



# USAID | DELIVER PROJECT

FROM THE AMERICAN PEOPLE



## Task Order 4 Completion Report

October 2010–February 2017

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## **USAID | DELIVER PROJECT, Task Order 4**

The USAID | DELIVER PROJECT, Task Order 4, is funded by the U.S. Agency for International Development (USAID) under contract number GPO-I-00-06-00007-00, order number AID-OAA-TO-I0-00064, beginning September 30, 2010. Task Order 4 is implemented by John Snow, Inc., in collaboration with PATH; Crown Agents USA, Inc.; Eastern and Southern African Management Institute; FHI 360; Avenir Health for Development, LLC; LLamasoft, Inc.; The Manoff Group, Inc.; Imperial Health Sciences; Asociacion Benefica PRISMA; and VillageReach. The project improves essential health commodity supply chains by strengthening logistics management information systems, streamlining distribution systems, identifying financial resources for procurement and supply chain operation, and enhancing forecasting and procurement planning. The project encourages policymakers and donors to support logistics as a critical factor in the overall success of their healthcare mandates.

### **Recommended Citation**

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### **Abstract**

This report describes the activities and achievements of the USAID | DELIVER PROJECT, Task Order 4, from October 1, 2010–February 28, 2017. 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.

### **Cover photos:**

In Malawi, commodities being delivered by boat. 2012 USAID | DELIVER PROJECT.

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# Acronyms

CARhs	Coordinated Assistance for Reproductive health supplies
CHEW	community health extension worker
cLMIS	contraceptive logistics management information system
CMS	Central Medical Store
CS	contraceptive security
CSCMP	Council of Supply Chain Management Professionals
CYP	couple-years of protection
DFID	Department for International Development
DMPA	Depo-Provera
eLMIS	electronic logistics management information system
ERP	enterprise resource planning
ForeLAC	El Foro Latinoamericano y del Caribe
FMOH	Federal Ministry of Health
FP	family planning
FP2020	Family Planning 2020
GHSC	Global Health Supply Chain
GIS	geographic information system
GON	Government of Nigeria
HCMIS	health commodity management information system
IAPHL	International Association of Public Health Logisticians
ILS	integrated logistics system
IPLS	Integrated Pharmaceutical Logistics System
IST	in-service training
JSI	John Snow, Inc.
LARC	long-acting reversible contraceptive
LMIS	logistics management information system
LMU	logistics management unit
MCH	maternal and child health
MOH	Ministry of Health
MPPD	Medical Procurement Production Division
MSD	Medical Stores Department
MSL	Medical Stores Limited
NGO	nongovernmental organization
NPHCDA	National Primary Health Care Development Agency
PAI	(only use acronym)
PFSA	Pharmaceuticals Fund and Supply Agency

PHDC	provincial health development centers
PPMR	Procurement Planning and Monitoring Report
PSM	Procurement and Supply Management
PST	pre-service training
PTD	People that Deliver
PWTI	population welfare training institute
RFP	request for proposals
RFQs	request for quotations
RHSC	Reproductive Health Supplies Coalition
R&R	Request & Requisition
SC	supply chain
SCMS	Supply Chain Management System
SCM	supply chain management
SDP	service delivery point
SECONAF	Sécurité Contraceptive en Afrique Francophone
SOP	standard operating procedure
SNNPR	Southern Nations, Nationalities, and Peoples Republic
TB	tuberculosis
TO4	Task Order 4
TRT	Technical Reference Team
UHC	universal health coverage
UNFPA	United Nations Population Fund
UNICEF	United Nations Children's Fund
vLMIS	vaccine logistics management information system
UNCoLSC	UN Commission on Life-Saving Commodities for Women and Children
ZAPS	Zimbabwe Assisted Pull System





# Executive Summary



To implement core supply chain strengthening interventions and improve product availability, the USAID | DELIVER PROJECT (the project) sought and adapted new and innovative tools, techniques, and methodologies in numerous areas. Using best practices, innovative approaches, collaboration, and strategic knowledge sharing, the project drove improvements in supply chain performance in the countries where we worked. Highlights of our work include—

- network modeling and optimization
- electronic Logistics Management Information Systems (eLMIS)
- logistic management units.

To effectively operate public health supply chains, a skilled and knowledgeable workforce is essential. To ensure sustainability for its interventions, the project worked with ministries of health, educational institutions, and the private sector to select and implement the strategies that best support capacity building in a particular country context. These strategies included—

- Institutionalized Supply Chain Management (SCM)
- Fostered Regional Training Centers
- IAPHL

The project supported the policy, planning, advocacy, and coordination activities that contribute to product availability. By shaping enabling environments, the project improved commodity security, which exists when every person can choose, obtain, and use quality contraceptives whenever they need them. Our technical and strategic expertise, data, and in-depth country perspective provided the evidence base for advocacy and action and helped extend and mobilize resources for commodity security. Project activities included—

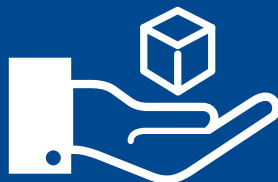
- financial tracking
- market analysis and commercial sector engagement
- supply chain segmentation
- costing, performance-based financing, and economic evaluation
- global partnerships and knowledge sharing.

The cost of our efforts was \$258,427,957.





## Project Mission



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.

The USAID | DELIVER PROJECT (the project), in partnership with ministries of health and other organizations, improved the health and well being of individuals and communities by increasing the availability of essential health supplies in public and private health services.

The project's objectives were the following:

- Improve and strengthen in-country supply chain systems and the environments in which they operate
- Improve commodity security by strengthening global and regional collaboration
- Improve USAID's ability to provide commodities to national programs

By strengthening the systems that get medicines and health products into the hands of clients and patients, the project contributed to better health outcomes for millions of people in low- and middle-income countries. The project provided technical assistance to more than 45 countries, operating country offices in 27 countries.

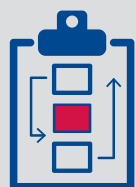
# Approach to building strong health supply chains:



Focus on improving health



Use evidence to drive action



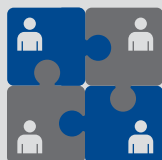
Find innovative solutions for persistent problems



Link programs and supply chains



Leverage global and local partnership efforts



Build local capacities and increase country ownership



Produce measurable results

# Six core supply chain functions contribute to supply chain sustainability.



Procurement



Human Resources



Information



Warehousing



Transportation



Waste Management

## In 2015, of 20 project presence countries:

65%

have **all six** supply chain systems in place for sustainability: Burkina Faso, Ethiopia, Ghana, Guinea, Indonesia, Liberia, Malawi, Mozambique, Nigeria, Rwanda, Tanzania, Zambia, and Zimbabwe

15%

have **five of six** supply chain systems in place for sustainability: India, Madagascar, and Pakistan

15%

have **four of six** supply chain systems in place for sustainability: Niger, South Sudan, and Togo

5%

have **two of six** supply chain systems in place for sustainability: Mauritania

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 warehouse management** of health commodities

85%

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

80%

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

85%

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





## Commitment to Family Planning



In most of the developing world, modern contraceptive use continues to increase. Because of the large population of young people in these countries, the number of women of reproductive age will continue to grow. This increase, combined with high levels of unmet need and an increased desire by people to plan their families, points to more demand for contraceptives. These increases will be particularly acute in sub-Saharan Africa—where use remains low and unmet need is high. A significant percentage of the project's Task Order 4 (TO4) work has been in contraceptive security (CS).

TO4's primary goals were to increase CS in the developing world by strengthening in-country supply chains, advocating for CS globally and regionally, and improving how commodities are provided to programs. CS exists when all people are able to choose, obtain, and use quality contraceptives when and where they need them. Choice implies that a range of suitable family planning methods should be available.

The project helped strengthen in-country supply chains that deliver family planning commodities and other essential medicines. The project assisted countries in assessing the CS environment and developing national contraceptive security strategies as part of the project's technical assistance. To monitor and track the progress of CS, the project collected annual CS indicators as well as collected data for *CS Index*. The project also helped develop forecasting for new and underutilized methods, and forecasting for long-term methods.

At the global level, the project participated in a number of initiatives to strengthen CS. The project was a member of the Reproductive Health Supplies Coalition (RHSC), which is a global partnership of public, private, and non-governmental organizations (NGOs) with critical roles in providing contraceptives and other reproductive health supplies. To track contraceptive stock levels, the project developed and managed the Procurement Planning and Monitoring Report (PPMR). As part of the Coordinated Assistance for Reproductive health supplies (CARhs) group, the project used the PPMR to monitor, report, and resolve stock issues in more than 30 countries.







## Health Areas Supported

The USAID | DELIVER PROJECT worked with national and international partners to expand the availability of contraceptives and essential health products around the world. The project supported ministries of health and partners to design, develop, strengthen, and operate safe, sustainable, and reliable supply systems. The project's technical support strengthened all aspects of in-country supply chains, including forecasting, procurement, distribution, management information systems, quality assurance, storage and infrastructure, and medical waste disposal.

The project's motto—*No Product, No Program*—is a reminder that health programs cannot operate successfully without a full, reliable supply of essential drugs, supplies, and other commodities. TO4 worked in a wide range of health areas, including—



Family planning



Essential Medicines



HIV and AIDS



Laboratories



Tuberculosis





# Technical Assistance Overview



The project worked with global, regional, and local partners to implement sustainable supply chain solutions that fit local contexts. Interventions were grounded in best practices and innovative technologies, often generated by the project, with inspiration from private-sector practices.

## Interventions

### ***Strengthening Supply Chain Performance***

In the public health setting, an integrated supply chain links everyone involved in managing essential health commodities into one cohesive supply chain management organization, ultimately helping clients.

- Improves Supply Chain System Design
- Recovers Warehouse Space and Improves Warehouse Management
- Distributes Health Commodities

### ***Increasing National Commitment to Commodity Security***

Commodity security focuses on the broader environment of supply chains—helping global, regional, and local partners apply advocacy and strategic interventions to ensure a sustainable flow of health commodities. This encompasses a range of policy, planning, advocacy, and coordination activities that contribute to product availability, including—

- Financial tracking
- Economic evaluation
- Market analysis and commercial sector engagement
- Performance-based financing

### ***Building Sustainable Capacity***

To be effective, supply chains must have a skilled and capable workforce. Increasing the capacity of individuals and institutions improves supply chain performance and encourages local ownership, including—

- Strengthening human resources in health logistics
- Building capacity in public procurement
- Developing regional training institutes' capacity to conduct SCM courses



### Figure 1. Where We Work

Over the life of the project, Task Order 4 provided technical assistance to 47 countries and had a country presence in 27 countries, which covered sub-Saharan Africa, Latin America, East and South Asia, and the Middle East.

## THE PROJECT'S TECHNICAL ASSISTANCE









# Improving In-Country Supply Chains



Delivering quality healthcare to patients requires that health facilities have a full supply of medicines and other health products. To ensure a steady supply of commodities, it is necessary to build and maintain a robust supply chain. The project collaborated with ministries of health to ensure that system strengthening interventions were integrated with government systems, and that they built capacity in the local environment, ensuring long-term sustainability. The interventions were based on best practices and innovative ideas, often from the private sector, where supply chain management is a driving factor for success. The project also partnered with NGOs, academia, and local partners to learn from their work and leverage their expertise.

## Supply Chain Strategic Planning

A major focus for the project was to support strategic activities that target overall planning, collaboration, and endorsement of supply chain management as a key factor in successful health programs. The project was involved in significant strategic planning activities in many countries.

Some of these strategic activities included developing reproductive health commodity security strategies and operational plans in select regions in Ethiopia; in Ghana, a national condom and lubricant strategy for 2016–2020; substantive inputs for supply chain master planning in Mozambique; and elaboration of supply chain strategic plans for mainland Tanzania and Zanzibar. In **Rwanda**, the Ministry of Health (MOH), with support from the project, took steps to operationalize the five-year National Pharmaceutical Supply Chain Strategic Plan, which included the definition of key activities and validation of a performance management plan. The performance management efforts aimed to clarify roles and responsibilities among stakeholders; monitor achievement of organizational targets; and, to achieve Rwanda's supply chain goals, identify what worked well and what needed to improve.

The Nigeria 2011–2015 reproductive health commodity security (RHCS) strategy included lifting barriers that were preventing community health extension workers (CHEW) from providing injectables and for training service providers nationally on long-acting reversible



contraceptive (LARC) methods. By 2014, significant advances had been made to implement a policy that enabled trained CHEWs to provide injectables and implants; national training of service providers on LARC was largely completed. These changes, in turn, contributed to increased requests from state family planning coordinators for implants, which contributed to the increase in couple-years of protection (CYP) produced by the public sector from 2 million in 2014 to 3.5 million in 2015.

## System Analysis and Design

Over the life of the project, supply chain system design evolved through careful piloting of new and innovative approaches to improve product availability. The project conducted in-depth supply chain system analysis and design activities in 27 countries. The project increasingly used combinations of innovative interventions—such as geographic information system (GIS), supply chain modeling, and optimization techniques—to improve product availability. To help identify changes needed to improve supply chains, these interventions improved data visibility and performance, resulting in better product availability and better health outcomes for clients. The project used these tools to model different scenarios of supply chain system design, helping stakeholders better understand the advantages and disadvantages of various design solutions.

Optimization is a commercial-sector approach to strategic planning, design, and continuous improvement in supply chain systems. It makes better use of existing data and integrates visual tools—such as GIS—and commercial-sector approaches into an analysis that can offer valuable insights into which interventions should be pursued. The project used simulation software and routine data to identify flexible strategies for increasing the performance and cost effectiveness for each supply chain function, such as warehousing and distribution.

## Data Visibility and eLMIS

Supply chain managers need timely and accurate logistics data to avoid shortages and bottlenecks at any level in the supply chain. To ensure that decisionmakers have the information they need, the project helped countries expand data visibility and build efficient and effective logistics management information system (LMIS). Better LMISs

can help increase reporting rates and reduce stockouts. Whenever possible, the project built on proven, scalable systems that were tailored to new health programs and new countries.

In **Pakistan**, the project designed and implemented an electronic logistics management information system (eLMIS) that collects, organizes, and reports data to facilitate informed logistics system decisions. In July 2011, after an extensive consultative process with public and private sector stakeholders, Pakistan's contraceptive logistics management information system (cLMIS) was piloted in 19 districts across the country. By 2012, it was scaled up to all districts. Key cLMIS insights identified bottlenecks in data management and ways to improve data quality at all levels and sectors. Web-based end-to-end dashboards made the cLMIS data for the entire supply chain visible to authorized users. The cLMIS intervention led to a continuous decline in stockouts of contraceptives—from 37 percent in 2011 to 13 percent in 2016. In 2015, the project provided rigorous technical assistance on using data analytics to improve data quality. Data error rates dropped from 15 to 5 percent.

In **Ethiopia**, the USAID | DELIVER PROJECT developed and implemented the health commodity management information system (HCMIS)—an open source, custom software solution that was first developed for the country's health commodity supply chain. This robust enterprise-level software solution delivers many of the features found in costly commercial enterprise resource planning (ERP) applications. In 2014, the project developed a datamart and dashboards to present critical data for decisionmaking. Thanks to the live commodity dashboards developed and deployed by the project across the Pharmaceuticals Fund and Supply Agency (PFSA) network of warehouses (central and hub levels), PFSA and Federal Ministry of Health (FMOH) partners have unprecedented access to real-time data. This data from across the entire PFSA network for all commodities—including program specific dashboards for contraceptives, HIV, malaria and maternal and child health (MCH) items—allows for improved decisionmaking.

As of 2015, the HCMIS platform was implemented in—

- more than 500 of the largest hospitals and health facilities



- the entire PFSA network of the central stores and 11 hubs
- central cold room and 18 regional cold rooms for vaccines.

Since 2006, not a single stockout was reported for any of the four major contraceptives—Depo-Provera (DMPA), male condoms, implants, and oral pills—at the national level; availability at health facilities for these methods has consistently been 95 percent or better.

In **Tanzania** and **Zambia**, the project identified similar challenges related to health commodity reporting and requisitioning, order fulfillment, and data visibility in their public health supply chains. In the fall of 2011, to address these challenges, Tanzania and Zambia embarked on a collaborative journey to develop the business requirements for managing an information system that could meet their needs. Recognizing that both countries shared many of the same requirements, the Ministry of Health of Zambia and the Ministry of Health and Social Welfare of Tanzania formed a joint project to develop an eLMIS that could be deployed in both countries.

As part of the Open LMIS initiative, the project created a state-of-the-art, full-featured, configurable, and scalable open source eLMIS to meet the needs of health commodity supply chains in low-income countries. In Tanzania, the eLMIS collects data from more than 6,000 service delivery points (SDP); and has expanded to tuberculosis (TB) and vaccines to include all vertical public health programs in the country, including family planning forms, malaria, and essential medicines commodities. The eLMIS now receives electronic Request & Requisitions (R&Rs) from 171 districts, on a quarterly basis, for family planning, malaria, and essential medicines commodities. Reporting rates were 91 percent in January–March 2015 (first quarter of complete rollout) and 93 percent in January–March 2015, was 91 percent for the integrated logistics system (ILS) and 93 percent in the January–March quarter in 2016. Ministries in both Tanzania Mainland and Zanzibar showed country ownership by officially launching the eLMIS platforms in June and July 2015, respectively. In Zambia, the eLMIS collects data from more than 2,000 SDPs, including four vertical programs—essential medicines, antiretrovirals, HIV testing, and labs—delivering services and commodities to public health facilities.

## Warehousing

After the commodities are procured and received in-country, storage and distribution are two crucial in-country supply chain functions; they require an investment in equipment, people, and procedures. The *Guidelines for the Storage of Essential Medicines and Other Health Commodities*, and the *Guidelines for Warehousing Health Commodities* continue to be two of the most requested and downloaded documents. The project, to sustain its work, published an updated guide for warehousing health commodities, including a step-by-step self-assessment for warehouse managers and staff.

In Tanzania, the project assisted the Medical Stores Department (MSD) with the procuring, configuring, and deploying equipment required for barcode reader–based processing. The project worked with the field office to deploy the Material Resources Planning and Cycle Counting modules. The MSD reduced the time required to carry out the Annual Stock Take by more than half. The project also worked with the MSD to compile related training materials for end-users, including revised standard operating procedures (SOPs) documentation.

In South Sudan, the project carried out an assessment of warehouse infrastructure, storage capacity requirements, and warehouse staff capability for the Central Medical Stores (CMSs). The project developed request for proposals (RFPs) and request for quotations (RFQs) and assisted the field office in procuring, deploying, and commissioning the infrastructure and equipment required for short-to medium-term improvement of two warehouses located in Juba. The project also assisted the field office in compiling a full set of SOPs documentation for the CMS.

In Rwanda, the project compiled a business process re-engineering plan, based on Lean Warehousing as per warehousing best practice guidelines for the Medical Procurement Production Division of Rwanda (MPPD), located in Kigali. The project assessed the warehouse management system, and developed as-is and to-be process flow diagrams, which led to the revision of the SOPs documentation. The project also assisted a local vendor and the field office in the installation of racking in a newly built warehouse.

In **Nigeria**, the project developed layout plans for four National Primary Health Care Development Agency (NPHCDA) warehouses, and assisted the field office in formulating RFQs for building refurbishments and for procuring warehouse inputs.

**Zambia's** national medical store, Medical Stores Limited (MSL), is the backbone of the medicines supply chain. The project began supporting MSL in 2006 by establishing the logistics management unit (LMU). Technical assistance in data management, commodity tracking, and procurement planning through training and support have helped MSL staff manage stock levels in warehouses more efficiently. MSL staff now use tools like the eLMIS to work directly with districts to improve reporting and data quality. Furthermore, establishing a pipeline coordinator

position at MSL ensured that partners coordinate orders, thereby reducing overstocking and stockouts of key commodities.

The project lobbied continuously for MSL to be given responsibility for full management of the national supply chain—from forecasting and quantification to last mile distribution. Its streamlined role was detailed in the National Supply Chain Strategy and the project was instrumental in MSL's successful transition to its new role. The LMU completely altered the function of the national supply chain by providing critical consumption data for decisionmaking. Over time, MSL assumed responsibility for the LMU staff and management and took ownership of the unit.



## Strengthening Environments for Commodity Security

In addition to strengthening logistics systems and building capacity within supply chain organizations, the project supported the policy, planning, advocacy, and coordination activities that contribute to product availability. By shaping enabling environments, the project improved commodity security, which exists when every person is able to choose, obtain, and use quality contraceptives and whenever they need them.

The project developed resources and tools that help manage and secure financing for commodities and supply chain operations. To increase the knowledge base of best practices and to generate evidence that bridges the technical/advocacy divide, the project conceptualized and tested innovative approaches in areas that include performance improvement, market segmentation, and costing, including how to effectively introduce service fees.

Working with donors, MOHs, and other stakeholders; the project supported coordination and resource mobilization efforts to detect and alleviate critical gaps in funding, which helped avert stockouts and, ultimately, saved lives. To prevent supply shortages through routine planning, increasing emphasis was placed on the availability of data for decisionmaking and regularly scheduled quantification activities undertaken by local stakeholders.

## Improving Financial Tracking and Advocacy for Funding Commodities and Supply Chains

The project developed a guide, *Enhancing Contraceptive Security through Better Financial Tracking: A Resource Guide for Analysts and Advocates*, which allowed stakeholders to navigate the various steps in tracking contraceptive finances. These resources are available at <https://www.k4health.org/>.

The project developed easy-to-use resources for analysts and advocates to learn about their country's finances for contraceptives, track commitments and expenditures, create process maps of donor and government financial processes, and determine advocacy entry points to promote sufficient funding for contraceptive procurement. Through various trainings, country teams—including

Commodity security focuses on the broader environment of supply chains—helping global and in-country partners apply advocacy and strategic interventions to ensure a sustainable flow of health commodities.

## Contraceptive Security (CS) Indicators

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

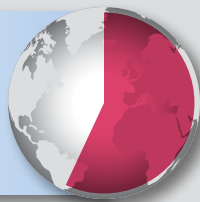
**86%** of countries have a committee that works on CS



**92%** of countries have a CS strategy



**57%** contribute government funds for contraceptives

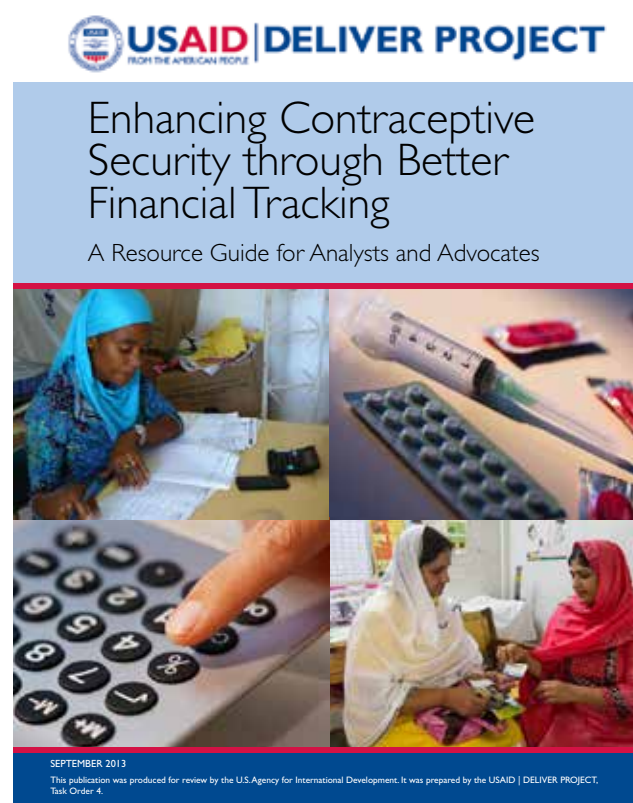


government representatives, civil society advocates, and technical supply chain specialists—increased their capacity to conduct quality financial tracking and evidence-based advocacy.

In **Tanzania**, the project developed a financial tracking tool that in-country stakeholders could use to track commitments, expenditures, and the resulting procurements. Training participants in Tanzania included MOH counterparts, local advocacy groups, and project staff. Participants learned techniques for gathering and monitoring data on commitments and spending toward contraceptive procurement and developed action plans for continuing financial tracking and related advocacy efforts.

Coupled with better tracking of contraceptive needs and financing through improved quantification and coordination, the project provided the evidence for Nigeria to mobilize additional funds. The public sector annual contraceptive funding increased from about \$2 million in 2010 to over \$10 million annually during the last five years. In 2002, the public sector's family planning

Figure 2. Resource Guide for Analysts and Advocates



program depended entirely on donations, totaling about \$2 million per year. In 2010, after advocacy efforts made by USAID, United Nations Population Fund (UNFPA), and Department for International Development (DFID), which were supported by evidence developed by the project, donors increased public sector contraceptive funding commitments from \$2 million to \$10 million a year in 2010, with similar requirements projected for future years incorporated into the National Reproductive Health Commodity Security Strategy. The project supported the Government of Nigeria (GON) by coordinating the development of multi-donor basket funding for public sector contraceptives, based on data-driven forecasts; by 2012, the GON released \$2 million for contraceptive procurement.

## Tracking CS Indicators

Many factors influence whether individuals can access the contraceptives they need to plan their families. Strengthening commodity security requires systematic tracking of donor and government commitment, policies, stakeholder coordination, and supply chain information. Through the *Contraceptive Security (CS) Indicators* survey, the project collected and disseminated important information on these factors from countries around the world. This knowledge base served the reproductive health community as members sought to identify issues and solutions to ensure CS. Collecting this information annually allowed stakeholders to measure country progress toward CS over time. In addition, the survey was also responsive to the global community, as it was adapted, over time, to include greater detail on commodity financing, task shifting, and product availability through various sectors.

In 2015, the seventh and final round of data collection from 49 countries was completed for the CS Indicators. The survey included questions on financing for contraceptives, methods offered, policies, coordination, and strengths of the supply chain. The most recent survey indicated that 86 percent of countries have a committee that works on CS, 92 percent have a CS strategy (98 percent of these strategies are being implemented), and 57 percent of respondent countries indicated that government funds were spent on contraceptive procurement in the most recent complete fiscal year. On average, these countries spent \$5.56 million on contraceptive procurement. Two

additional countries completed the survey in the last survey: Côte d'Ivoire and Indonesia. Thirty countries completed the survey during each of the 7 years. The project's CS data and findings were disseminated widely to various partners and used by other organizations, including the Advance Family Planning Project, PAI, Family Planning 2020 (FP2020), UNFPA, and others.

## Costing and Economic Evaluation

Countries were increasingly interested in the ongoing costs required to fund their health supply chains. Having these data enabled stakeholders to evaluate economic considerations when making decisions that affect the supply chain. Building on the supply chain costing methodology developed by the project in 2013, the project developed the guide—*Economic Evaluation: Guide to Approaches for Public Health Supply Chains*—a framework that defines several of the main types of analyses, including cost effectiveness, cost benefit, and return on investment. This guide helps decisionmakers compare costs and the consequences of alternative supply chain investments (see figure 3). Applying economic evaluation enables decisionmakers to make informed choices; they need to know the costs that an intervention or function will require, as well as the effectiveness it will produce. Economic evaluations were conducted in Ghana, Nigeria, Rwanda, Tanzania, and Zimbabwe, where policymakers incorporated the results into supply chain decisions.

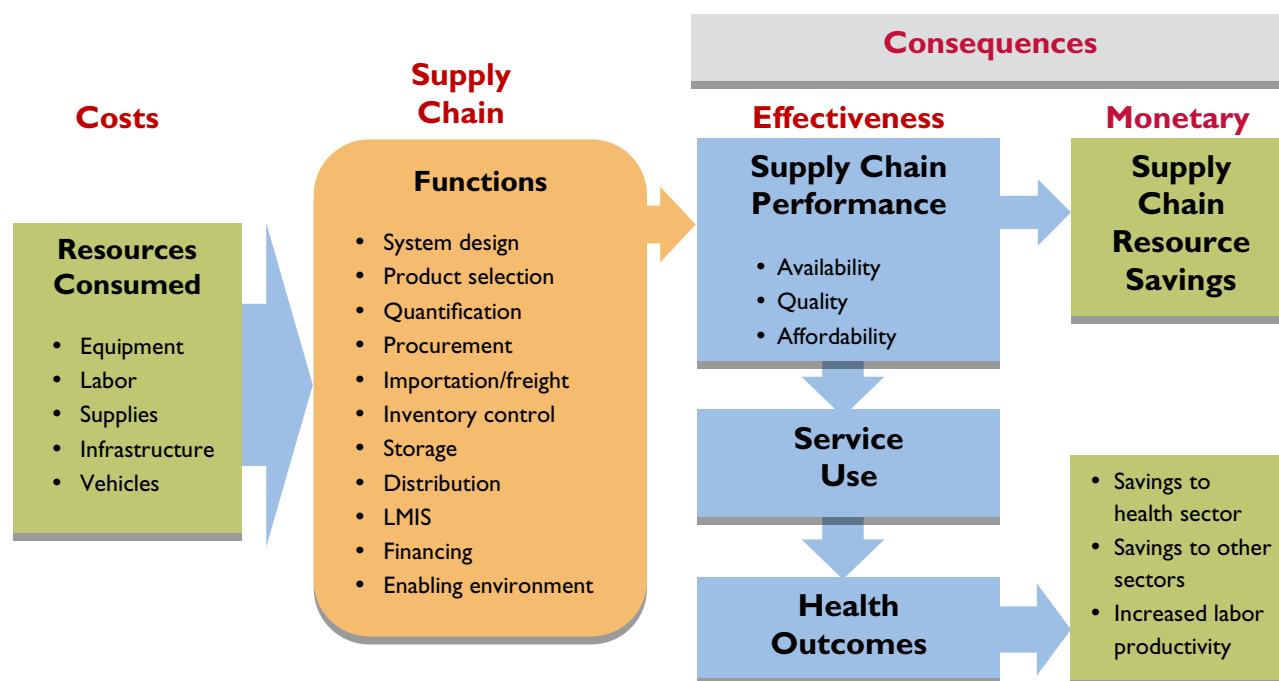
Costing or economic evaluation exercises were carried out in more than 25 countries, providing decisionmakers and policymakers information to increase funding for CS and the supply chain.

In 2014, [Peru](#) decided to conduct a costing exercise, as well, adapting the project's methodology while letting government staff run and manage it with very limited external support. This is a significant step that few countries have taken before. Moreover, the transportation and warehousing cost analysis done in the La Libertad region in Peru led to a budget for first-time funding for transportation in the next year's results-based budget.

In [Zimbabwe](#), the project conducted a study to compare the performance, costs, and efficiency of the Zimbabwe



Figure 3. Components of Economic Evaluation of Supply Chains



Assisted Pull System (ZAPS) to that of four existing distribution systems operating as individual entities. The analysis showed that ZAPS was less costly than the previous systems. Further, because ZAPS cost less and handled greater volumes and values of commodities at the same level of performance, it was a more cost-effective system compared to the baseline systems. Following the dissemination of the evaluation results, government and donor

stakeholders agreed on a nationwide scale up of the ZAPS, with the cost effectiveness results a key consideration.

The project also established and led the Supply Chain Costing Users Group to share technical expertise among a community of practice of similar supply chain costing practitioners. The meetings, first started in 2009, foster sharing and learning from each other on a range of costing and economic evaluation related topics.

# Global Partnerships and Knowledge Sharing

The project occupied the global leadership role in supply chain strengthening and improving commodity security. We served as the go-to resource for global and regional partners, helping to ensure that CS and supply chains are part of the global agenda and initiatives, and made the case that CS and SC contributed to improved health outcomes. Our technical and strategic expertise, data, and in-depth country perspective provided the evidence base for advocacy and action and helped extend and mobilize resources for commodity security.

Within the RHSC, project staff held leadership roles on the executive committee, the Systems Strengthening Working Group (serving as the chair), *El Foro Latinoamericano y del Caribe* (ForoLAC), and *Sécurité Contraceptive en Afrique Francophone* (SECONAF), and supported several workstreams and initiatives. The project also participated in and provided a unique perspective to the Advocacy & Accountability and Market Development Approaches Working Groups of the RHSC.

The project's PPMR administrators played a key role and provided evidence and technical context to inform the CARhs group and Coordinated Supply Planning group. With data from the project's PPMR, governments and donors can respond rapidly and effectively to supply shortfalls. To prevent stockouts of contraceptives, or instances of overstock when drugs would expire and possibly be wasted, the CARhs group monitored stock status and shipments of contraceptives for 33 countries and 53 programs to address over- and undersupply situations.

The PPMR and the CARhs group became essential mechanisms for countries and donors to improve data visibility, monitor contraceptive stock and shipment status, strengthen in-country coordination, and address critical contraceptive stock imbalances in countries around the world. Launched in 2007 and online as of 2012, the PPMR was created by the USAID | DELIVER PROJECT to capture country-by-country information on contraceptive stock and shipment status. By September 2016, 53 public sector, NGOs, and social marketing programs

in 33 countries were reporting to the PPMR. Regularly reporting countries include the following:

- |                                |                         |
|--------------------------------|-------------------------|
| • Afghanistan                  | • Malawi                |
| • Bangladesh                   | • Mali                  |
| • Burkina Faso                 | • Mauritania            |
| • Cameroon                     | • Mozambique            |
| • Cape Verde                   | • Niger                 |
| • Chad                         | • Nigeria               |
| • Côte d'Ivoire                | • Pakistan              |
| • Democratic Republic of Congo | • Rwanda                |
| • Ethiopia                     | • Sao Tome and Principe |
| • Gabon                        | • Senegal               |
| • Gambia                       | • Sierra Leone          |
| • Ghana                        | • Tanzania              |
| • Guinea                       | • Togo                  |
| • Kenya                        | • Uganda                |
| • Liberia                      | • Zambia                |
| • Madagascar                   | • Zimbabwe              |

The PPMR is available online as an interactive database, increasing data visibility for all registered users. This increased data visibility gave CARhs members the information needed to quickly prioritize urgent needs, understand the overall context of program reporting, and take decisive actions to assist a wide range of programs and countries. Between May 2012 and September 2016, the CARhs group used PPMR data as the evidence base to create 81 new shipments and expedite 46, addressing potential shortages; postponed 18 shipments and canceled 14, avoiding or minimizing overstocks; and facilitated five product transfers so that product that would not be used before expiry in one country could meet user needs in another.

Project staff contributed to other global groups as well, including the UN Commission on Life-Saving Commodities for Women and Children (UNCoLSC), FP2020, and People that Deliver (PtD). The project has provided leadership for activities conducted through the Technical Reference Teams (TRTs) (i.e., working groups) that were formed to address recommendations in the 2012 report of the UNCoLSC, especially the Supply Chain TRT and the Maternal Health TRT. Project staff also participated in the FP2020 Market Dynamics Working Group and the Expert Advisory Committee and provided technical input to the Performance Monitoring & Evidence FP2020

working group. In addition, the project participated on the PtD board.

Project staff provided technical input to additional global efforts, including the UNFPA universal health coverage (UHC) meeting, the Coordinated Supply Planning group of the RHSC, the RHSC Contraceptive Commodities Analysis project, the International FP Expenditure Tracking Advisory Group, and the USAID briefs on High Impact Practices for FP.

The project also organized and shared technical expertise with communities of practice, including the International Association of Public Health Logisticians (IAPHL). See the IAPHL section for more information.

Project staff monitored trends and identified risks and opportunities for SC and CS, and used numerous strategies to elevate these issues to the wider community. For example, staff wrote blogs on the Global Financing Facility and UHC. They also shared experiences, findings, and lessons learned through publishing journal articles (see Appendix E, PMP Indicator 3.2) and presenting at conferences and meetings, including the International Conference on Family Planning, the Global Health Supply Chain Summit, the Reproductive Health Supplies Coalition's General Membership Meeting, the Advance Family Planning Partners Meeting, the Population Association of America Annual Meeting, and the American Public Health Association Annual Meeting.

## Market Analysis and Commercial Sector Engagement

To achieve commodity security, it is beneficial to include stakeholders from all sectors. With a total market approach, suppliers and financiers from all three

sectors—public, nonprofit, and commercial—work together to increase and/or sustain the equitable use of contraceptive products and services. The project demonstrated leadership in this area by (1) developing resources; (2) collecting and analyzing data; (3) supporting the evolution of country-specific contraceptive security committees with multi-sectoral participation; and (4) facilitating formal discussions among technical experts about developing new strategies, approaches, and interventions.

To successfully engage all sectors, the project developed *A Participatory Approach: Using Evidence to Support a Total Market Approach to Family Planning (2014)*, including a suite of tools that takes stakeholders through a highly participatory process to analyze, understand, and use market analysis data for decisionmaking related to policy and the provision of services and products. The process helped maximize the resources of each sector and encouraged the development of coordinated strategies to identify and reduce gaps in family planning services and supplies.

Recognizing that FP2020 goals cannot be met by relying exclusively on public sector programs and donated commodities, the project increasingly examined ways to encourage the commercial sector to contribute to a sustainable contraceptive supply in African countries. To this end, the project organized and hosted the initial meeting of the Commercial Technical Advisory Group, comprising six members with technical, geographic, and leadership experience in the pharmaceutical and fast-moving consumer goods industries; academia; health market data; global health; and women's development issues. The Technical Advisory Group provided strategic guidance for USAID's contraceptive investments in emerging markets in Africa. The project was a finalist for the 2014 Innovation Award from the Council of Supply Chain Management Professionals (CSCMP).





## Building Local Capacity in Supply Chain Management

An essential component of a robust health supply chain is the staff that implements logistics tasks. To run effectively, public health supply chains require motivated, trained, and skilled staff who are competent in the various essential logistics functions and who are empowered to make decisions that positively impact health supplies and supply chains. A skilled and knowledgeable workforce is essential to effectively operate public health supply chains.

The goal of the project's capacity-building activities was to strengthen human resources in public health supply chain systems in the developing world. A focus on developing a superior workforce allows organizations and individual staff to accomplish their customer service goals, ensuring higher performance among public health personnel and, therefore, increased availability of contraceptives and other essential health products.

To ensure sustainability for its interventions, the project worked with ministries of health, educational institutions, and the private sector to select and implement the strategies that best supported capacity building in a particular country context. With human resources assessments establishing a baseline for capacity building in many countries, a variety of educational approaches were employed to address training needs at each level of the supply chain.

The project renewed the focus on leadership in supply chains and conducted human resources assessments in Ethiopia, Ghana, Rwanda, Tanzania, and Zimbabwe. The number of countries with pre-service training (PST) in supply chain management increased to 11, and the project conducted hundreds of specialized trainings in support of various supply chain interventions (see Appendix C). IAPHL, a community of practice for public health logisticians, has continued to expand and is a valuable resource for the global health supply chain community.

## Improving Global Access to Logistics Training

Access to learning in supply chain management is a key component for strengthening supply chains. The project built programs that extend learning opportunities to both local and global audiences. Logisticians can access supply chain management knowledge through short-term in-person classes, PST programs, or tap into online learning

**To be effective, supply chains must have a skilled and capable workforce. Increasing the capacity of individuals and institutions improves supply chain performance and encourages local ownership.**



**109,000** people were trained in supply chain management in countries that had TO4 offices.

**36** courses taught by regional institutes



**5,232** learning sessions completed through online courses

Presence countries with a pre-service training program



Presence countries with a logistics management unit or dedicated supply chain management positions



through John Snow, Inc. (JSI's) e-learning website, where users can earn a certificate after completing the project's eight-module flagship supply chain management course (John Snow, Inc. 2015). To supplement the in-depth courses, the project developed three 10–20 minute videos on forecasting, supportive supervision, and disposal of unusable health commodities. The videos were shared widely and used during trainings.

To provide access to short-term training courses in supply chain management, the project established the Regional Training Institutes program, which enabled five local training institutions to offer courses in supply chain management (SCM) in French, English, and Spanish. The institutes are in West Africa, East Africa, Southern Africa, and Latin America. Since 2008, the institutes have trained 809 people through 54 courses.

The project's online supply chain course—Lessons in Logistics Management for Health Commodities—remains an important resource for logisticians and other stakeholders looking to build their supply chain management knowledge. The courses, free of charge, are available through JSI's online learning portal (<http://elearning.jsi.com>).

Overall, the project trained 109,000 staff from all levels of the supply chain. Of the personnel trained, 55 percent were men and 45 percent were women. While many of the people trained came from higher levels—central, district, and region—a majority (63 percent) came from the SDP level.

The project trained in all presence countries, especially for the roll out of new systems and operating procedures. For example, to build a cadre of qualified logistics professionals skilled in quantification, participants in the four focus countries of the West and Central Africa regional contraceptive security initiative—Burkina Faso, Mauritania, Niger, and Togo—engaged in supply chain training.

In **Nicaragua**, the project undertook SCM training with organizations working with most-at-risk populations, as part of institutional strengthening efforts for NGOs working in HIV prevention and care. The project developed an educational package covering supply chain topics cited by NGO staff in an assessment of storage conditions and management of health supplies. Participants in the

trainings included 107 people from 42 NGOs, which also resulted in developing action plans for making warehouse improvements.

The project conducted 11 courses for more than 225 staff on the Introduction to Supply Chain Management and Commodity Security for the USAID health sector for incoming health officers from USAID/Washington and missions.

## Sustainable Development for the Supply Chain Workforce

During the last several years, PST proved to be a sustainable approach for ensuring that skilled logisticians are trained every year. To establish PST in a country, the project typically worked with schools of pharmacy and nursing to incorporate health logistics into their curricula. These training taught students the principles and applications of health logistics before they were placed as nurses or pharmacists in health facilities across the country.

PST was established in Ethiopia, Ghana, Malawi, Mozambique, Nicaragua, Nigeria, Pakistan, Rwanda, Tanzania, Zambia, and Zimbabwe. In Ethiopia, where PST was first introduced in 2009, the project compared the cost effectiveness of PST versus in-service training (IST) to help guide supply chain training policies for the public sector. The study showed that PST was significantly more cost effective than IST, savings costs for transport and per diem, and reducing lost work time.

In **Ghana**, since 2015, all students in nursing and pharmacy schools across the country have received PST in supply chain management. Supply chain training is available as part of the curriculum in all three universities that offer a pharmacy degree and in 109 nursing and midwifery schools, as well as four other health institutions. In nursing training colleges, 208 tutors across the country received instruction to train their students. Pharmacy students have received supply chain management training since 2014, with approximately 440 students graduating each year. By October 2015, an estimated 15,600 nurses and midwifery students received formalized supply chain management trainings. With the added logistics

knowledge, these nurses will be better prepared to ensure that they have the supplies they need for better service delivery.

Since **Ethiopia** began implementing the Integrated Pharmaceutical Logistics System (IPLS) in 2009, more than 13,602 healthcare workers have been trained on IPLS. However, staff attrition and expanding service delivery has created a continuous demand for training. To address this, the project began looking at PST as a complementary approach to IST. The project began working with the four health science colleges in Southern Nations, Nationalities, and Peoples Region (SNNPR) in 2009; and, in 2011, began to expand the training to other regions. A study showed that within one year of being trained, 81 percent of PST trainees—pharmacists or pharmacy technicians—had been recruited to work on the IPLS system and the comparative training costs for PST were one-sixth of those for IST. In 2015 and 2016, the project trained 751 pharmacy students in six institutions. The project also continued its efforts to advocate for inclusion of IPLS training as part of the standard curriculum for pharmacy technicians.

In **Nigeria**, the project collaborated with Supply Chain Management System (SCMS) to institutionalize PST in supply chain management within 12 schools of pharmacy. More than 1,900 pharmacists who graduated from 12 schools of pharmacy received PST in SCM. By incorporating basic supply chain knowledge into PST, the project built sustainability for the SCM workforce. PST provided future pharmacists and community health extension workers with a SC skill set that they need to understand and perform key SC functions.

**Pakistan** also took steps to ensure that the appropriate human resources are being built to sustain its supply chain investments, particularly in LMIS automation. To support the training of personnel for LMIS and other supply chain functions, the project created a pool of 37 master trainers within the provincial departments of health and population welfare. These master trainers trained 6,758 staff to use the cLMIS, vLMIS, and TB data management information system for data entry, analysis, and decisionmaking.

The training curricula, developed in consultation with the federal and provincial governments, was handed over to

the government and institutionalized within the provincial health development centers (PHDCs) and population welfare training institutes (PWTIs) to help scale up and sustain human resource capacity for the health supply chain.

## IAPHL

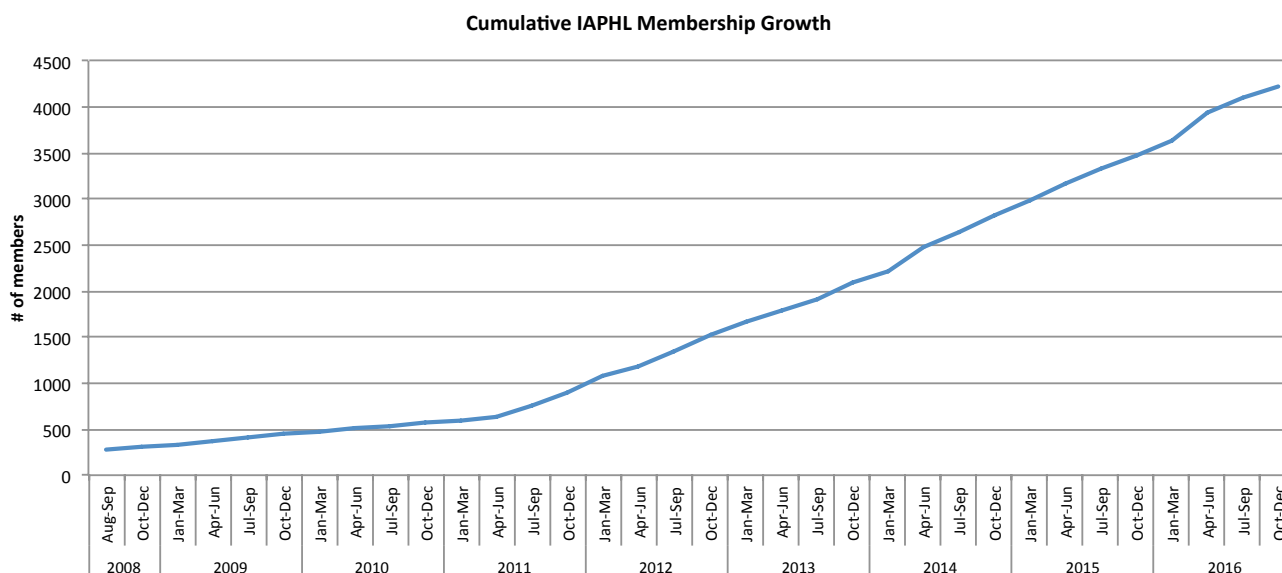
To support continuous learning for supply chain professionals and the public health logistics community, the project, with significant contributions from JSI, hosts the secretariat for the IAPHL and continues to develop it as an organization. The project founded IAPHL, which began as a forum for USAID-funded supply chain management training participants around the world to discuss supply chain challenges and to share lessons learned and best practices. Since then, the association has grown steadily, quadrupling its number of members in the last five years to more than 4,000 members in 140 countries (see figure 4). Members work across many commodity

programs ranging from family planning, malaria, vaccines, to HIV and AIDS.

IAPHL has offered rich technical online discussions, established country chapters, and piloted mentoring and leadership programs. Through participation in the Global Health Supply Chain (GHSC) Summit, the project created additional networking opportunities for IAPHL members. Since 2013, IAPHL has sponsored 61 of its members to attend the GHSC Summit, most of them public health logisticians from African countries, but, also, from Pakistan, Fiji, and Papua New Guinea.

IAPHL is in a unique position to support the professional development of public health supply chain professionals in developing countries in response to this global need and call from international stakeholders. It is the only association attempting to meet the professionalization needs of the public health supply chain sector in developing countries through a continuous open dialogue between members at every level in the supply chain all over the world.

Figure 4. IAPHL Membership Growth, October 2008–December 2016





# Knowledge Management



The project's strategic approach to knowledge management played an important role in achieving the project's goal of increasing access to health commodities. Knowledge management enabled the project to capture critical learning from project implementation and distribute it to partners and practitioners within the commodity security and SCM communities, both globally and locally.

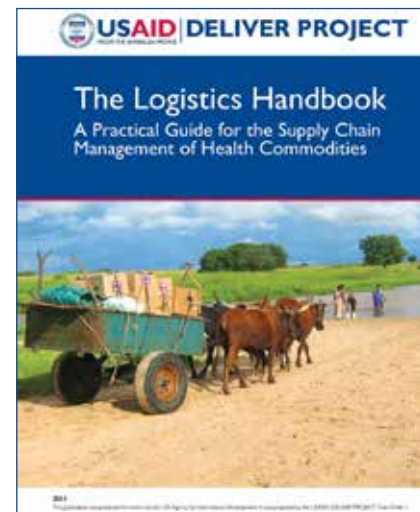
The project developed hundreds of tools and guides that are now used by organizations all over the world to build and maintain high-performing supply chains. This included best practices, innovative approaches, and new research, which helped raise awareness globally about the important role of supply chain management in securing a steady flow of life-saving health commodities.

The project published critical guidance that helped countries optimize their supply chains. This included SOPs, assessments, supply chain toolkits, manuals, software, K4Health toolkits, and more. Numerous countries have used the PipeLine software for quantification. *The Logistics Handbook*, available in six languages, was distributed and used in all countries as a learning tool. Important advocacy tools included the CS Indicator dashboards and the *CS Index*.

Through submission of journal articles to six different peer-reviewed journals, with four published articles so far, the project contributed to the health supply chain management body of knowledge and helped build the evidence base for improving access to health supplies. (See Appendix E, PMP Indicator 3.2)

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*The Logistics Handbook* is available in English, French, Spanish, Portuguese, Hindi, and Arabic.





To improve the accessibility of its materials, the project increasingly used visual communication formats—infographics, data visualizations, dashboards, online toolkits, and videos—in addition to its traditional products. The project used videos to convey supply chain technical knowledge, such as supportive supervision and forecasting, as well as to advocate for investments in supply chains.

Through comprehensive and systematic dissemination efforts, the project put its supply chain tools and knowledge into the hands of global-, regional-, and national-level partners; and into the hands of everyday health professionals, leading to a greater impact and long-term access to the project's knowledge and experience base.

The project contributed 150 tools to the Procurement and Supply Management (PSM) Toolbox website, which serves as an important resource for health logisticians. Constituting approximately one-third of the tools available in the PSM Toolbox, the project's tools cover all major topics of procurement and supply chain management.

The project connected with followers and broadened the dissemination reach through platforms that include

Facebook, Tumblr, Twitter, Instagram, Vine, Vimeo, and YouTube; and postings on a broad range of public health outlets, including various social media channels, blogs, listservs, and forums.

The project also played an integral role in advocating for the importance of SCM and educating stakeholders globally and nationally on the tools and approaches developed by the project. Project staff attended more than 80 major conferences and meetings worldwide, and gave presentations that reached thousands of people in the supply chain and broader public health realm.

Under Task Order 4, the USAID | DELIVER PROJECT celebrated more than 30 global health campaign days, such as World Malaria Day and World Population Day. Through social media, the project reached thousands of followers every day. The project published more than 600 public documents during this period, which contributed new knowledge and lessons learned to the health supply chain management community. Through portals like the PSM Toolbox and the K4Health website, the project's most important tools and guide will be available for years to come.





## The Way Forward

The USAID | DELIVER PROJECT leaves a legacy of trained and empowered supply chain professionals and supply chain systems around the globe. As these systems are carried forward, best practices, innovative approaches, collaboration, and strategic knowledge sharing will continue to be key assets to drive improvements in system performance. Critical to the way forward are initiatives that motivate and support the supply chain leaders to benefit families and communities in the countries where we have worked. Innovative methodologies pioneered by the project, such as applying a total market approach to increase and/or sustain the equitable availability of contraceptive products and services, will continue to be a key component for achieving commodity security. Countries must focus on increased data visibility and accuracy—including an eLMIS on open source platforms—to ensure that decisionmakers have the information they need to improve their supply chains and reach the goal of providing health commodities to everyone who need them.





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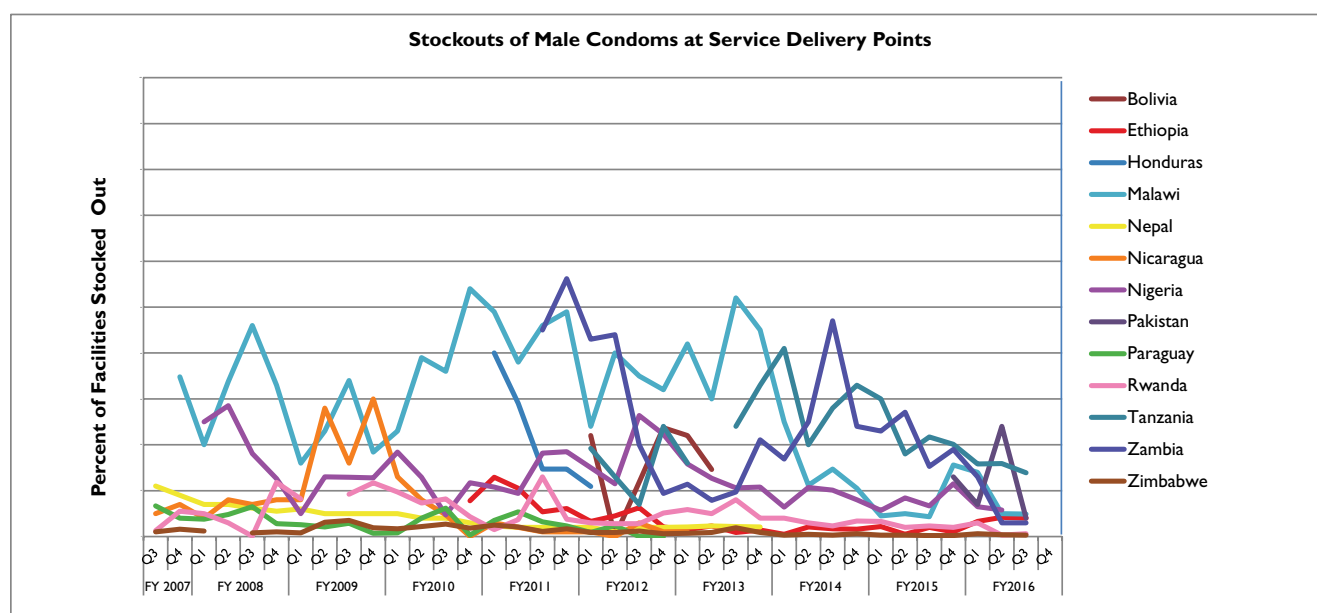
# Appendix A

## 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

Figure 5. Stockout Rates for Male Condoms, Injectables, and Oral Pills, FY2007–FY2016

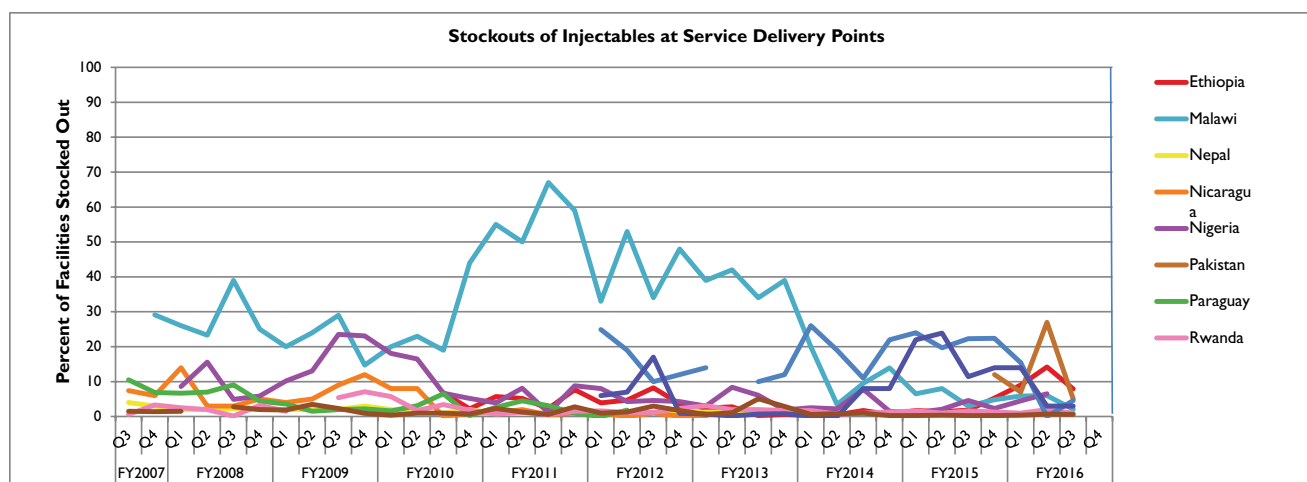


\* Ethiopia data includes facilities receiving supportive supervision only

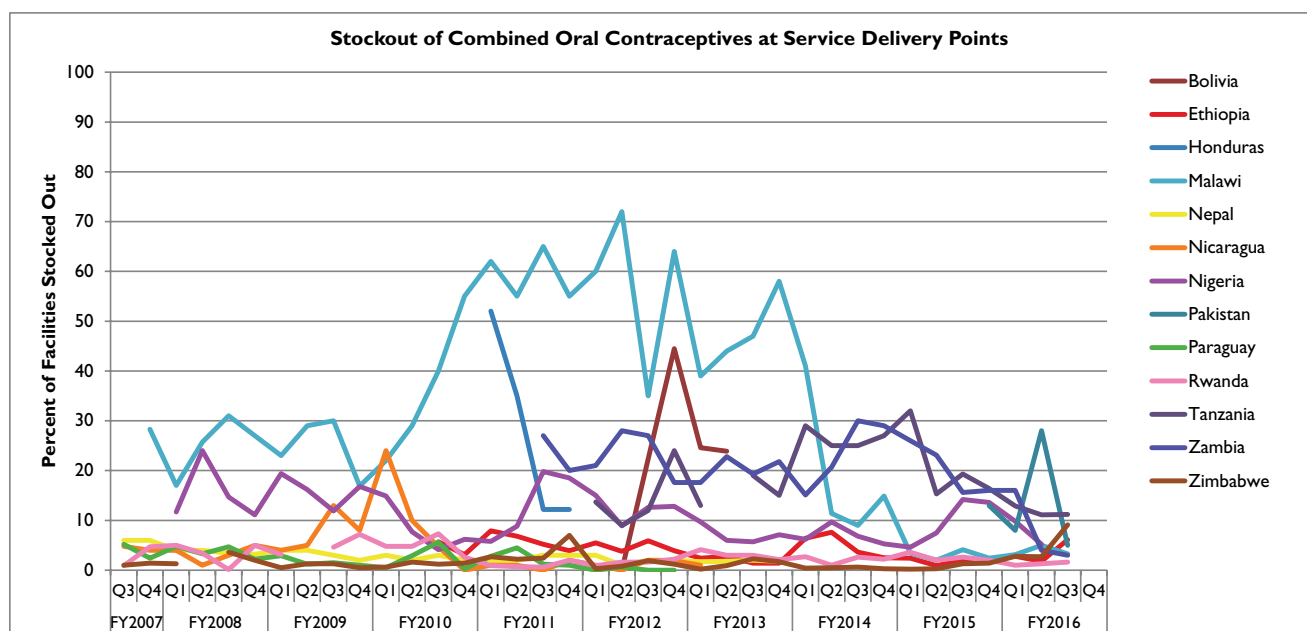
\* Nigeria data includes project focus states only

\* Pakistan data includes three regions implementing eLMIS only

\* Zambia data includes facilities implementing EMLIP only



- \* Ethiopia data includes facilities receiving supportive supervision only
- \* Nigeria data includes project focus states only
- \* Pakistan data includes three regions implementing eLMIS only
- \* Zambia data includes facilities implementing EMLIP only



- \* Ethiopia data includes facilities receiving supportive supervision only
- \* Nigeria data includes project focus states only
- \* Pakistan data includes three regions implementing eLMIS only
- \* Zambia data includes facilities implementing EMLIP only



Over fiscal years 2015 and 2016, two additional project presence countries began reporting stockout data, bringing the total number of countries providing significant information on stockouts to eight. These include Ethiopia (based on a sample of SDPs that received supportive supervision visits), Malawi, Nigeria (for project focus states only), Pakistan (which began reporting eLMIS data for Punjab, Sindh, and Khyber Pakhtunkhwa provinces in late 2015), Rwanda, Tanzania (which began reporting national eLMIS data in early 2015), Zambia (for facilities implementing the Essential Medicines Logistics Improvement Program), and Zimbabwe. Five of these countries, including Ethiopia, Malawi, Nigeria, Rwanda,

and Zimbabwe, kept stockout rates for all three products below 10 percent for nearly the entire two-year period; this is especially notable for Malawi, which had seen significantly higher stockout rates in previous years. Of the three remaining, Pakistan kept stockout rates for all three products below 10 percent for two of the four quarters for which we have data; Tanzania managed to halve their stockout rates for all three products over the course of the two-year period; and Zambia managed huge reductions in stockout rates from over 20 percent for all three products at the beginning of FY2015, to less than five percent for all three products by the end of FY2016.

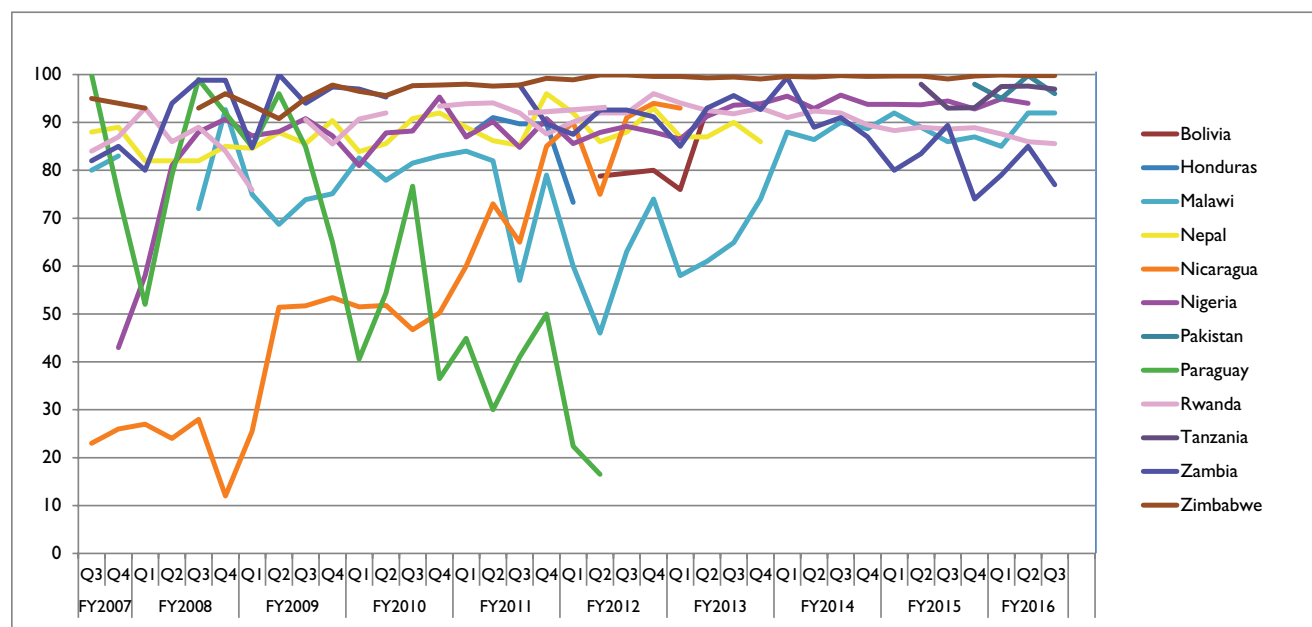


# Appendix B

## Strengthening Key Supply Chain Functions

### PMP Indicator 1.9 SDP-level Reporting Rates

Figure 6. Percentage of Facilities Reporting during Fiscal Years 2007–2016



\* Nigeria data includes project focus states only

\* Pakistan data includes three regions implementing eLMIS only

\* Zambia data includes facilities implementing EMLIP only

Over fiscal years 2015 and 2016, two additional project presence countries began reporting stockout data, bringing the total number of countries providing regular nationally or regionally representative information on stockouts to seven. These include Malawi, Nigeria (for project focus states only), Pakistan (which began reporting eLMIS data for Punjab, Sindh, and Khyber Pakhtunkhwa provinces in late 2015), Rwanda, Tanzania (which began reporting national eLMIS data in early 2015), Zambia (for facilities implementing the Essential Medicines Logistics Improvement Program [EMLIP]), and Zimbabwe. Overall, health facility reporting rates have remained very high in countries that have access to this

information through each country's LMIS. Of the seven presence countries that are reporting (Malawi, Nigeria, Pakistan, Rwanda, Tanzania, Zambia and Zimbabwe), all except Zambia have reporting rates around 90 percent or higher on average. Although Zambia continued to add new facilities to the denominator for this indicator each quarter (as additional facilities began to implement the EMLIP), Zambia achieved an average reporting rate of 80 percent over the two-year period.

## 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

All 19 project-presence countries that submitted supply plans during **FY2015** (out of 23 total presence countries in FY2015) reviewed and updated their plans at least semi-annually during the year. During **FY2016**, 17 of 18 project-presence countries that submitted supply plans reviewed and updated their plans at least semi-annually during the year or were on track to do so according to their normal schedule of reviews (data were not collected for quarter four, which followed technical closeout of project activities). Guatemala did not complete its normal review in the first quarter of FY2016, but did review its supply plan in the third quarter of FY2016.

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

Fourteen of 20 (70%) TO4 presence countries that received USAID-procured contraceptives in **FY2015** completed quantifications and submitted supply plans. Nicaragua's quantifications are done by its Ministry of Health, which did not submit data to the project. Of these 14, seven (50%) received external technical assistance to complete their supply plans: Côte d'Ivoire, Malawi, Mauritania, Mozambique, Niger, Tanzania, and Zambia. The remaining seven did so without external technical assistance.

Twelve of 20 (60%) TO4 presence countries that received USAID-procured contraceptives in **FY2016** completed quantifications and submitted supply plans. Nicaragua's quantifications are done by its ministry, which did not submit data to the project. Of these 12, five (42%) received external technical assistance: Côte d'Ivoire, Liberia, Mauritania, Niger, and Tanzania. The remaining seven did so without external technical assistance.

## PMP Indicator 1.4 Forecast Accuracy for Contraceptives

Calculating forecast accuracy is one of the ways that programs can judge the quality of their forecast. Comparing the actual issues or consumption of a product to its prior year forecast also helps programs adjust their assumptions in the coming year. The project uses median absolute percentage error (MdAPE) to calculate forecast accuracy in project-presence countries. The calculation compares forecasted quantities to actual consumption or issues for the six most common contraceptives (male condoms, combined oral pills, progestin-only pills, implants, injectables, and IUDs) to find the forecast error (which can be a negative or positive percentage). Products which experienced stockouts are excluded from the analysis, because stockouts are not typically forecast (they are unpredictable). In the final step in the analysis, we convert each error to its absolute value, and calculate the median value across all products in a program's forecast. The project benchmark for forecast error is 25 percent or less, based on work done by Smith (1997)<sup>1</sup> for U.S.-based commercial industries.

In all countries in this analysis, forecast error is calculated for public sector programs as a measure of both the country's progress in supply chain strengthening, and the project's capacity building efforts. Some public sector programs supply

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<sup>1</sup> Smith, B.T., 1997. Focus Forecasting. Fredericksburg, VA: BookCrafters

NGOs and social marketing organizations (as in Ghana), and the forecast includes their consumption as well as the projected consumption at public sector facilities.

In FY 2015, Côte d'Ivoire and Niger, both part of the West Africa Regional Initiative, were included for the first time as countries that had quantification data that could be reviewed for forecast accuracy.

Despite the influx of several new countries over the past three years, median forecast error rates across all countries fell from 37% in CY2010 to 27% in CY2015.

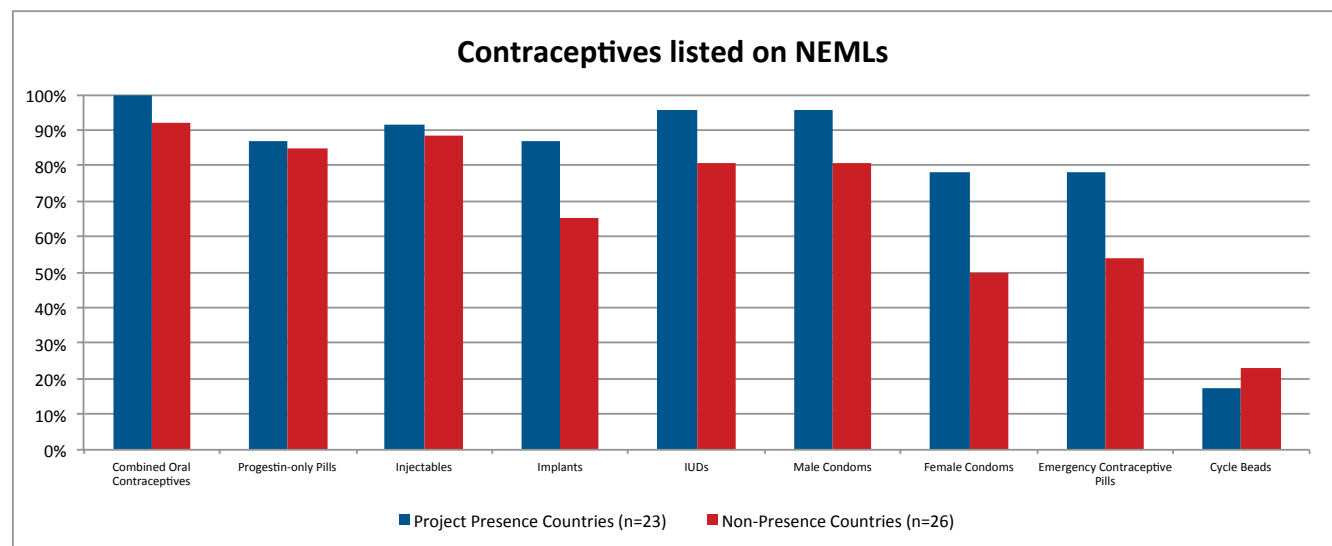
**Table 1. Median Forecast Error Rates in Project-Supported Countries**

Country	2006 (%)	2007 (%)	2008 (%)	2009 (%)	2010 (%)	2011 (%)	2012 (%)	2013 (%)	2014 (%)	2015 (%)
Burkina Faso								11	6	7
Cameroon								65		
Chad								10		
Côte d'Ivoire										35
Ethiopia						17	64	56	27	5
Ghana	33	63	34	28	33	16	31	10	46	11
Liberia				57	80	63	32	186	15	69
Malawi									41	
Mauritania								76	20	35
Mozambique	151	15	15	18	102	27	13	37	13	
Niger										20
Nigeria							30	22	33	19
Pakistan					11	5	26	10		
Rwanda	17	12	8	3	7	26	18	5	2	14
Tanzania	22	13	30	35	21	52	44	58	13	57
Togo								27	14	15
Zambia			70	40	59	131	27	51	11	10
Zimbabwe					10	24	7	12		

Of 11 countries whose forecast error was measured in CY2013 and again in either CY2014 or CY2015, eight reduced their error rates, one (Ghana) increased its error rate slightly, and two (Nigeria and Rwanda) had more mixed success, with error rates lower in one year compared to CY2013 but higher in the other. All 11 of these countries had error rates below the project's 25 percent error benchmark for at least one year of CY2014-2015. Of the 14 countries for which forecast error was measured in either CY2014 or CY2015, error rates were below the project benchmark every time they were measured for six countries. Forecast error fell below the project benchmark for the first time in Liberia, Mauritania, Niger, Togo, and Zambia.

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

Figure 7. Contraceptives Listed on NEMLs



According to the 2015 CS Indicators Survey, which included 23 project presence countries and 26 non-presence countries, eight of nine key contraceptives were more likely to be included on National Essential Medicines Lists in project-presence countries than they were in non-presence countries. The CS Indicators Survey was not completed in 2016 due to project closeout.

## PMP Indicators 1.6, 1.7, 1.8, 1.10, 1.11, 1.12, 1.13, 1.14 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 2 Project-Presence Countries with Systems in Place for Core Supply Chain Functions FY2015

Indicator:	1.6	1.7	1.8	1.10	1.11	1.12	1.13	1/14
Country	Do documented and approved protocols, procedures, and/or guidelines exist for the procurement of health commodities?	Is there an established procurement unit or other body responsible for the procurement of health commodities?	Is there a logistics management information system (LMIS) that routinely reports stock status from the service delivery point level to the higher administrative levels? (Note: "Routine reporting" is defined according to the reporting requirements of the LMIS.)	Are there supervision guidelines and tools for routine supervision of commodity logistics management functions?	Do documented and approved protocols, procedures, and/or guidelines exist for warehouse management of health commodities (manual or automated)?	Do documented and approved protocols, procedures, and/or guidelines exist for the transportation of health commodities? (These may include documented distribution routes, procedures for vehicle maintenance, etc.)	Are supply chain protocols in place for the disposal of medical waste and the management of expired, damaged, and/or recalled products?	Do established positions/units exist that include defined responsibilities and required qualifications for supply chain management?
Burkina Faso	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Ethiopia	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Ghana	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Guinea	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
India	Yes	Yes	Yes	No	Yes	No	Yes	No
Indonesia	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Liberia	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes
Madagascar	Yes	Yes	Yes	Yes	Yes	No	Yes	No
Malawi	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Mauritania	Yes	Yes	No	No	No	No	No	No
Mozambique	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Niger	Yes	Yes	No	Yes	No	Yes	Yes	No
Nigeria	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Pakistan	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes
Rwanda	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
South Sudan	No	Yes	No	No	Yes	Yes	Yes	Yes
Tanzania	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Togo	Yes	Yes	No	Yes	Yes	Yes	No	No
Zambia	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Zimbabwe	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
<b>Total:</b>	<b>95%</b>	<b>100%</b>	<b>80%</b>	<b>80%</b>	<b>90%</b>	<b>85%</b>	<b>85%</b>	<b>75%</b>





# Appendix C

## Building Local Capacity

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

Table 3 and 4. Summary of In-country Staff Trained, by Level and Gender

### Trainings in FY2015: by Level

Level	Women Trained	Men Trained	Total Trained
Central	303	605	908
District	1,017	1,820	2,837
Region	242	690	949
SDP	5,818	5,201	11,067
Other	359	969	1,374
<b>Grand Total</b>	<b>7,739</b>	<b>9,285</b>	<b>17,135</b>

### Trainings in FY2016: by Level

Level	Women Trained	Men Trained	Total Trained
Central	414	717	1,155
District	148	671	819
Region	605	939	1,544
SDP	3,827	4,347	10,067
<b>Grand Total</b>	<b>4,998</b>	<b>6,674</b>	<b>13,585</b>

Table 5 and 6. In-Country Staff Trained, by Country, Level, and Gender

Trainings in FY2015: by Country			
Country / Level	Women Trained	Men Trained	Total Trained
<b>Burkina Faso</b>	<b>12</b>	<b>52</b>	<b>64</b>
District	12	52	64
<b>Côte d'Ivoire</b>	<b>8</b>	<b>44</b>	<b>52</b>
Central	3	12	15
Region	5	32	37
<b>Ethiopia</b>	<b>372</b>	<b>1225</b>	<b>1597</b>
Central	139	255	394
District	19	88	107
Other	5	35	40
Region	3	9	12
SDP	206	838	1044
<b>Ghana</b>	<b>138</b>	<b>229</b>	<b>367</b>
Central	23	21	44
Other	14	76	90
Region	16	30	46
SDP	85	102	187
<b>India</b>	<b>886</b>	<b>712</b>	<b>1598</b>
Central	11	25	36
District	724	240	964
Region	65	223	288
SDP	86	224	310
<b>Liberia</b>	<b>1334</b>	<b>149</b>	<b>1483</b>
SDP	1334	149	1483
<b>Madagascar</b>	<b>142</b>	<b>97</b>	<b>239</b>
Central	22	15	37
District	12	3	15
Region	0	2	2
SDP	108	77	185
<b>Malawi</b>	<b>710</b>	<b>1135</b>	<b>1845</b>
Central	30	115	145
SDP	680	1020	1700
<b>Mauritania</b>	<b>48</b>	<b>39</b>	<b>87</b>
Central	1	0	1
District	20	14	34
Region	5	3	8

Trainings in FY2015: by Country			
Country / Level	Women Trained	Men Trained	Total Trained
SDP	22	22	44
<b>Mozambique</b>	<b>377</b>	<b>299</b>	<b>676</b>
Central	4	7	11
District	9	53	62
Region	91	175	266
SDP	273	64	337
<b>Nicaragua</b>	<b>69</b>	<b>24</b>	<b>93</b>
Central	14	2	16
Other	55	22	77
<b>Niger</b>	<b>110</b>	<b>28</b>	<b>138</b>
District	12	14	26
SDP	98	14	112
<b>Nigeria</b>	<b>600</b>	<b>424</b>	<b>1024</b>
District	26	117	143
Other	143	231	374
Region	7	0	7
SDP	424	76	500
<b>Pakistan</b>	<b>226</b>	<b>1973</b>	<b>2199</b>
District	86	1116	1202
Region	7	135	142
SDP	133	722	855
<b>South Sudan</b>	<b>4</b>	<b>17</b>	<b>21</b>
Central	4	17	21
<b>Tanzania</b>	<b>233</b>	<b>825</b>	<b>1187</b>
Central	47	125	182
District	20	20	40
Other	142	605	793
Region	24	75	116
SDP			56
<b>Togo</b>	<b>112</b>	<b>45</b>	<b>149</b>
Central	2	6	8
District	20	0	20
Region	19	2	21
SDP	71	37	100
<b>Yemen</b>	<b>1066</b>	<b>336</b>	<b>1402</b>
SDP	1066	336	1402

Trainings in FY2015: by Country			
Country / Level	Women Trained	Men Trained	Total Trained
<b>Zambia</b>	<b>1292</b>	<b>1632</b>	<b>2924</b>
Central	3	5	8
District	57	103	160
Region		4	4
SDP	1232	1520	2752
<b>All Countries Grand Total</b>	<b>7739</b>	<b>9285</b>	<b>17145</b>

Trainings in FY2016: by Country			
Country / Level	Women Trained	Men Trained	Total Trained
<b>Burkina Faso</b>	<b>64</b>	<b>21</b>	<b>524</b>
SDP	64	21	524
<b>Ethiopia</b>	<b>397</b>	<b>1157</b>	<b>1554</b>
Central	165	439	604
District	65	240	305
Region	17	179	196
SDP	150	299	449
<b>Ghana</b>	<b>90</b>	<b>160</b>	<b>250</b>
Region	90	160	250
<b>Guatemala</b>	<b>343</b>	<b>252</b>	<b>595</b>
Central	70	28	98
Region	273	224	497
<b>India</b>	<b>6</b>	<b>15</b>	<b>21</b>
Region	6	15	21
<b>Liberia</b>	<b>15</b>	<b>16</b>	<b>31</b>
Central	15	16	31
<b>Madagascar</b>	<b>15</b>	<b>17</b>	<b>32</b>
Central	15	17	32
<b>Mauritania</b>	<b>59</b>	<b>49</b>	<b>108</b>
Central	1	5	6
Region	13	8	21
SDP	45	36	81
<b>Mozambique</b>	<b>254</b>	<b>440</b>	<b>694</b>
Central	6	12	18
Region	166	312	478

Trainings in FY2016: by Country			
Country / Level	Women Trained	Men Trained	Total Trained
SDP	82	116	198
<b>Nicaragua</b>	<b>101</b>	<b>41</b>	<b>142</b>
Central	69	28	97
Region	32	13	45
<b>Niger</b>	<b>62</b>	<b>40</b>	<b>102</b>
Central	9	12	21
District	31	16	47
Region	4	8	12
SDP	18	4	22
<b>Nigeria</b>	<b>2543</b>	<b>1248</b>	<b>5245</b>
SDP	2543	1248	5245
<b>Pakistan</b>	<b>118</b>	<b>2107</b>	<b>2225</b>
District	22	388	410
Region	4	20	24
SDP	92	1699	1791
<b>Tanzania</b>	<b>78</b>	<b>177</b>	<b>275</b>
Central	68	160	248
Other	10	17	27
<b>Togo</b>	<b>62</b>	<b>41</b>	<b>103</b>
SDP	62	41	103
<b>Zambia</b>	<b>801</b>	<b>910</b>	<b>1711</b>
District	30	27	57
SDP	771	883	1654
<b>Grand Total</b>	<b>5008</b>	<b>6691</b>	<b>13612</b>

## 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)

It became too cumbersome for field offices to monitor this indicator, now many years into the project with thousands of people trained across project-presence countries. Please note: this indicator is not a performance measure. It was developed for our field offices to use for project management and for monitoring retraining needs, if posts have been vacated.

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

The following 11 field offices supported a pre-service training program in their countries: Ethiopia, Ghana, Malawi, Mozambique, Nicaragua, Nigeria, Pakistan, Rwanda, Tanzania, Zambia, and Zimbabwe. This number did not change between FY2014 and FY2016.



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

**2015 subcontracts and 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
Ethiopia	Imperial Health Sciences	\$25,481.00	Transportation analysis for the Pharmaceutical Funds and Supply Agency
Ghana	Imperial Health Sciences	\$169,811.55	Storage, insurance, transportation and distribution of USAID/DELIVER TO4 and DKT commodities
Indonesia	Pandu Logistics	\$175,165.00	Pandu provides the necessary daily pick up service as needed to pick up each packed cold box and deliver the cold box to the provincial GX Lab following the most effective option.
Malawi	Imperial Health Sciences	\$320,609.18	To provide warehousing of FP and HIV commodities to support Ministry of Health.
Malawi	Cargo Management Logistics Ltd	\$28,491.84	To manage distribution of FP commodities to support Ministry of Health.
Nigeria	General Health Logistics	\$79,077.14	Distribution of commodities in four states using the DDIC distribution model
Nigeria	Abonil Investment Ltd	\$15,750.00	Warehouse Renovation
Nigeria	Morphosis Inc. Ltd	\$80,414.94	Warehouse Renovation
Rwanda	Imperial Health Sciences	\$23,357.57	Support implementation of a new supply chain management unit, including identifying KPIs, SOPs, and training
Zambia	Express Mail Service (EMS)	\$172,800.00	Courier service to transport reports from districts to MSL
Zimbabwe	Lacho	\$38,492.54	Storage of male and female condoms
Zimbabwe	Bak Storage	\$2,946.00	Storage of female condoms
Zimbabwe	Mitchell Courts	\$4,147.00	Storage of male condoms
<b>Total</b>		<b>\$1,136,748.06</b>	

**2016 subcontracts and 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	Imperial Health Sciences	\$553,961.90	Storage, insurance, transportation and distribution of USAID DELIVER TO4 and DKT commodities
Ghana			
Malawi	Imperial Health Sciences	\$76,819.10	To provide warehousing of FP and HIV commodities to support Ministry of Health.
Malawi	Cargo Management Logistics Ltd	\$17,917.69	To manage distribution of FP commodities to support Ministry of Health.
Nigeria	General Health Logistics	\$51,663.46	Distribution of commodities in four states using the DDIC distribution model
Pakistan			
Rwanda			
<b>Total</b>		<b>\$700,362.15</b>	

# PMP Indicator 1.19 Number (and Proportion) of Field Office Staff who are Local or Regional Hires 2015

Country	Regional Hires		Local Hires		Total Number Regional/Local Hire		Total <b>ALL</b> Field Office Staff	Percentage of Total Regional/Local Hires Field Office Staff	Percentage of Total Regional/Local Hires Field Office Staff who are:	
	Men	Women	Men	Women	Technical Staff	Admin/ Finance/ Support Staff			Technical	Admin/ Finance/ Support Staff
Burkina Faso	1		3	1	3	2	5	100%	60%	40%
Ethiopia			83	25	76	32	110	98%	70%	30%
Ghana	1		15	4	11	9	20	100%	55%	45%
Guatemala		1	1	3	3	2	5	100%	60%	40%
Guinea			3		2	1	3	100%	67%	33%
India			10	8	15	3	19	95%	83%	17%
Indonesia			2	2	2	2	6	67%	50%	50%
Liberia*	2		7	2	7	4	11	100%	64%	36%
Malawi*	2		14	4	11	9	21	95%	55%	45%
Mauritania			1		1	0	1	100%	100%	0%
Mozambique*			15	8	10	13	27	85%	43%	57%
Niger			1		1	0	1	100%	100%	0%
Nicaragua				3	2	1	3	100%	67%	33%
Nigeria*			38	27	31	34	65	100%	48%	52%
Pakistan			53	6	36	23	59	100%	61%	39%
Rwanda*	2	1	15	9	13	14	27	100%	48%	52%
South Sudan	1		4	1	4	2	7	86%	67%	33%
Tanzania*	3		76	30	70	39	111	98%	64%	36%
Togo			1		1	0	1	100%	100%	0%
Yemen			10		2	8	11	91%	20%	80%
Zambia*	1		109	43	77	76	159	96%	50%	50%
Zimbabwe*			7	6	4	9	14	93%	31%	69%
<b>TOTAL</b>	<b>13</b>	<b>2</b>	<b>468</b>	<b>182</b>	<b>382</b>	<b>283</b>	<b>686</b>	<b>97%</b>	<b>57%</b>	<b>43%</b>

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

Note: Total staff includes expatriate staff. These numbers were collected in mid-2015 for use in the FY2014 Annual Report. By FY2016 field offices were closing and these numbers were not collected.



# Appendix D

## Strengthen Environments for Commodity Security

PMP Indicators 2.1, 2.2, 2.4, 2.5

Table 8. Contraceptive Security Indicator 2015 Data

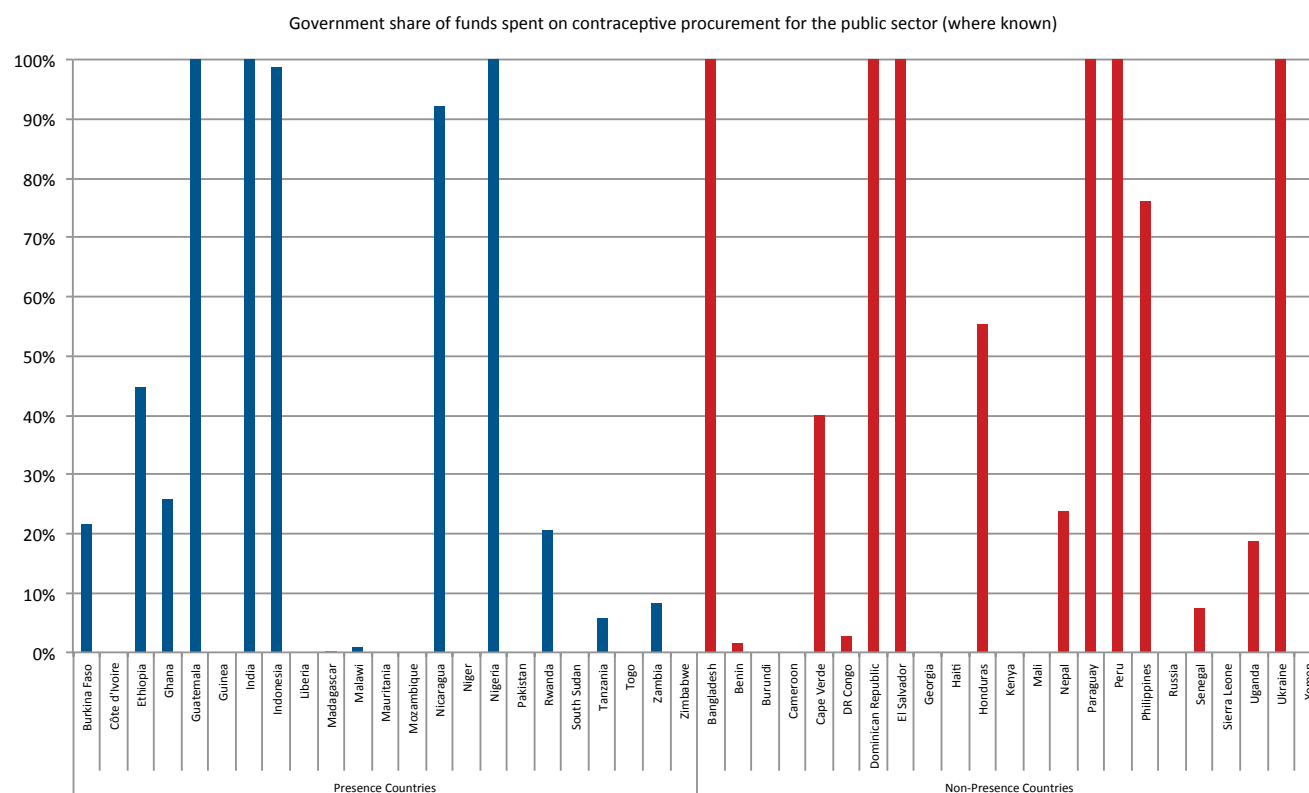
		Project-Presence Countries		Non-Presence Countries		Total	
Indicator		Number	Percentage	Number	Percentage	Number	Percentage
2.1	Countries with active contraceptive security coordinating mechanism in place	19	83%	23	88%	42	86%
2.2	Countries with current commodity security strategies developed	22	96%	23	88%	45	92%
2.4	Countries with a government budget line item for procuring contraceptives	14	61%	15	58%	29	59%
2.5	Countries spending government funds on procuring public-sector contraceptives	13	57%	15	58%	28	57%

## 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

Updates to previous market analyses for the Dominican Republic, Peru, Honduras, and Nicaragua were done in 2015 to support LAC regional CS activities; a market shaping analysis was completed in Zambia in 2015; and a market analysis was completed in Mauritania in 2015 to support quantification exercises.

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

Figure 8. Government Share of Contraceptive Funds Spent, by Presence- and Non-Presence Countries, CS Indicators 2015



## 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

Article	Journal	Submitted or published?	Publish / submission date
Estimating Contraceptive Prevalence Using Logistics Data for Short-Acting Methods: An Analysis Across 30 Countries	Global Health: Science and Practice	Published	Sep-15
The Effect of Access to Contraceptive Services on Injectable Use and Demand for Family Planning in Malawi	International Perspectives on Sexual and Reproductive Health	Published	Mar-15
Using performance-based financing (PBF) to motivate health commodity supply chain improvement at a central medical store in Mozambique	BMC Health Services Research	Published	2014
Multiplicity in public health supply systems: a learning agenda	Global Health: Science and Practice	Published	Jun-13
A Decade of Monitoring Contraceptive Security and Measuring Successes and Opportunities around the World	The Lancet	Submitted	May-13
Vendor Managed Inventory Models for Public Health Supply Chains in Developing Countries	Health Affairs	Submitted	Feb-13



The International Association of Public Health Logisticians (IAPHL) membership increased dramatically over the past few years—from 2,875 in FY2014 to 3,325 in FY2015 to 4,222 in FY2016, a 47 percent increase from FY2014 to FY2016. Members are based in over 135 countries around the world.

## PMP Indicators 3.3, 3.5, 3.6, 3.7

These four 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 3.4 List of Websites that Link to deliver.jsi.com

<a href="http://jsi.com">jsi.com</a>	<a href="http://rollbackmalaria.org">rollbackmalaria.org</a>
<a href="http://apps.who.int">apps.who.int</a>	<a href="http://cgdev.org">cgdev.org</a>
<a href="http://int.search.tb.ask.com">int.search.tb.ask.com</a>	<a href="http://capacityplus.org">capacityplus.org</a>
<a href="http://bidocean.com">bidocean.com</a>	<a href="http://fcmi.org">fcmi.org</a>
<a href="http://storymaps.arcgis.com">storymaps.arcgis.com</a>	<a href="http://ptassist.com">ptassist.com</a>
<a href="http://thepump.jsi.com">thepump.jsi.com</a>	<a href="http://ppmr.rhsupplies.org">ppmr.rhsupplies.org</a>
<a href="http://elearning.jsi.com">elearning.jsi.com</a>	<a href="http://bu.edu">bu.edu</a>
<a href="http://openlms.org">openlms.org</a>	<a href="http://capmalaria.org">capmalaria.org</a>
<a href="http://peoplethatdeliver.org">peoplethatdeliver.org</a>	<a href="http://esri.com">esri.com</a>
<a href="http://facebook.com">facebook.com</a>	<a href="http://pdf.usaid.gov">pdf.usaid.gov</a>
<a href="http://k4health.org">k4health.org</a>	<a href="http://arcgis.com">arcgis.com</a>
<a href="http://images.google.de">images.google.de</a>	<a href="http://iadb.org">iadb.org</a>
<a href="http://scms.pfscm.org">scms.pfscm.org</a>	<a href="http://popcouncil.org">popcouncil.org</a>
<a href="http://who.int">who.int</a>	<a href="http://ppmrm.org">ppmrm.org</a>
<a href="http://iaphl.org">iaphl.org</a>	<a href="http://repositioningfp.org">repositioningfp.org</a>
<a href="http://lms.empowerschoolofhealth.org">lms.empowerschoolofhealth.org</a>	<a href="http://rhinonet.org">rhinonet.org</a>
<a href="http://images.google.fr">images.google.fr</a>	<a href="http://search.tb.ask.com">search.tb.ask.com</a>
<a href="http://kff.org">kff.org</a>	<a href="http://villagereach.org">villagereach.org</a>
<a href="http://pai.org">pai.org</a>	<a href="http://devlopafrica.org">devlopafrica.org</a>
<a href="http://en.wikipedia.org">en.wikipedia.org</a>	<a href="http://globalmedicines.org">globalmedicines.org</a>
<a href="http://usaid.gov">usaid.gov</a>	<a href="http://guides.lib.berkeley.edu">guides.lib.berkeley.edu</a>
<a href="http://familyplanning2020.org">familyplanning2020.org</a>	<a href="http://hrhresourcecenter.org">hrhresourcecenter.org</a>
<a href="http://cdc.gov">cdc.gov</a>	<a href="http://knowledgegateway.org">knowledgegateway.org</a>
<a href="http://healthpolicyproject.com">healthpolicyproject.com</a>	<a href="http://lib.berkeley.edu">lib.berkeley.edu</a>
<a href="http://cpc.unc.edu">cpc.unc.edu</a>	<a href="http://lifesavingcommunities.org">lifesavingcommunities.org</a>
<a href="http://globalhealthlearning.org">globalhealthlearning.org</a>	<a href="http://mcsprogram.org">mcsprogram.org</a>
<a href="http://linkedin.com">linkedin.com</a>	<a href="http://paper.li">paper.li</a>
<a href="http://jsi.maps.arcgis.com">jsi.maps.arcgis.com</a>	<a href="http://rhsupplies.org">rhsupplies.org</a>
<a href="http://slideshare.net">slideshare.net</a>	<a href="http://sc4ccm.jsi.com">sc4ccm.jsi.com</a>
<a href="http://healthmarketinnovations.org">healthmarketinnovations.org</a>	<a href="http://thelastmile.tumblr.com">thelastmile.tumblr.com</a>
<a href="http://resolog.org">resolog.org</a>	<a href="http://transaid.org">transaid.org</a>
<a href="http://popline.org">popline.org</a>	<a href="http://usaidlearninglab.org">usaidlearninglab.org</a>
<a href="http://ncbi.nlm.nih.gov">ncbi.nlm.nih.gov</a>	

## 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 2,875 in FY2014 to 3,325 in FY2015 to 4,222 in FY2016, a 47 percent increase.

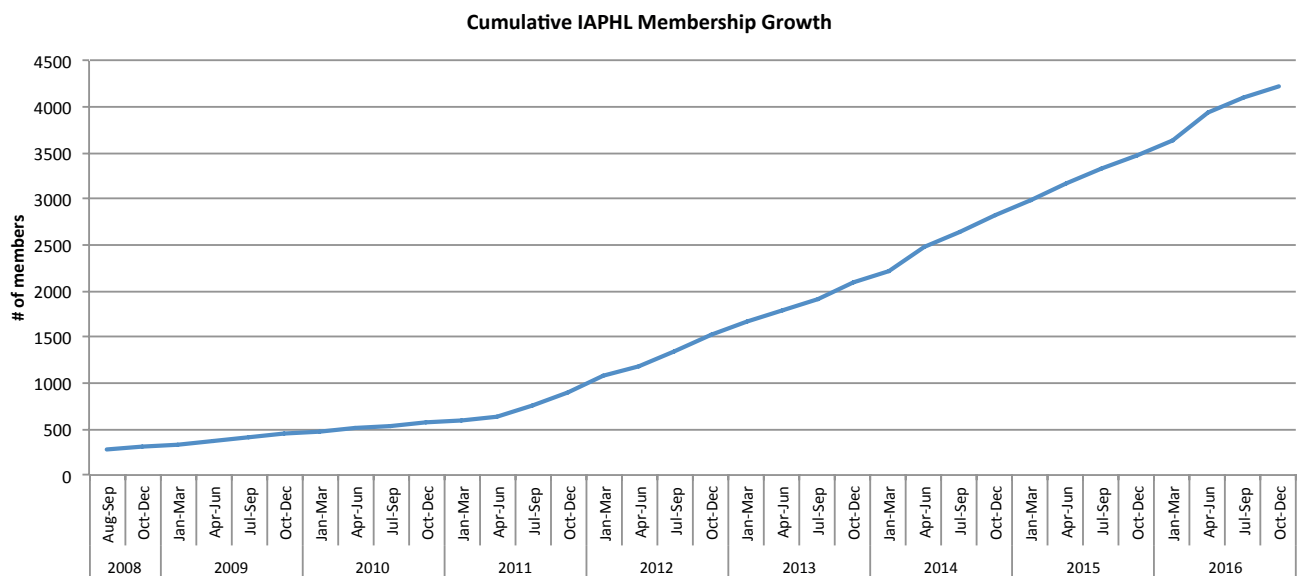
Table 9.Active IAPHL membership

Country Name	Number of members as of 12/30/2016	Country Name	Number of members as of 12/30/2016
Afghanistan	3	Djibouti	1
Albania	1	Dominican Republic	1
Angola	4	East Timor	1
Argentina	2	Ecuador	1
Australia	21	Egypt	8
Austria	1	El Salvador	1
Azerbaijan	1	Eritrea	1
Bangladesh	23	Ethiopia	206
Barbados	1	Fiji	6
Belgium	14	Finland	3
Benin	20	France	31
Bhutan	1	Gambia	4
Bolivia	1	Germany	33
Botswana	23	Ghana	97
Brazil	2	Grenada	1
Brunei	2	Guatemala	4
Bulgaria	1	Guinea	4
Burkina Faso	34	Guyana	1
Burundi	6	Haiti	22
Cameroon	59	Honduras	7
Canada	9	Hong Kong	1
Central African Republic	3	India	91
Chad	1	Indonesia	23
Chile	2	Iran	1
China	1	Iraq	1
Colombia	3	Ireland	3
Comoros	1	Israel	1
Costa Rica	1	Italy	2
Democratic Republic of the Congo	42	Ivory Coast	20
Denmark	30	Jamaica	1

Country Name	Number of members as of 12/30/2016
Japan	3
Jordan	3
Kenya	81
Kiribati	1
Kuwait	21
Kyrgyzstan	2
Laos	3
Lesotho	8
Liberia	48
Libya	1
Lithuania	1
Madagascar	21
Malawi	59
Malaysia	6
Maldives	2
Mali	8
Mauritius	68
Mexico	2
Micronesia	1
Mongolia	1
Morocco	3
Mozambique	19
Myanmar	25
Namibia	13
Nepal	27
Netherlands	22
New Zealand	3
Niger	15
Nigeria	597
Niue	1
Norway	2
Oman	1
Pakistan	81
Palau	1
Panama	2
Papua New Guinea	12

Country Name	Number of members as of 12/30/2016
Paraguay	3
Peru	7
Philippines	23
Poland	1
Portugal	1
Qatar	3
Republic of the Congo	2
Russia	2
Rwanda	66
Senegal	22
Sierra Leone	17
Solomon Islands	2
Somalia	7
South Africa	63
South Korea	1
South Sudan	9
Spain	8
Sri Lanka	5
Sudan	16
Swaziland	12
Sweden	3
Switzerland	41
Syria	2
Tajikistan	2
Tanzania	119
Thailand	14
Togo	7
Tonga	1
Tunisia	1
Turkey	2
Uganda	79
Ukraine	2
United Arab Emirates	4
United Kingdom	86
United States	529
Uzbekistan	3

Country Name	Number of members as of 12/30/2016
Vietnam	7
Yemen	4
Zambia	69
Zimbabwe	88
Not Specified	835
<b>Total all countries:</b>	<b>4,222</b>





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