



Task Order 4

Technical Assistance for Supply Chain Strengthening
and Commodity Security in Public Health:

Annual Report

October 2010–September 2011



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Cover photo: Dil Maya Maharjan, a female community health volunteer in ward no. 3, Khokana Sub-Health Post (Lalitpur district), delivers contraceptives and basic medicines door-to-door to people in her community. The ward is close to Nepal's capital of Kathmandu. USAID | DELIVER PROJECT 2011.

USAID | DELIVER PROJECT

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Acronyms

AIDS	acquired immunodeficiency syndrome
AMDS	AIDS medicines and diagnostics service
ARV	antiretroviral
BA	bachelor of arts
CARhs	Coordinated Assistance for Reproductive Health Supplies Group
CEMAF	<i>Centro Superior de Estudios de Administración y Finanzas Públicas para el Desarrollo</i>
CHAI	Clinton HIV/AIDS Initiative
CLMS	Contraceptive Logistics Management System
CML	Cargo Management Logistics
CMS	Central Medical Stores
COC	combined oral contraceptives
CPR	contraceptive prevalence rate
CPT	Contraceptive Procurement Table
CS	contraceptive security
CSL	Commodities Security and Logistics Division (USAID)
DFID	Department for International Development (UK)
DHS	Demographic and Health Survey
DLI	Developing Leadership Initiative (USAID)
D/PHO	district public health office
DPR	DPR Digital Solution Pvt. Ltd.
DRV	delivery receipt voucher
DTTU	Delivery Team Topping Up
ESAMI	Eastern and Southern African Management Institute
EUV	End-Use verification
FE	Facility Edition
FMOH	Federal Ministry of Health
FP	family planning
FY	fiscal year
GF	Global Fund

GFATM	Global Fund to Fight HIV/AIDS, Tuberculosis and Malaria
GHI	Global Health Initiative
GHS	Ghana Health Service
GIS	Global Information Systems
HCMIS	Health Commodity Management Information System
HE	Hub Edition
HIV	human immunodeficiency virus
IAPHL	International Association of Public Health Logisticians
ILS	integrated logistics system
IPC	International Planning Committee
IPPF	International Planned Parenthood Federation
IT	information technology
IUD	intrauterine device
JSI	John Snow, Inc.
KM	knowledge management
LAC	Latin America and the Caribbean
LGA	local government authority
LIAT	Logistics Indicators Assessment Tool
LMIS	logistics management information system
M&E	monitoring and evaluation
MAPE	mean absolute percent error
MCHW/VHW	Maternal and Child Health Workers and Volunteer Health Workers
MOH	Ministry of Health
MOHCW	Ministry of Health and Child Welfare
MOHSW	Ministry of Health and Social Welfare (Tanzania)
MSD	Medical Stores Department
MSH	Management Sciences for Health
NEML	National Essential Medicines Lists
NGO	nongovernmental organization
NHIS	National Health Insurance Scheme
NUR	National University of Rwanda
PATH	(acronym only)
PMI	President's Malaria Initiative

PMP	Performance Monitoring Plan
PPMR	Procurement Planning and Monitoring Report (formerly the CPT Status Report)
PRISMA	<i>Proyectos en Informática Salud Medicina y Agricultura</i> (Peru)
PSI	Population Services International
PSM	Procurement & Supply Management (PSM Toolbox)
R&R	report and request form
RH	reproductive health
RHB	Regional Health Bureau
RHCS	reproductive health commodity security
RHS	Reproductive Health Survey
RHSC	Reproductive Health Supplies Coalition
RIDI	Regional Institute Development Initiative
RTK	rapid test kit
SCM	supply chain management
SCMS	Supply Chain Management Systems (project)
SDP	service delivery point
SMS	short message service (text messaging)
SNNP	Southern Nations, Nationalities and People's Region (Ethiopia)
SPS	Strengthening Pharmaceutical Systems project
STG	standard treatment guidelines
STTA	short-term technical assistance
TA	technical assistance
TB	tuberculosis
TO	task order
TOT	training-of-trainers
UN	United Nations
UNFPA	United Nations Population Fund
UNICEF	United Nations Children's Fund
USAID	U.S. Agency for International Development
USG	United States Government
VPN	virtual private network
WMS	warehouse management system
ZNFPC	Zimbabwe National Family Planning Council

Executive Summary

The objective of the USAID | DELIVER PROJECT Task Order Technical Assistance for Supply Chain Strengthening and Commodity Security in Public Health (TO4) is to increase product availability in U.S. Agency for International Development (USAID)-supported public health supply chains. The project implements interventions that strengthen supply chains and support environments for commodity security. We ensure that these interventions improve sustainability, local capacity, commitment, and coordination. We develop logistics management information systems (LMIS) that reliably and consistently provide data for management decisionmaking. We apply the latest commercial and academic innovations, combine these with identified best practices from the field, and disseminate the results to the widest possible audience.

During the past year, we saw a transition as TO1 activities concluded and TO4 activities began. Given the similar, yet distinct, activities of both task orders, we included the activities of and performance measures for the past year for both TO1 and TO4 in this report. TO4 is responding to the needs of increasingly complex global public health supply chains. We are working to apply a whole system *end-to-end* approach—integrating from suppliers to the *last mile* and putting the product in the hands of the client. This involves working with countries to improve their internal supply chains; and strengthening the skills and capacity of the public health systems, institutions, human resources, and country management teams in countries supported by USAID.

The ultimate goal of TO4 is to bolster country-level supply chain performance to ensure improved commodity availability at service delivery points. The key metrics for measuring overall performance are reporting rates and stockout rates. In FY2011, the number of countries reporting in the Procurement Planning and Monitoring Report (PPMR) increased from 19 to 22.

During the 12-month reporting period, no stockouts were reported at the central level in seven project-presence countries: the Dominican Republic (the office has since closed), Ethiopia, Malawi, Mozambique, Nepal, Rwanda, and Zimbabwe. The other eight of the 15 project-presence countries reported at least one stockout at the central level with Depo-Provera experiencing the most stockouts (29 percent of all stockouts in FY2011). This was caused by a product recall and the difficulty replacing those products; and, subsequently, production limitations that needed to keep up with growing global demand.

In almost all countries, reporting rates have remained consistently high, averaging around or above 80 percent during each quarter. Half of all reporting countries have maintained an average of 90 percent or greater reporting rates (Honduras, Nepal, Rwanda, Zambia [for antiretrovirals], and Zimbabwe). Nicaragua has been rolling out a national integrated LMIS; reporting rates have continued to rise, over time, as more facilities begin reporting stock status, reaching an average of 71 percent in FY2011. In addition to routine monitoring through the PPMR and countries' routine LMISs, the project has also begun collecting a snapshot of commodity availability using the End-Use verification (EUV) data collection tool.

Contraceptive product availability is high in most of these project-presence countries (stockout rates of 10 percent or less) where most of the basic supply chain systems are in place—this suggests a relationship between the two. In the few countries with lower product availability (i.e., Malawi, Honduras, and Nigeria), the systems are largely in place; however, other external factors have affected product availability.

To help frame our understanding of how supply chains evolve, the project adapted an academic, private-sector model for supply chain evolution using developing country health care supply chain case studies. The adapted model argues that sustained supply chain strengthening efforts lead to improved supply chain performance capacity by increasing the definition and clarity of logistics processes, increasing coordination between supply chain partners, and increasing centralized supply chain oversight capacity. The model also defines four evolutionary stages that can roughly gauge a supply chain's position along a strengthening trajectory: ad hoc, organized, integrated, and extended. This trajectory helps to logically organize the suite of supply chain strengthening activities supported by the project, and it will support future efforts to develop metrics to evaluate those strengthening efforts.

In 2010, Task Order 4 recorded a median forecast error of 25 percent across the six most common products¹ in ten countries. This represents a 2 percent increase over last year's 23 percent error, just meeting the project's benchmark of 25 percent error or less. An analysis of forecast error rates, by product, showed that forecast error has declined for IUDs, combined orals, and progestin-only orals. However, it more than doubled for male condoms and implants, which was caused by over-forecasting.

During FY2011, five out of 10 project-assisted countries completed the forecasting and procurement planning process and submitted their supply plans for USAID-procured contraceptives and condoms without any external short-term technical assistance (STTA) from project technical advisors.

Establishing the parallel supply chain in Malawi, in difficult circumstances, helped ensure product availability despite a dysfunctional public sector system. Continued progress in Ethiopia and Rwanda in strengthening the family planning supply chain has been crucial to the contraceptive procurement rate (CPR) gains in those countries. Supply chain strategy work in Ghana supported the Ghana Health Service (GHS) and mission to identify possible actions to address problems with contraceptive product availability. In Nigeria, application of the costing tool helped the states' budget distribution costs for contraceptive delivery. In Tanzania, the integrated logistics system (ILS) Gateway development helped improve reporting rates and accountability. In Paraguay, according to an Abt Associates assessment report, the project's work has positioned the country well for graduation from USAID family planning support. In Pakistan, the adaptation of the web-based LMIS from Bangladesh has been a key south-to-south sharing that will increase data visibility. Finally, the continued development and use of the PPMR has made it an early warning system, helping donors and governments anticipate and head off family planning stock problems.

Six project-assisted countries have adopted pre-service training in supply chain management (SCM) and they are working to implement these programs under TO4 (the Dominican Republic, Ethiopia, Nicaragua, Rwanda, Zambia, and Zimbabwe). For example, in the Dominican Republic, the project followed up on the supply chain curriculum that staff had integrated into nursing schools during the previous fiscal year (until the office closed in November 2010). In Ethiopia, an orientation was given to four Pharm Tech colleges; two colleges integrated the SCM modules in their curricula. In Nicaragua, working with the National Autonomous University of Nicaragua, the project initiated the integration of supply chain topics into pharmacy schools when we presented an academic kit to 25 lecturers in the pharmacy department. Rwanda has integrated the SCM curricula for pharmacists with a bachelor of arts (BA); the first students have graduated. In Zambia, the supply chain curriculum, which the project started integrating in Pharm Tech college curriculum during the previous year, was implemented. And, finally, in Zimbabwe, SCM curriculum has been integrated for three BA pharmacist programs; the program is awaiting approval from the pharmaceutical council.

¹ The six common products are combined oral pills, Depo-Provera, implants, IUDs, male condoms, and progestin-only pills.

In FY2011, the project conducted in-service training for 16,269 participants—41 percent women and 59 percent men. Ethiopia trained the most (4,491), followed by Ghana (2,424). Women made up the majority of trainees in Honduras, Mozambique, Nicaragua, Paraguay, and Rwanda. Ghana, Tanzania, and Zambia had 48–49 percent women in their courses.

Under the Regional Institute Development Initiative (RIDI), the project's regional institute partners held nine supply chain training courses this year, for a total of 168 people. *Proyectos en Informática Salud Medicina y Agricultura* (PRISMA) conducted three project modules, without technical assistance. They also provided courses funded by United Nations Population Fund (UNFPA) in Panama and Ecuador. The Eastern and Southern African Management Institute (ESAMI) conducted the two modules twice and one module once, with the project co-facilitating the last module only. With technical assistance, Bioforce conducted the one module once. Notably, this year marked the largest number of courses given by regional institutes, with the lowest cost in subsidies. The project did not provide subsidies for the Bioforce course or the last ESAMI course. A project advisor also trained PRISMA in curriculum development this year, so they can adapt supply chain curricula to country-specific courses.

In FY2010, out of the 15 project-presence countries, all but Liberia, Mozambique, Nigeria, Zambia, and Zimbabwe, used government funds to procure contraceptives; of those using national financing, most (70 percent) reported using internally generated funds. Note that among the non-presence countries, Guatemala, the Dominican Republic (DR), Albania, and El Salvador have graduated from USAID population and project support.

Perhaps the most prominent example of partner use of project data is from the recent Reproductive Health Survey (RHSC) meeting in Addis Ababa, Ethiopia. To celebrate the 10th anniversary of the Istanbul conference, the coalition was charged with showing how contraceptive security (CS) has evolved over the past 10 years by highlighting key accomplishments. Both the multimedia presentation and the report: *Reproductive Health Commodity Security: Leading from behind to forge a global movement*, relied heavily on project data. In addition, numerous partners referenced project data and resources in making the case for specific CS issues.

The project website is one of the most effective ways to share with its partners the tools, resources, lessons learned, and best practices of the project. The site continues to be a primary vehicle for sharing and disseminating information. Over the past year, the project website had 375,427 visits and 466,668 downloads, including software; it received an average of 31,135 unique visitors each month. There were 544,115 pages viewed, with *My Commodities* the most visited page (14,485 views), then procurement news (10,664 views), resources, and the product catalog (7,271 views).

Another outlet for sharing and disseminating project lessons learned, best practices, and resources is the International Association of Public Health Logisticians (IAPHL), which the project created and continues to facilitate. During this reporting period, IAPHL membership increased from 568 members in 76 countries to 907 members in 90 countries. The countries with the largest membership include the U.S., with 23 percent of all members; Nigeria (15 percent); and Ethiopia (6 percent).

One key challenge the project faces is the impact of political and economic uncertainty on project activities and performance. For example, the World Bank praised the highly successful Essential Medicines pilot in Zambia, the USAID Mission, and the TO1 Mid-Term Evaluation as pioneering example of how to test and demonstrate the impact of alternative implementation models. That successful crossdock option was ready to be expanded across the country when the Ministry of Health (MOH) put a hold on further changes pending the outcome of the next general election.. As

economic and political conditions decline, the situation in Malawi and Nigeria could adversely affect the project's ability to strengthen local sustainable supply chains..

Ethiopia, Rwanda, and Malawi had an impressive increase in their CPR; and the consistent performance of Zimbabwe, despite its economic problems, shows what can be accomplished in sub-Saharan Africa with the right commitment, policies, funding, and supply chain systems. The priority for the project in the coming year is to consolidate and build on these gains and to support other countries as they work to increase product availability and health performance. Applying the recently developed supply chain evolution model to frame country-level strategies for public health supply chain improvement will help identify priority interventions.

Other priorities include disseminating identified best practices and innovations, such as supply chain and transport modeling; and better inventory modeling, particularly in better LMIS operation and a greater understanding of what supply chain integration means in presence-countries. Sustainability needs further work, including defining performance metrics, benchmarking, and applying the supply chain evolution model to measure where countries are in terms of sustaining supply chain performance.

Introduction

What We Do

The objective of the USAID | DELIVER PROJECT Task Order Technical Assistance for Supply Chain Strengthening and Commodity Security in Public Health (TO4) is to increase product availability in U.S. Agency for International Development (USAID)-supported public health supply chains. The project implements interventions that strengthen supply chains and supportive environments for commodity security. We ensure these interventions work toward improving sustainability, local capacity, commitment, and coordination. We develop logistics management information systems (LMISs) that reliably and consistently provide data for management decisionmaking. We apply the latest commercial and academic innovations and combine these with identified best practices from the field, disseminating results to the widest possible audience.

USAID awarded Task Order 4 (TO4) on September 30, 2010. This task order builds on the work of Task Order 1 (TO1) in implementing best practices for commodity security and supply chain management. TO4 responds to local contexts and the needs of local stakeholders and USAID missions. In the new task order, increased emphasis is placed on capacity building, research and innovation, and leveraging partners to increase sustainability. TO4 is aligning activities and approaches with the President's Global Health Initiative (GHI). A key component in the work of TO4 is the effort to improve country ownership—through increased capacity to manage supply chains and improve commodity security.

During the past year, the project saw a transition as TO1 activities concluded and TO4 activities began. Given the similar, yet distinct, activities of both task orders, this report includes the activities of and performance measures for the past year for both TO1 and TO4. TO4 is one of two successors to Task Order 1, under the USAID | DELIVER PROJECT. A separate task order—the Procurement and Distribution of Essential Public Health Supplies (Task Order 5)—is continuing the work of Task Order 1, Objective 3: Improving USAID's Provision of Commodities to Programs. This was also awarded September 30, 2010.

The procurement team worked in close collaboration with CSL to coordinate a smooth transition from TO1 to TO5. The task order's foremost requirement was that public health commodities remain available throughout the process. To ensure this, the project was able to put new contracts in place for all contraceptive commodities, prior to the end of TO1. *See TO5 Annual Report for 2010–2011* for a full report on the past year's activities related to TO1, Objective 3.

The work of TO4 is responding to the needs of increasingly complex global public health supply chains. We are working to apply a whole system *end-to-end* approach—integrating from suppliers to the *last mile* and putting the product in the hands of the client. This involves working with countries to improve their internal supply chains; and strengthening the skills and capacity of the public health systems, institutions, human resources, and country management teams in countries that USAID supports. TO4 has worked in all the key components—product selection, forecasting, financing, procurement, quality assurance, distribution, inventory management, storage, LMIS, and product disposal.

Figure 1. Example of an Integrated Supply Chain

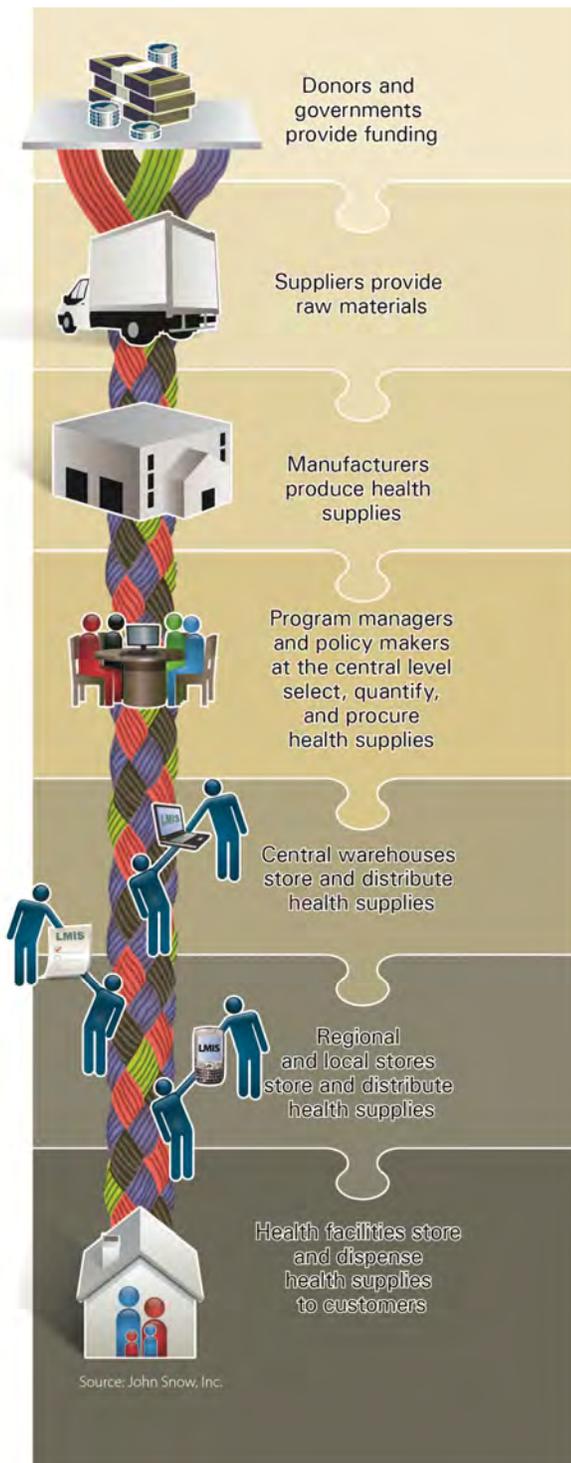


Figure 1 visually presents the concept of an integrated public health supply chain, where all the functions are interconnected. Zimbabwe’s use of the Delivery Team Topping Up (DTTU) best exemplifies the application of an integrated end-to-end approach to supply chain management. Data is visible throughout the LMIS because the data is captured using ruggedized laptops and AutoDRV software. Consumption data informs both the amount carried on the trucks when delivery runs are made and when contraceptive orders placed with suppliers.

Further, the task order’s activities and technical support are planned and undertaken with the changing environment for commodity security in mind. In recognition of significant fluctuations in government and donor financing; increased demands in number and volumes of products managed in public sector supply chains; and changes in health system policies at the global, national, and local levels, TO4 is committed to activities that yield innovations to address these changes and challenges.

The project is working to quickly identify viable solutions based on work in the private sector, academia, and local institutions; and, to achieve maximum impact, we can quickly adapt, test, monitor, and scale these solutions to fit the countries that USAID supports. This includes work on improvements in supply chain efficiencies and integration; and carefully balancing the project’s priority—family planning—with the broader need for health systems strengthening. TO4 is documenting and disseminating lessons learned widely, facilitating country-to-country knowledge transfer. This is illustrated by our continued work in the Latin America and the Caribbean (LAC) region and the fostering of south-to-south learning around procurement best practices and approaches adopted.

The challenges facing public health systems requires TO4 to work collaboratively with partners to leverage relative strengths, maximize outcomes, and ensure sustainability. TO4 is committed to sharing its supply chain expertise with governments, nongovernmental organizations (NGOs), donors, civil society organizations, commercial sectors, and other relevant stakeholders. The intent is to reduce redundancy and to

highlight the importance of deliberate and strategic thinking around commodity security and supply chains for health. To ensure consistent technical support to countries, TO4 is also working to harmonize messaging and approaches with other partners.

With Cargo Management Logistics (CML), a private transport company in Malawi, we are partnering to deliver family planning and malaria products to public facilities. In Nepal, we are working with private providers to roll out LMIS training and computer support. In Ethiopia, we are working with several local colleges to apply pre-service training for health providers. We have also provided capacity building support to the International Planned Parenthood Federation’s (IPPF) regional office in Kenya. The activities and progress discussed in this report reflect the continuation of the successes and the evolution of thinking of TO1 and affirm the embrace of these new approaches to supply chain strengthening. TO4’s focus is to support the countries where USAID works to improve product availability by increasing country ownership, increasing internal human resources capacity, and strengthening the underlying systems in a sustainable fashion.

Organization of the Report

This report combines the analysis of some of the key indicators from the project’s Performance Monitoring Plan (PMP) with examples of the project’s work. With the project tracking 35 indicators and work across 20-plus countries, this report highlights and discusses a selected number of indicators in the text and provides detailed tables for others in appendix A. The report is organized around three main themes that describe our work:

1. Improve and strengthen in-country supply chains.
2. Strengthen environments for commodity security.
3. Increase knowledge management and dissemination.

Table 1 shows where we address each PMP indicator in the main report and appendices.

Table 1. Performance Monitoring Plan Indicators

Functional Area I—Improve and Strengthen In-Country Supply Chains	
I.1	Stockout rates
I.2	Number (and proportion) of project-assisted countries with supply plans reviewed and updated semi-annually for an agreed list of commodities
I.3	Number (and proportion) of project-assisted countries that submit supply plans for USAID-procured contraceptives, condoms, and other health commodities, as applicable, without external short-term technical assistance
I.4	Forecast accuracy for contraceptives and other health commodities, as applicable
I.5	Number (and proportion) of countries with key contraceptives on the national essential medicines lists (NEML), by method
I.9	Service delivery point (SDP)-level reporting rates
	<i>Number (and proportion) of project-assisted in-country organizations in project-assisted countries that have:</i>
I.6	documented and approved protocols/procedures/guidelines for the procurement of health commodities
I.7	an established procurement unit/body responsible for the procurement of health commodities
I.8	an LMIS that routinely reports stock status from SDP level

I.10	supervision guidelines and tools for routine supervision of commodity logistics management functions
I.11	documented and approved protocols/procedures/guidelines for operational warehouse management of health commodities (manual or automated)
I.12	documented and approved protocols/procedures/guidelines for the transportation of health commodities (may include documented distribution routes, procedures for vehicle maintenance, etc.)
I.13	supply chain protocols in place for disposal of medical waste and management of expired, damaged, or recalled products
I.14	established positions/units that include defined responsibilities and required qualifications for SCM
I.15	Number of in-country staff trained
I.16	Number (and proportion) of people trained at regional and central levels in project-assisted countries who are still responsible for performing the supply chain functions for which they were trained by the project
I.17	Number of project-assisted countries adopting pre-service training in supply chain management
I.18	Number and value of sub-contracts and/or work orders issued with local/regional institutions (including the private sector and NGOs) for technical services
I.19	Number (and proportion) of field staff who are local or regional hires

Functional Area 2—Strengthen Environment for Commodity Security

2.1	Number (and proportion) of countries with active CS coordinating mechanisms in place
2.2	Number of countries with current commodity security strategies developed
2.3	List of project-assisted countries where market analysis has been conducted and disseminated using the most recent Demographic and Health Survey (DHS) or Reproductive Health Survey (RHS) data
2.4	Number (and proportion) of countries with a government budget line item for the procurement of contraceptives
2.5	Number (and proportion) of countries spending government funds on the procurement of public sector contraceptives
2.6	Percentage of total funding spent on public sector procurement of contraceptives that comes from government funds, by country (i.e., government share of spending on contraceptive procurement for the public sector)
2.8	List of instances where project-collected data is used for advocacy and to influence decision-making

Functional Area 3—Knowledge Management and Communications

2.7	List of instances where input or support provided to global, regional, and national partners to promote CS (e.g., civil society organizations, women's groups)
3.1	List of instances where a country adopts or adapts a core or field-funded innovation or toll
3.2	List of articles submitted to peer reviewed journals by project staff
3.3	List of technical websites, publications, and social media sites used for sharing and disseminating project information and documents
3.4	List of websites that link to deliver.jsi.com
3.5	Number of unique visitors per month to deliver.jsi.com
3.6	Total number of unique page views by content area
3.7	Number of downloads and order fulfillment for project materials
3.8	Number of active IAPHL members

Improve and Strengthen In-Country Supply Chains

Under TO4, the USAID | DELIVER PROJECT is fulfilling its commitment to improve and strengthen in-country supply chains with core and field-supported funds. We are using an end-to-end supply chain strengthening approach, which includes assessing, improving, and overcoming bottlenecks throughout the supply chain. In particular, we have paid attention to those associated with procurement, human resources, transport, and last mile distribution. This approach is addressed through three overarching themes of work: (1) ensuring commodity availability, (2) strengthening key supply chain functions, and (3) building local capacity. Cutting across each is a desire to combine innovation and best practice from field-tested approaches.

Ensuring Commodity Availability

The ultimate goal of TO4 is to bolster country-level supply chain performance to ensure improved commodity availability at service delivery points. The key metrics for measuring overall performance are reporting rates and stockout rates. We present these below and then present an analysis of availability and sustainability.

Contraceptive Availability

Since FY2007, the project has routinely monitored contraceptive availability at the central and facility levels in most of the project-presence countries that have received TO1 and TO4 funding. In FY2011, the number of countries reporting in the Procurement Planning and Monitoring Report (PPMR) increased from 19 to 22, despite the loss of two countries (the Dominican Republic and El Salvador) after the reporting agencies' offices closed. In both countries, the ministries of health were not interested in reporting (neither country receives donated commodities). The PPMR gained Afghanistan, including reports from four separate projects (coordinated by Management Sciences for Health [MSH]); and Honduras, a new USAID | DELIVER PROJECT country. Of the reporting countries, 15 are project-presence countries. Pakistan is the only project-presence country with TO4 funding not currently included in the PPMR. With Madagascar, we expect it to begin reporting. In addition, USAID/Lilongwe established a parallel supply chain in Malawi in early 2011; after this, data from the MOH were difficult to obtain. Although not yet incorporated, the project is working with USAID and UNFPA in West African to create a West African-based early warning system that will report to a regional Coordinated Assistance for Reproductive Health Supplies (CARhs) group. This is expected to incorporate non-reporting countries from that region.

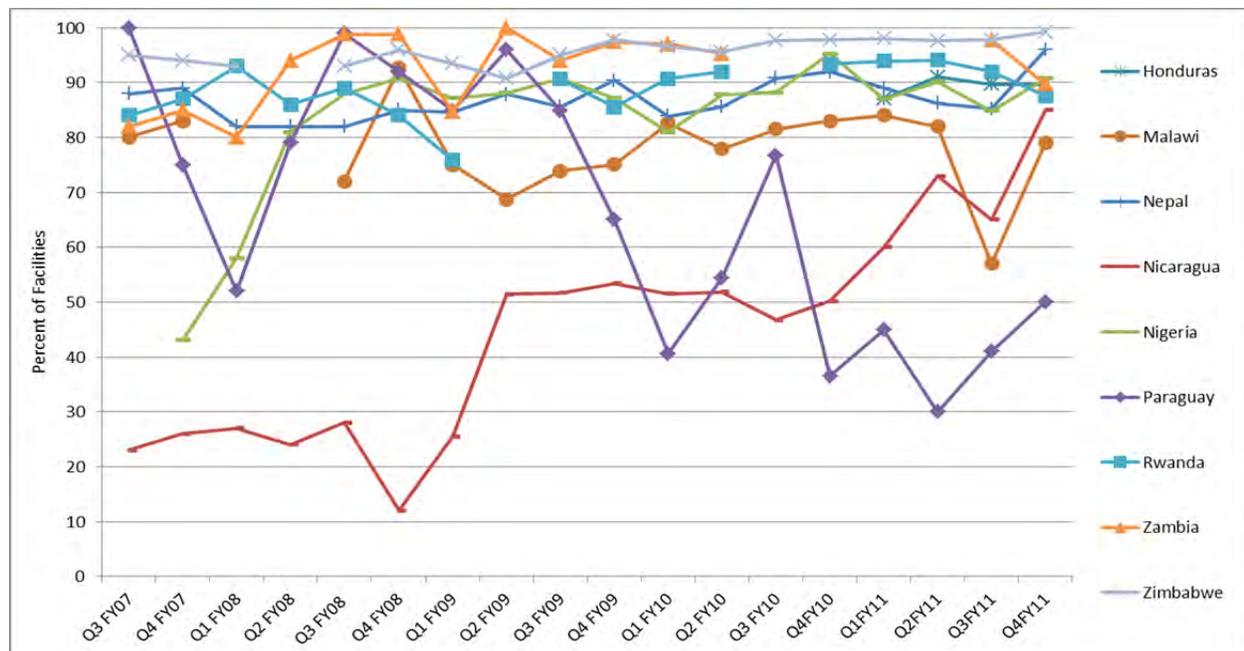
During this 12-month reporting period, no stockouts were reported by seven project-presence countries at the central level: the Dominican Republic (the office has since closed), Ethiopia, Malawi, Mozambique, Nepal, Rwanda, and Zimbabwe. Eight of the 15 project-presence countries reported at least one stockout at the central level (Ghana, Honduras, Liberia, Nicaragua, Nigeria, Paraguay, Tanzania, and Zambia). Appendix A, table 12 shows stockouts, by product and country, for project-presence countries who reported a stockout during FY2011.

For these eight countries, Depo-Provera had more stockouts than any other product (29 percent of all stockouts in FY2011) because of a product recall, the difficulty replacing those products, and the subsequent production limitations to keep up with growing global demand. IUDs were the second most common product stocked out (15 percent of all stockouts). The largest number of stockouts were in October 2010 (12 products stocked out across four countries, almost half were Depo-Provera), with the second highest number in March 2011 (seven products stocked out across four countries). Otherwise, in most months of this year, very few stockouts were reported across these eight countries; in fact, in July 2011, none of these countries reported stockouts. In January, May, and September, only one stockout was reported across these countries.

Ghana had the most stockouts during FY2011, many within the social marketing program; while the remaining seven countries had very few during the year. For example, Paraguay experienced only one stockout all year—for emergency contraceptive pills. In the first half of FY2011, Nicaragua had a recurrent stockout of Depo-Provera, over three months, at the central level; however, no other products had a stockout in FY2011. As noted, Ghana reported an extended central-level stockout of Depo-Provera in the social marketing program, as well as several months of stockouts of progestin-only pills at the MOH, and other limited stockouts.

In addition to these project-presence countries reporting to the PPMR, eight of the same countries also submit quarterly figures for contraceptive availability from the service delivery point (SDP) level; they were available through each country’s LMIS. Zambia’s reporting rates for antiretroviral medicines for its LMIS are also included in figure 2, which presents SDP-level reporting rates from FY2007–FY2011.

Figure 2. Percentage of Facilities Reporting during Fiscal Years 2007–2011



Note: The Bangladesh, Dominican Republic, and El Salvador field offices closed under TO1 and their data are no longer available.

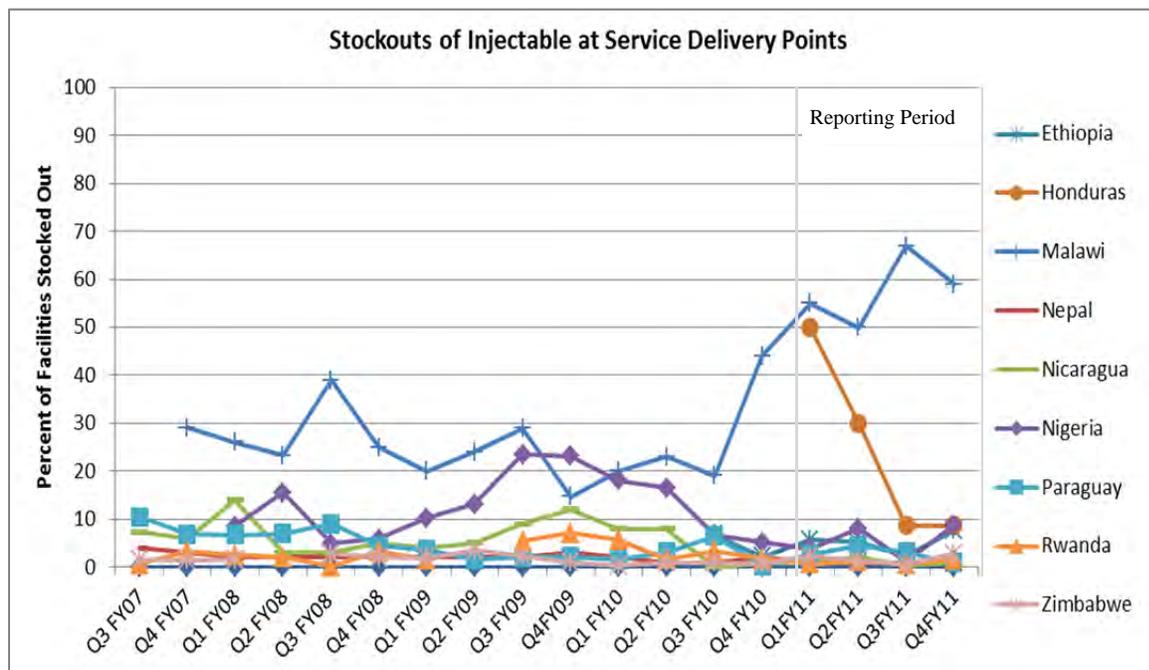
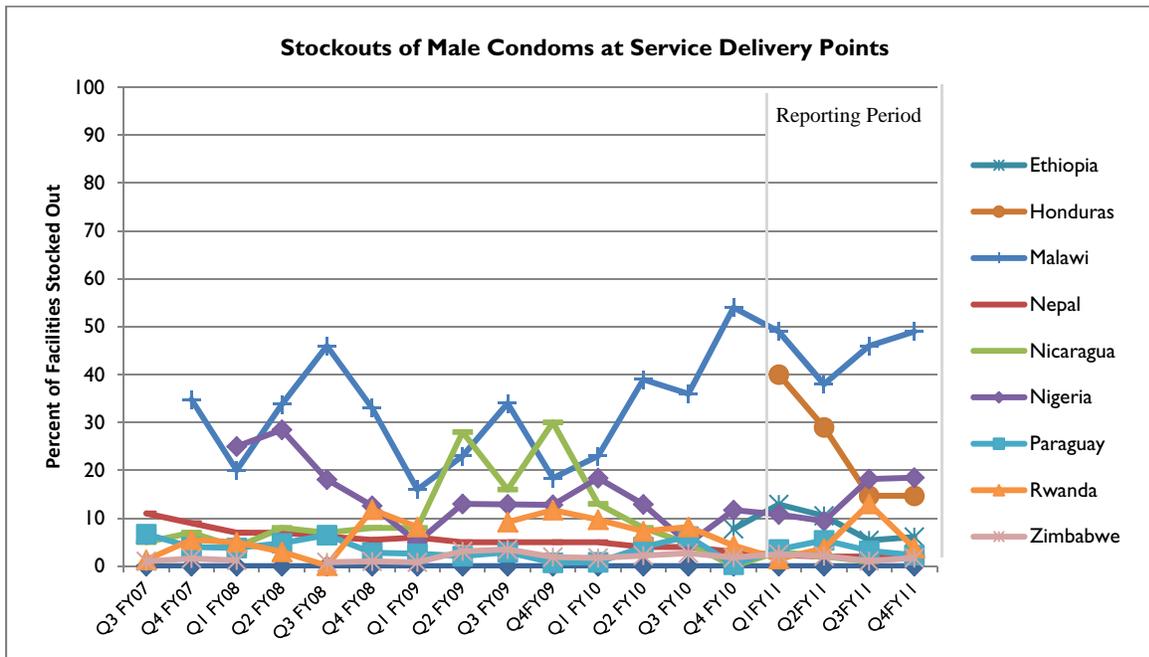
In almost all countries, reporting rates have remained consistently high, averaging around or above 80 percent during each quarter. Half of all reporting countries have maintained an average of 90 percent or greater reporting rates (Honduras, Nepal, Rwanda, Zambia [for antiretrovirals], and Zimbabwe).

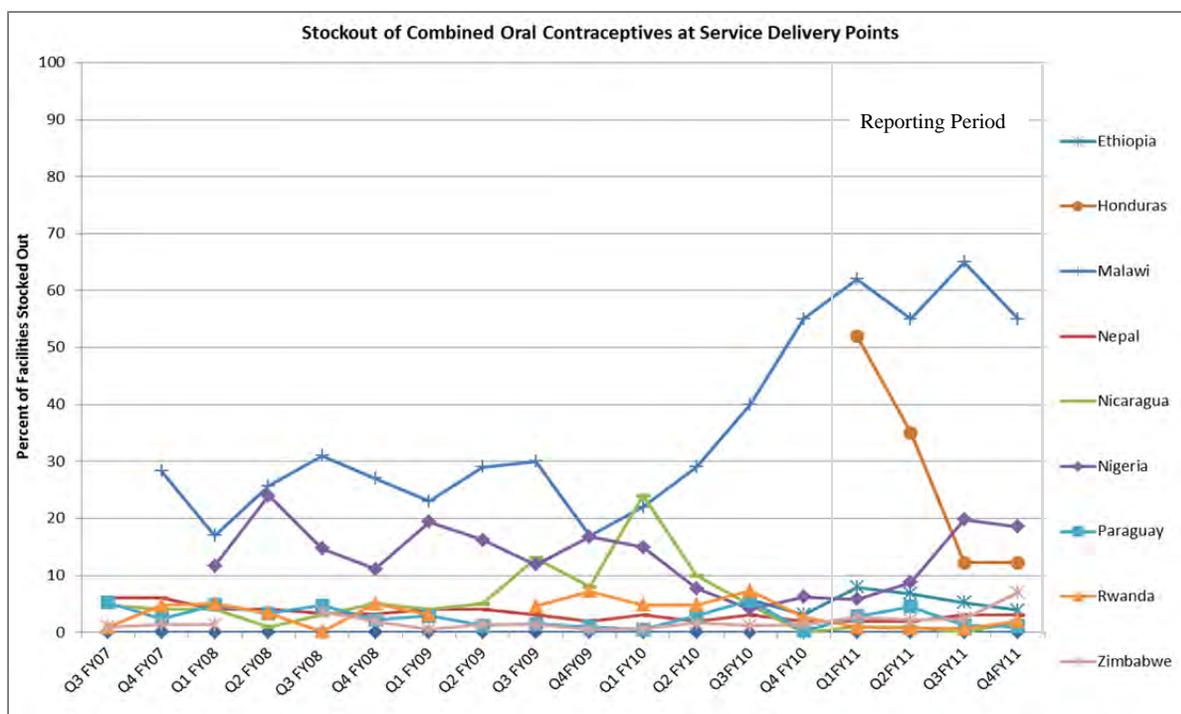
Nicaragua has been rolling out a national integrated LMIS; reporting rates have continued to rise over time, reaching an average of 71 percent in FY2011, as more facilities begin reporting stock status. In Paraguay, reporting rates dropped drastically at the end of FY2009 when contraceptives were integrated with other health commodities. Rates have remained low.

In addition to routine monitoring through the PPMR and countries' routine LMISs, the project has also begun collecting a snapshot of commodity availability by regularly applying the End-Use verification (EUV) data collection tool. The EUV tool was developed under the President's Malaria Initiative, originally for monitoring availability of malaria commodities. However, in project-presence countries, data collection teams have added contraceptives to the list of tracer commodities to be tracked, allowing for limited visibility into downstream supply availability in countries without a functioning national-level LMIS. This integration of efforts is occurring in presence-countries—Ghana, Malawi, Mozambique, Tanzania, and Zambia.

As noted above, we continue to routinely monitor contraceptive stockout rates in eight project-presence countries, using data from the in-country LMIS. Stockout data for Ethiopia are also presented here, although these data are based on a sample of sites visited during supportive supervision. These data are presented in figure 3 for male condoms, injectables, and combined oral contraceptives from the middle of FY2007 through FY2011.

Figure 3. Stockout Rates for Male Condoms, Injectables, and Oral Pills, FY2007–FY2011





Note: Nigeria data represent availability in project focus states only: Bauchi, Kano, and Sokoto.

These three high-demand resupply methods require a continuous and reliable supply to meet clients’ needs. The figures above show that, for the most part in reporting countries, these methods are routinely available to clients at SDPs because stockout rates were at or below ten percent for at least six to seven out of nine countries for these methods, during this time period.

For male condoms, most reporting countries (seven out of nine) have maintained very low stockout rates, below 15 percent on average; six of these seven countries maintained stockout rates of less than 10 percent, on average, since routine reporting began in 2007. (Note that Ethiopia only began reporting in late FY2010). Honduras only began reporting at the beginning of FY2011 and, although stockouts were initially higher, they have also remained low at 15 percent for the second two quarters of FY2011. In Malawi, stockouts for male condoms remained a persistent challenge in FY2011; financing and policy issues continued in spite of the concerted efforts by project staff and MOH counterparts.

For both injectables and combined oral pills, almost all reporting countries have maintained impressively low stockout rates, well below 10 percent. As with male condoms in Honduras, although stockouts were initially high for both injectables and pills, rates fell to below 10 percent for the second two quarters of FY2011. Malawi also struggles with high stockout rates for both injectables and pills, as well as condoms. Finally, although stockout rates for combined oral pills in Nigeria had been consistently low over the past few years, there was a slight increase in the second half of FY2011 because of an uptake in demand after cost recovery was eliminated in the public sector, as well as delays in the Federal Ministry of Health’s (FMOH) delivery of products to states.

Sustainability and Availability

Sustainability is a significant part of TO4’s approach to supply chain strengthening. All the work that the project does to support countries, MOHs, supply chains, and the availability of products is done

with longer-term sustainability in mind. This includes ensuring that each step in the supply chain process is functioning and is properly supported by underlying structures.

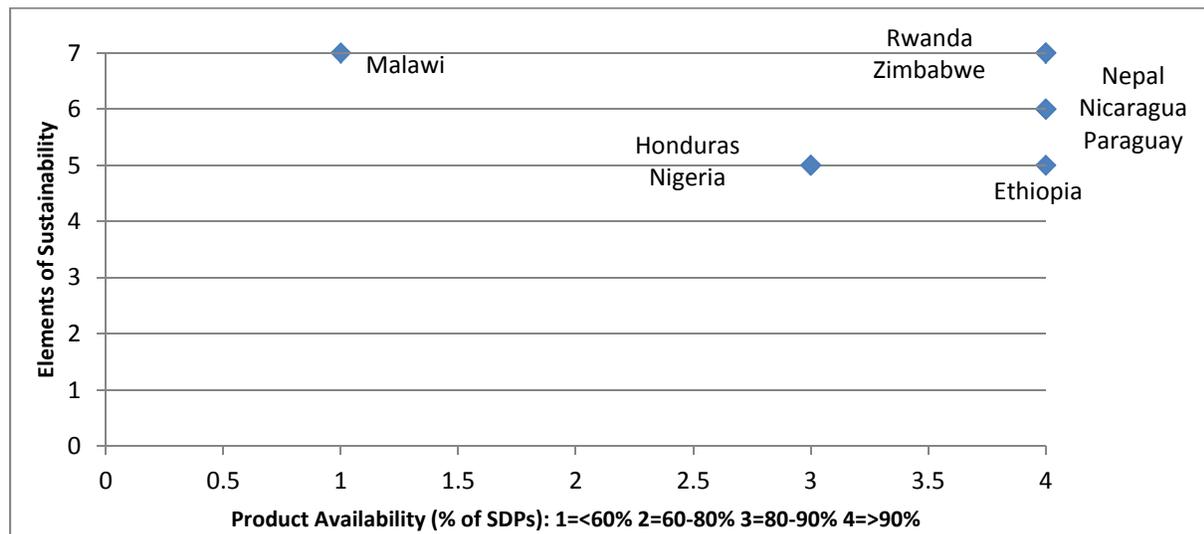
Based on a working definition of sustainability, the TO4 PMP assesses a basic building block of sustainability—whether the protocols, procedures, guidelines, and/or systems are in place and have been documented and approved for core supply chain functions—including procurement, LMIS, supervision, warehouse management, transportation, and waste management/disposal.

The project provides technical assistance to local partners as they put these basic systems in place to strengthen the sustainability of in-country supply chains and the local capacity to manage them. However, measuring the performance of each process is not always feasible for each function. Nonetheless, the performance of many of these functions is monitored through certain key output indicators, such as reporting rates, forecast accuracy, and stockout rates; because any deficiencies in the core supply chain functions will ultimately be reflected in these key outputs.

Over time, it will be important to monitor the sustainability of the systems and procedures put in place with technical assistance from the project and to ensure that the resources required for the sustainable management of the supply chains are in place. Finally, in-country organizations receiving technical assistance should become competent in measuring the performance of their own systems and in making adjustments, as required.

To study the relationship between product availability and the sustainability of the systems with which the project works, figure 4 presents a scatter plot of product availability at the SDP level (where available), compared to having these basic systems in place for key supply chain functions. The seven elements presented in figure 4 are captured on the vertical axis, while a scale of product availability as an average percentage of availability of three key resupply contraceptive methods (orals, condoms and injectables) at SDPs is presented on the horizontal axis for nine countries.

Figure 4. Product Availability and Sustainability



Product availability is high in most of these project-presence countries (stockout rates of 10 percent or less); most of these basic supply chain systems are in place, indicating a possible relationship between the two. In the few countries with lower product availability (i.e., Malawi, Honduras, and Nigeria), the systems are largely in place; however, other external factors have affected product

availability. As noted earlier, Malawi and Nigeria have been struggling with the implications of related policy and financial decisions that have affected the supply chain and product availability; for example, decentralization of funding in Malawi and the elimination of user fees in Nigeria. The project office in Honduras only opened this past year. For pills, condoms, and injectables, stockout rates have already dropped—from 40–50 percent of SDPs in the first half of FY2011 to approximately 10 percent of SDPs by the second half.

More work is required to define supply chain sustainability. Some preliminary work was undertaken to prepare for the Supply Chain Sustainability Technical Advisory Group Meeting that will be reported in next year's annual report. To help frame our understanding of how supply chains evolve, the project adapted an academic, private-sector model for supply chain evolution using developing country health care supply chain case studies. The adapted model argues that sustained supply chain strengthening efforts lead to improved supply chain performance capacity by increasing the definition and clarity of logistics processes, increasing coordination between supply chain partners, and increasing centralized supply chain oversight capacity. The model also defines four evolutionary stages that can be used to roughly gauge a supply chain's position along a strengthening trajectory: ad hoc, organized, integrated, and extended. This trajectory helps to logically organize the suite of supply chain strengthening activities supported by the project, and will support future efforts to develop metrics to evaluate those strengthening efforts. As a result, this model has been incorporated into project conceptualization of supply chain strengthening, and into the Supply Chain Management Systems' (SCMS) new performance management efforts. The ideas in the paper have helped LAC technical staff characterize the nature of the supply chain strengthening work there, compared to our work in other countries; and they have clarified the need for specific supply chain strengthening work beyond the establishing basic supply chain processes.

Strengthening Supply Chain Functions for Sustainability

To improve commodity availability, all the functions within a supply chain must have better integration and optimal performance. An integrated supply chain links everyone involved in managing essential health commodities into one cohesive supply chain management organization. Integration helps clients access quality health care services and supplies. A sustained and integrated supply chain management organization can learn from errors, to self-assess, and to adapt through continuous improvement processes. It leverages resources from all parts of the supply chain and enables rational implementation of innovative new technologies.

People managing integrated supply chains use data about products, costs, and customers to make decisions and to optimize performance across functions, levels, and partners. Functions in an integrated supply chain—for example, product selection, procurement, storage, and distribution—are all steps in an interconnected process. People at different levels of the system (central, regional, district, and health facilities) carry out various supply chain management activities; they must understand how the activities link to others in the supply chain. Similarly, partners across programs, organizations, and sectors must learn to coordinate their work.

An integrated approach to supply chain management requires a whole-system perspective, instead of looking at separate functions (an LMIS or warehousing), or separate programs (family planning or HIV and AIDS, or malaria); or separate levels (central or regional). Integration creates a more cost-effective, agile, and reliable supply chain; it yields lower stockout rates, reduced costs, and better order fulfillment rates.

With a new focus on health system strengthening and service integration through the GHI, the project developed a supply chain integration model that illustrates the important connections between stakeholders, levels, and functions in a supply chain and how these linkages bring information about supply and demand closer together. The integrated supply chain has multidimensional linkages; connections move horizontally, vertically, and diagonally. Well-functioning supply chains are characterized by features that support the linkages between functions, levels, and stakeholders: clarity of roles and responsibilities, agility, streamlined processes, visibility of information, trust and collaboration, and alignment of objects. In two papers, *Supply Chain Integration: Seamlessly Linking the Pieces* and *Supply Chain Integration: Case Studies from Nicaragua, Ethiopia, and Tanzania*, the project outlined the integration model, including examples from our work in the field.

In the remainder of this section, we look at how the project has sustained in-country supply function improvements to promote high-performing, integrated supply chains. While, for organizational purposes, we describe performance by function, we also identify how our work in each area is integrated with our aspects of supply chain strengthening. We start first with product selection, illustrated by including family planning commodities on National Essential Medicines Lists (NEML). Next, before examining procurement and supply plans, we analyze forecast accuracy. We then look at the progress in storage and distribution before summarizing country examples of improvements in supervision and management and LMIS systems. Finally, we examine the relationship between key supply chain functions, sustainability, and product availability before concluding the section with examples of innovations for system strengthening.

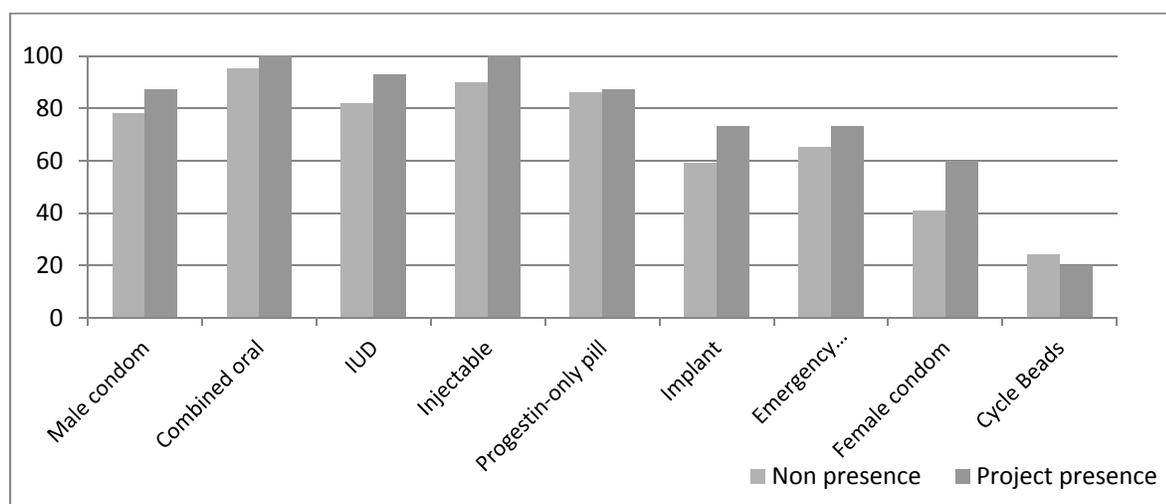
Selection: Contraceptives on National Essential Medicines Lists

Including contraceptives on a country's NEML indicates that the country is committed to maintaining a continuous supply of these products. Inclusion on this list highlights the priority of these products; and, therefore, increases the likelihood that they will be procured for family planning and reproductive health programs. The products will also be less likely to face obstacles with importation. The *CS Indicators* country data looks at which countries include contraceptives on their NEMLs, by method. The nine methods tracked are male and female condoms, combined oral pills, progestin-only pills, emergency contraceptive pills, injectables, implants, IUDs, and cycle beads. Based on data from the *2011 Contraceptive Security Indicators*, figure 5 displays the percentage of countries that include the nine methods of contraception on their NEML, divided by project-presence and non-presence countries.

According to the *2011 CS Indicators*, an average of six out of nine methods is included on the respective country NEML, or equivalent, for all countries reporting. Seven countries (Liberia, Rwanda, Zimbabwe, Democratic Republic of Congo (DRC), Madagascar, Senegal, and Mali) reported including all nine methods on their NEML. Kenya updated their list in 2010; they added implants, IUDs, and barrier methods.

According to the *CS Indicators*, the project-presence countries reported an average of seven out of nine methods on their NEMLs/NEML equivalent. All project-presence countries reported including combined oral pills and injectables on their lists.

Figure 5. Percentage of Countries Including Contraceptives on NEML, 2011 CS Indicators



Forecast Accuracy

To analyze different countries' and programs' experiences in forecasting, the project conducted an accuracy review of country forecasts; we reported them in the study, *Strengthening HIV/AIDS Commodity Forecasting Factors and Considerations for Increasing Accuracy*. The review also identified some determining factors that could assist in reducing forecasting errors. We analyzed the forecast error rates for forecasted consumption and actual consumption data on certain HIV and AIDS commodities (namely adult and pediatric antiretrovirals [ARVs], HIV rapid test kits [RTKs], and select laboratory commodities), in five countries (Ethiopia, Haiti, and Zambia, plus two anonymous countries). For the calculation, we used the Mean Absolute Percent Error (MAPE), one of the most common measures of error rates and the easiest to interpret. In reviewing the quantifications conducted in the five countries, it appears that positive achievements in forecasting accuracy (low error rates) can be attributed to well-developed and appropriately staffed logistics systems. The improvements result in availability of quality data; a mature and institutionalized program, which is staffed by trained personnel; and a rigorous and regular review process that incorporates multiple data sources. On the other hand, high forecasting errors can be attributed to significant changes in the standard treatment guidelines (STGs) by the MOH, without proper coordination with the parties responsible for forecasting, procurement, and distribution; delays in implementation of policy changes; and discrepancies in available data for use in forecasting. The forecasting process was reviewed, as well as the in-country context, to determine possible causes for more or less accurate forecasting results. Findings and conclusions were determined based on the analysis. This analysis will help supply chain managers better predict future needs.

Accurately forecasting contraceptive requirements is one key piece in an effective and well-functioning supply chain. When followed by supply planning in the quantification process, forecasting is the first step to ensuring the availability of commodities to meet clients' needs, while avoiding overstocks, wastage, and expiry.

To assess contraceptive forecast accuracy in project countries, the forecasted monthly consumption of a contraceptive is compared to actual consumption recorded at the end of the year. For contraceptives, the *median* difference between the actual and the forecasted quantities over one year determines forecast accuracy for each product. The absolute median error across all products forecasted in a country determines contraceptive forecast accuracy for that country. This measure is the MAPE.

Optimum forecast error (i.e., the absolute percentage variation between forecasted and actual consumption of a contraceptive) should be 25 percent or less (see table 2). The smaller the percentage, the better the forecast accuracy, which is consistent with the benchmark set by Smith (1997) for U.S.-based commercial industries²

In 2010, TO4 recorded a median forecast error of 25 percent across the six most common products³ in ten countries. This represents a 2 percent increase over last year’s 23 percent error, just meeting the project’s benchmark of 25 percent error or less. Analysis of forecast error rates by product showed that forecast errors have declined for IUDs, combined orals, and progestin-only orals. However, they have more than doubled for male condoms and implants—the result of over-forecasting needs.

Of the ten countries forecasting for male condoms, 70 percent over-forecasted. Seventy percent of the seven countries forecasting for implants also over-forecasted. For male condoms, the increased error may be related to combined forecasting for HIV and AIDS and family planning program condoms and confusion about how much should be ordered to cover both needs. For implants, new initiatives to train providers and educate them about the method may not have been implemented as quickly as first expected.

Table 2. Forecast Error Rates by Product, 2007–2010, Measured in MAPE

	2007 MAPE	2008 MAPE	2009 MAPE	2010 MAPE
Male condom	21%	21%	16%	35%
IUDs	24%	72%	37%	24%
Depo-Provera	16%	30%	17%	25%
All combined orals	4%	16%	17%	13%
Progestin-only orals	16%	22%	31%	26%
Implants	73%	36%	30%	63%
Overall	16%	21%	23%	25%

For the first time, Pakistan and Zimbabwe were included in the data for the ten countries analyzed in 2010.⁴ The forecasts for four countries showed a significant rise in errors: Liberia, Malawi, Mozambique, and Zambia. In Malawi and Mozambique, significant supply chain disruptions have impacted data availability and the forecast process, which may have led to large error increases. Liberia and Zambia have less forecasting history than most of the other countries in the analysis and, therefore, less data on historical trends to assist in developing their forecasts. Paraguay, Rwanda, and Tanzania (that already had low error rates) further reduced their error rates. Median forecast error rates are shown, by country, in table 3.

² Smith, B. T. 1997. *Focus Forecasting*. Fredericksburg, Va.: BookCrafters.

³ The six common products are combined oral pills, Depo-Provera, implants, IUDs, male condoms, and progestin-only pills.

⁴ Although the USAID | DELIVER PROJECT had an office in Zimbabwe for many years, USAID does not provide contraceptives to Zimbabwe except condoms for HIV prevention. The Department for International Development (DFID) provides all contraceptives. Therefore, historically, Zimbabwe has not been included in this analysis.

Table 3. Forecast Error Rates in Ten USAID | DELIVER PROJECT Countries

Country	2006 Median	2007 Median	2008 Median	2009 Median	2010 Median
Ghana	33%	63%	34%	28%	33%
Liberia				57%	80%
Malawi	21%	207%	30%	49%	97%
Mozambique	151%	15%	15%	18%	102%
Pakistan					11%
Paraguay	10%	13%	16%	12%	8%
Rwanda	17%	12%	8%	3%	7%
Tanzania	22%	13%	30%	35%	21%
Zambia			70%	40%	59%
Zimbabwe					10%

These analyses provide insight into the importance of data visibility for improved forecast accuracy in the ten countries. Countries with the most accurate forecasts represented here have logistics data from lower levels of the supply chain, and they use it for forecasting (with the exception of Pakistan). Countries with the highest error rates are characterized by poor logistics data (often available from the central level only), or heavy reliance on older demographic data for forecasting. In addition, over-forecasting is a common problem for products with high error rates. Three of the four countries with the highest error rates consistently over-forecasted in 2010, by large margins, for all products except IUDs. Zambia is the exception. Although Zambia over-forecasted for all methods, the errors are large only for IUDs, progestin-only pills, and implants. Countries with the lowest error rates show a mix of under- and over-forecasting across products, but individual product error rates are below 25 percent for most products in low-error countries.

Procurement and Supply Plans Developed, Reviewed, and Updated

Following the development of the commodity forecast, a procurement and supply plan is developed based on the requirements determined in the forecast, existing stock in the pipeline, system capacity, and the resources available for procurement. During FY2011, five out of 10 project-assisted countries (Ghana, Mozambique, Nigeria, Rwanda, and Zambia) completed the forecasting and procurement planning process and submitted their supply plans for USAID-procured contraceptives and condoms; the countries did not have any external short-term technical assistance (STTA) from project technical advisors. Countries who received STTA from the home office included Ethiopia, Liberia, Malawi, Pakistan, and Tanzania.⁵ These results reflect the project's effort to create sustained capacity in key logistics operations and the degree to which national counterparts are able to forecast commodity needs and develop supply plans without external technical assistance (TA), aside from the TA provided by the local project staff based in each country.

⁵ Presence countries not listed here include countries where USAID does not provide commodities (i.e., the MOH is fully in charge of the quantification process): Honduras, Nepal, Nicaragua, Paraguay, and Zimbabwe.

In addition, project-assisted countries are expected to review procurement plans semi-annually against current stock and planned orders, and to update the plans accordingly. All the reporting countries⁶ reviewed procurement plans for family planning products at least once during the year; two-thirds conducted a mid-year review in the second half of FY2011, as well (Ghana, Honduras, Liberia, Mozambique, Nicaragua, Nigeria, Pakistan, Rwanda, Tanzania, and Zambia).

Storage and Distribution

Storage and distribution are two crucial in-country supply chain functions after the commodities are procured and received in-country. They require an investment in equipment, people, and procedures. As mentioned earlier under Knowledge Management (KM), 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. As table 8 in appendix A confirms, 12 out of 15 project-presence countries reported having warehouse management guidelines in place for health commodities; Honduras, Nigeria, and Tanzania did not have the guidelines. The first two countries benefited from project-provided STTA in warehouse management.

In Ethiopia, the project's warehouse team used a five-part process to assist warehouses and health facility stores: (1) assessment, (2) upgrade proposal, (3) upgrade decisions, (4) bidding, and (5) reorganization/installation/implementation. Upgrades may include the installation of shelving, reorganization planning, and/or the supply of warehouse equipment (pallets, trolleys, ladders, ventilators). This year, the warehouse team assessed 143 facility stores (26 hospitals and 117 health centers) in all 11 regions and cities. The warehouse team also procured and installed 222 pieces of industrial shelves in eight hospitals and one Regional Health Bureau (RHB) warehouse (Addis Ababa). In addition, the team distributed warehouse equipment (1,723 items) to 211 health facilities (28 hospitals and 183 health centers) during the year. A total of 1,375 warehouse guidelines (820 in Amharic, 300 in Oromiffa, 180 in English, and 75 in Tigrigna), were printed and disseminated.

In Zimbabwe, the project has worked with NatPharm and the central medical stores to undertake a road mapping exercise of key improvements needed in all aspects of their operation, including storage, distribution, LMIS, and staff management. Subsequently, an external advisor, funded by SCMS, has been appointed to implement the recommendations from the road map exercise. Also in Zimbabwe, the success of the DTU led the Ministry of Health and Child Welfare to adopt a similar distribution model for malaria and tuberculosis (TB) products.

In Pakistan, the project provided support to the Karachi Medical Stores in both redesigning warehouse layout and procedures; and procuring racking, shelving, and other equipment. Similarly, in Paraguay, we have given support to regional and central stores, including the procurement of racking.

In Malawi, significant problems were identified with the procedures and operation of the Central Medical Stores—disorganized storage areas, multiple warehouses, insufficient staff, and poor recordkeeping—combined with concerns about product integrity and cash flow problems with decentralized commodity management. These issues contributed to the decrease in product availability (see figure 3). In response, with funding from Task Order (TO)4, TO3, and the Global Fund, the project contracted with a local third party logistics provider (3PL), CML, to create a parallel supply chain. CML now stores and distributes contraceptives and antimalarial products to public health facilities.

⁶ Reporting countries include Ethiopia, Ghana, Honduras, Liberia, Malawi, Mozambique, Nepal, Nicaragua, Nigeria, Pakistan, Paraguay, Rwanda, Tanzania, Zambia, and Zimbabwe.

Eleven out of 15 reporting project-presence countries have documented and approved transportation guidelines, including documented distribution routes, procedures for vehicle maintenance, etc. Ethiopia, Honduras, Nicaragua, and Nigeria reported that they do not have established guidelines. In addition to work in Malawi and Zimbabwe, the project-supported family planning commodity distribution in Nepal and Nigeria to the USAID-focus states (Sokoto, Bauchi, and Kano).

Network design represents an important part of improving supply chain integration and performance. Application of commercial network optimization techniques has helped model options improve storage and distribution, as well as inventory management. The USAID | DELIVER PROJECT's pioneering work with LLamasoft, which began in 2008, uses a more scientific approach to address some of the difficult supply chain problems in the public health sector. The goal was to predict supply chain requirements for public health networks for 2020–2024 and to model future capacity constraints as demand and funding for public health commodities expands. In collaboration with Medical Stores Department (MSD), the project first produced these models for Kenya; and, this year, used the same framework to model for Tanzania, using data collected in Tanzania. The objectives were to model the relationships between key public health variables—population, disease prevalence, health program focus, and economic conditions—with the resulting health supply materials requirements, in order to predict future supply chain needs and performance metrics. This can be used to inform and improve long-range strategic planning processes by policymakers, helping to make decisions on the use of limited resources and for improving the supply chain, such as engaging 3PLs, positioning a warehouse, and/or use of transportation resources.

Supervision and Management

Supervision and management are critical to support and sustain strong supply chain performance. All 15 project-presence countries reported having supportive supervision mechanisms in place for routine supervision of commodity logistics management functions. These work best when supervisors have budgets to fund travel. For example, the resupply meetings in the three USAID-focus states in Nigeria allow both supervision and resupply of commodities; SDP staff receive travel funds when they go to their local government area (LGA). Similarly, the Zimbabwe National Family Planning Council (ZNFPC) staff who travel with the DTTU vehicles can conduct supervision visits during the delivery runs. When explicit funding is not provided to cover transport and other travel costs, supervision and system performance can suffer. The Nigeria Logistics Indicators Assessment Tool (LIAT) identified this as a challenge in non-USAID presence states.

Public health supply chain professionals play a critical, but often undervalued and undefined, role in developing countries. Reaching beyond simple skills transfer to individuals, sustainable capacity building efforts often require the establishment of positions for supply chain professionals within organizations and recognition for these individuals as professionals. These organizations are more likely to understand and emphasize the critical role that professional staff play in reaching program goals. It is important to note that, although the project may support these organizations in creating such positions or units, each organization is ultimately responsible for any personnel or organizational design decisions.

A total of 17 project-assisted in-country organizations have established positions or units that include defined responsibilities and required qualifications for supply chain management. Sixty-six percent (10 of 15) of project-presence countries have these positions/units established in the public sector.

In addition, in two presence countries (Rwanda and Zimbabwe), the project is assisting multiple departments within the public sector that are responsible for managing supply chain functions. In

Rwanda, the Pharmacy Task Force, the Logistics Management Office, and the Medical Procurement and Distribution Division (CMS) have established positions or units with defined responsibilities and required qualifications for supply chain management. Population Services International (PSI)/Rwanda and the *Association Rwandaise pour le Bien Etre Familiale* (International Planned Parenthood Federation [IPPF] affiliate), two local nongovernmental organizations (NGOs) with whom the project also works, have these defined positions or units as well. In Zimbabwe, both NatPharm and the ZNFPC have these positions or units.

Logistics Management Information Systems

An LMIS is the backbone of the supply chain; information is shared both up and down the chain for operational and management decisions. All 15 project-presence countries reported having a functioning LMIS. The effectiveness of these LMIS systems is reflected in the number of countries reporting product availability at service delivery points. As seen in figure 3, nine project-presence countries report on product availability at the SDP level, at least quarterly. As more and more products are actively managed within public health supply chains, the trend is increasingly to automate data capture and reporting from the lower levels. Six of the nine countries—Ethiopia, Honduras, Nepal, Nicaragua, Paraguay, and Zimbabwe—all have an automated LMIS. In Malawi, Nigeria, and Rwanda, the LMIS is not fully automated but it does provide SDP-level data using a project-supported, paper-based system; and Supply Chain Manager.

Web-based LMIS systems have been developed in Nepal and Pakistan after their earlier development in Bangladesh. These systems typically allow for paper reporting from the SDP to the district level; but, data entry at the district is either through a web-based portal or is transmitted through the Internet. This speeds up data transmission, allowing supervisors to monitor who has and has not reported and to address supply issues faster.

Since its inception, the Health Commodity Management Information System (HCMIS) Facility Edition (HCMIS FE) in Ethiopia has been implemented in 205 hospitals and health centers. At the end of the fiscal year, 64 health facilities (HFs) were in the pre-HCMIS phase, 41 were in the *intensive* phase, and 100 HFs had *graduated* to the monitoring phase (each phase is at least three months long). In addition, all HCMIS sites received regular supportive supervision from the HCMIS managers, information technology (IT) field support team, and health commodity logistics advisors. The project also supported Adama, Bahir Dar, Hawassa, Jimma, and Mekelle hubs to implement HCMIS Hub Edition (HE) for program drugs, following preparations by the hub staff and SCMS.

Electronic data entry for selected products is also becoming more common with mobile health technology using either short message service (SMS) text messages or preloaded forms. In collaboration with the Ministry of Health and Social Welfare (MOHSW) in Tanzania, the USAID | DELIVER PROJECT recognized the need to strengthen and support the functioning of the paper-based integrated logistics system (ILS). In consultation with the MOHSW and other key stakeholders, the project designed a monitoring and reporting system using SMS-based technology, known as the ILSGateway.

The ILSGateway has introduced a series of innovative interventions to complement the existing ILS. It has focused on strengthening the entire ILS, making it more efficient and effective, as well as sustainable. The system has been piloted in the districts of Bagamoyo, Kilindi, Masasi, Nanyumbu, Newela, Tandahimba, and Temeke. Currently, facilities are being asked to report on 20 essential health products, including seven reproductive health commodities. Interim results indicate that the ILSGateway has helped expand the instant accessibility to and visibility of logistics data; improve the report and

request (R&R) form reporting rates and the adherence to reporting groups; and, also, strengthen supervision efforts. This, in turn, will improve the supply chain decisionmaking for all essential health commodities.

The End-Use verification tool, first developed by TO Malaria, has been expanded to include family planning commodities; it has been used in Ghana, Malawi, Mozambique, Tanzania, and Zambia. The Strengthening Pharmaceutical Systems (SPS) project also developed an SMS pilot system in Malawi; the project took it over when SPS closed out. Automated LMIS projects are also being considered in Zambia and Rwanda.

Geographic information systems (GISs) can be thought of as a map directly connected to a database. The USAID | DELIVER PROJECT has developed GIS maps of data in LMISs to help supply chain managers better explore, analyze, synthesize, and share to improve decisionmaking. In Rwanda, Tanzania, and Zambia, staff prepared and presented maps that showed data in areas that included reporting rates, training coverage, and product availability at service delivery points, over time. This highlighted that the supply chain, as a whole system, works and uncovers areas where the system could be improved. Maps were shared with supply chain managers, ministry staff, and USAID. Using a GIS, you can see the system as a whole, with detailed picture from the national level or any other level. The visualization of data provides improved understanding of information by a wider audience and new interpretations of the data by supply chain managers for decisionmaking. To build capacity in using a GIS, the project trained field staff and completed a guide in linking LMIS data to a GIS. The project has also used a GIS to map results from family planning market and equity analyses.

Building Local Capacity

As part of TO4's commitment to promoting full country ownership of systems, local professionals with the necessary skills must perform their supply chain management functions. Through training, professionalization programs, and working to identify and retain qualified local and regional staff, the project is working to ensure that the countries USAID supports have qualified professionals for all supply chain functions.

Pre-Service Training in Supply Chain Management

To fill the supply chain management (SCM) positions in-country, the project is promoting the integration of supply chain management curricula into pre-service training at relevant in-country schools of higher education; or training institutes that educate future supply chain staff, such as nursing and pharmacy programs. By integrating this material into existing degree programs, the project is working to ensure the institutionalization of this core competency training and the related knowledge, skills, and leadership throughout the in-country supply chain. These efforts will help to ensure local capacity to manage the supply chain. After the supply chain modules have been fully integrated into the schools' curricula, future generations of students will receive high-quality training in supply chain management, prior to their posting; and local schools will be able to offer this training.

Six project-assisted countries have adopted pre-service training in supply chain management (SCM); they are implementing these programs under TO4 (the Dominican Republic, Ethiopia, Nicaragua, Rwanda, Zambia, and Zimbabwe). For example, in the Dominican Republic, the project followed up on supply chain curriculum that staff had integrated in nursing schools during the previous fiscal year (until the closing of the office in November 2010). In Ethiopia, the project gave four Pharm Tech colleges an orientation; two colleges integrated the SCM modules into their curricula. In Nicaragua, working with the National Autonomous University of Nicaragua, the project integrated supply chain topics into pharmacy schools by presenting an academic kit to 25 lecturers in the pharmacy department. Rwanda has integrated the SCM curricula for BA pharmacists; the first students have graduated. In Zambia, the project implemented the supply chain curriculum, started in the previous year, into the Pharm Tech college curriculum. And, finally, in Zimbabwe, SCM curriculum has been integrated for three BA pharmacist programs; it is awaiting approval from the pharmaceutical council.

In-Service Training in Supply Chain Management

Project staff offered four core-funded training courses this year. Two courses were held in Arlington for USAID Developing Leadership Initiative (DLI) health officers; and two courses were held for the International Planned Parenthood Federation, including the Francophone course on using quantification for advocacy. A total of 82 participants were trained (38 males and 44 females).

The project provided in-service training for 16,269 participants FY2011 (41 percent women and 59 percent men). Table 9 in appendix A lists the number trained by country and gender. Ethiopia trained the most (4,491), followed by Ghana (2,424). Women were the majority of trainees in Honduras, Mozambique, Nicaragua, Paraguay, and Rwanda. Ghana, Tanzania, and Zambia had 48–49 percent women trainees in their courses.

Table 4 displays the total number of trainees in all countries in FY2011, by their level of the supply chain. Notably, the largest number of trainees came from the SDP level, where most of the health workers are based.

Table 4. Trainees by Level of the Supply Chain

Level	Number Trained	Percentage
Central	947	5.8%
Region	959	5.9%
District	4,422	27.2%
Service delivery point	8,180	50.3%
Community-based distributors	833	5.1%
Other	928	5.7%
Total trained	16,269	

Examples of these country-level trainings include—

- In Ethiopia, the project conducted a training on curriculum development for 21 central-level staff, including two participants from Nigeria and one from Tanzania. Three training-of-trainer courses were conducted, which also facilitated paper-based Integrated Pharmaceutical Logistics System (IPLS) orientations and roll-out trainings, for a total of 3,843 staff at the regional, district, and SDP levels.
- In Ghana, the project provided Lab LMIS trainings for 236 SDP staff and bed net distribution training for 90 district-level staff. At the central level, the project increased capacity in the national quantification team, among other activities.
- In Liberia, the project conducted the Overview of Supply Chain Management course and Strengthening Supply Chains through M&E course, for a total of 59 central- and regional-level staff. Two-hundred forty SDP-level staff members attended project trainings on LMIS for Health Workers.
- In Nicaragua, the project conducted a workshop on supportive supervision to strengthen ARV supply chains for 82 SDP staff members. In addition, 109 regional staff members attended five regional workshops on programming medical commodities for 2012.
- In Nepal, 703 SDP staff attended regional Basic Health Logistics Trainings for Maternal and Child Health Workers and Volunteer Health Workers (MCHW/VHW), and 77 district staff attended refresher training on web-based LMIS and inventory management systems, among other activities.

National Staff Turnover

Training can effectively improve public health professionals' performance on supply chain tasks. However, staff turnover in these positions is inevitable, whether due to promotion or leaving the institution, so it is important to ensure that new staff either already have the requisite skills (through prior training or experience), or that they receive the training required to perform their tasks at a new post. This turnover of staff has implications for the overall performance and sustainability of the system. While not a direct indicator of project or system performance, when gaps are identified,

the project and its partners will work to ensure that knowledge and skills are reinforced through a variety of capacity building activities, such as supportive supervision with on-the-job training, the use of position-specific job-aids, and additional in-service training, where appropriate.

Data has been collected at the central level and regional level on staff turnover in six project-presence countries. See table 10 in appendix A for details. Of the six countries where this indicator was monitored, five maintained 100 percent retention at one or both levels; all six maintained a total average retention of 95 percent or higher across both levels. Staff turnover at SDPs will probably be higher.

Working with Regional Partners

Since 2007, to increase the number of supply chain courses conducted regionally under the Regional Institute Development Initiative (RIDI), the project has worked with three training institutes in Africa and Latin America. These institutes are based in Peru (PRISMA), Tanzania (ESAMI), and Burkina Faso (Bioforce); they offer courses in Spanish, English, and French, respectively. The course modules that training institutes have been trained to facilitate include the (1) Overview of Supply Chain Management and Commodity Security, (2) the Quantification of Health Commodities, (3) Commodity Security: Principles and Practice, and (4) Strengthening Supply Chain Systems Through Monitoring & Evaluation.

This year, under the RIDI, the project’s regional institute partners held nine supply chain training courses for a total of 168 people trained. PRISMA conducted the first three modules without technical assistance (among other courses and technical assistance they provided in this area through other funding, such as the United Nations Population Fund (UNFPA) funding for activities in Panama and Ecuador). ESAMI conducted the first two modules twice and the last module one time; they had project technical assistance to co-facilitate only for the last module. Bioforce conducted the second module one time, with technical assistance. Notably, this year marked the largest number of courses held by regional institutes, but with the lowest cost in subsidies. The project did not provide subsidies for the Bioforce course or the last ESAMI course. A project advisor also trained PRISMA in curriculum development this year; they can now adapt supply chain curricula to country-specific courses. Table 5 shows the number of courses held by each organization, each year, since the RIDI began.

Table 5. Number of Courses Held, by Year

Organization	2007–2008	2008–2009	2009–2010	2010–2011
USAID DELIVER PROJECT	2	1	0	0
PRISMA	2	4	3	3
ESAMI		2	4	5
Bioforce			1	1
Total	4	7	8	9
Share offered by regional institutes	50%	86%	100%	100%

The project’s work on capacity building included mobilizing resources internationally for greater global representation at the People that Deliver’s Geneva conference on sustainable workforce excellence and bringing together a variety of countries to reach consensus on steps to reach this goal. The project also worked with the International Planned Parenthood Federation (IPPF) during the year to improve IPPF’s capacity to quantify health commodities; we conducted workshops and

provided technical assistance to individual country member associations. The project published guidelines on supportive supervision and on-the-job training for those working in supply chain management at health facilities, as well as publishing an updated version of the *Logistics Handbook: A Practical Guide for the Supply Chain Management of Health Commodities*.

Other Partnerships and Sub-Contracts with Local/Regional Institutions

The project worked with a variety of other in-country partners on capacity building activities in FY2011. Several efforts focused on pre-service training activities for pharmacists or pharmacy technicians. Several training activities focused on promoting supportive supervision. Partners included ministries of health, regional training institute partners, and universities. Table 6 displays some of the capacity building activities conducted with local or regional partners.

Table 6. Local and Regional Partner Capacity Building Activities

Countries	Project Partnerships for Training
Regional	The project worked with the regional training institute Bioforce, located in Burkina Faso, to co-facilitate the Overview of Supply Chain Management course for Francophone logisticians.
Regional	Project advisors worked with the International Planned Parenthood Federation to conduct a course, held in Mali, on quantification and its use for advocacy; attendees were member association staff from seven Francophone countries.
Rwanda	The project worked with the National University of Rwanda's (NUR) pharmacy department to orient fourth and fifth year pharmacy students on pharmaceutical logistics. Four workshops were organized and included 110 students. Five pharmacy department lecturers, who attended a training-of-trainers (TOT) the previous year, facilitated the workshops. The project assisted the NUR with organizing the workshops, and provided the teaching materials, including the syllabuses.
Zimbabwe	The project, in collaboration with SCMS, assisted the Ministry of Health and Child Welfare (MOHCW) and the three training institutions for pharmacists and pharmacy technicians to finalize the pre-service supply chain management (SCM) training curriculum. They conducted a TOT course that prepared faculty staff at the University of Zimbabwe School of Pharmacy, MOHCW Pharmacy Technician Training School, and Harare Polytechnic to introduce SCM modules into pre-service training. The University of Zimbabwe began offering pre-service supply chain management modules in September 2011; Harare Polytechnic and Pharmacy Technician Training School will start in January 2012.

In addition to the partnerships noted above, related to specific capacity building initiatives, the project also implemented subcontracts in seven countries with local and regional institutions and with the two regional training institutes, for more than \$685,000 (see table 7). These subcontracts cover a variety of technical services related to the project's supply chain strengthening activities in-country. They represent the project's efforts to use more local institutions for technical services and to promote the sustainability of such efforts and the efforts of these local institutions to offer these services in the future.

Table 7. Value of Subcontracts with Local/Regional Institutions

Country	Value	Task Order	Purchase Order/Subcontract
Honduras	\$2,000	TO1	Purchase order (PO) signed with PROFAMILIA (IPPF affiliate in Colombia) to cover expenses related to hosting ASHONPLAFA (IPPF affiliate in Honduras) when they learned to implement a resource management unit and exchange experiences with other IPPF affiliates from Ecuador and Brazil.
Malawi	\$61,772	TO4	Using Cargo Management Logistics (CML) as 3rd party provider for storage and distribution of USG and Global Fund products.
Nepal	\$135,748	TO4	Subcontract with DPR Digital Solution Pvt. Ltd. to support district public health office (D/PHOs) in 75 districts in operation of web-based LMIS and inventory management system. Master training-of-trainer (TOT) of 10 DPR's staff was completed in March 3–4, 2011. DPR successfully conducted regional TOT in all five regions (Eastern, Central, Western, Far-West, and Mid-West).
Pakistan	\$42,489	TO4	Value Resources, a local private company, was awarded a subcontract to conduct the district/provinces assessment.
Paraguay	\$20,000	All TO1 UMBRAL	PO with a Paraguayan company, the Center for Development Information and Resources, to develop software to automate the MOH's inventory management and logistics information system. In addition to the MOH's central level, the system is now being implemented in MOH regional offices and pharmacies.
	\$22,324		PO with the <i>Centro Superior de Estudios de Administración y Finanzas Públicas para el Desarrollo (CEMAF)</i> , an Asuncion-based company, to conduct a marketing study and a corporate procurement process study; and to review the MOH's contracts operating unit organization and methods. After asking for request for proposals, in Paraguay, CEMAF was selected for their excellent training expertise; and particularly, their expertise in results-based budgeting.
	\$43,619		PO with <i>Rejalaga y Asociados</i> , an Asuncion-based consulting firm, to work with the MOH's contracts operating unit to recommend ways to restructure the drugs and commodities procurement processes, according to current Paraguayan legislation.
	\$3,421		PO with Veronique Balansa to produce a video documentary for activities under UMBRAL.
	\$29,959		PO with Planet S.A., an Asuncion-based company, to develop a virtual private network (VPN) as a remote access alternative for the MOH; where users, administrators, and IT staff can exchange information in a safely and cost-effectively.
Philippines	\$64,148	TO4	PO with IMS Health Philippines for national facility survey (LIAT); included technical assistance for field work, data entry and analysis, training, and management.
Zimbabwe	\$88,807	TO4	The project continued to work with Westchase, a local software development company, on upgrades to the AutoDRV software. (This includes 2 contracts—\$78,011 and \$10,796.)
ESAMI	\$89,144	TO1 Core	Regional Training Institute partnership to conduct core module trainings.
PRISMA	\$81,886	TO1 Core	Regional Training Institute partnership to conduct core module trainings.
Total Value	\$685,316		

In addition, as part of the PPMR and CARhs, the project works with UNFPA, IPPF, and MSH to collect and analyze data on product availability from countries where the project does not have a presence.

Following are a few more examples of activities that TO4 has engaged in or been engaged with partners on work to strengthen supply chains and promote commodity security:

In March 2011, the project presented its new model for an integrated/seamless supply chain, as part of the John Snow, Inc. (JSI), presentation at the International Planning Committee's (IPC) meeting in Washington, DC.

- Project staff participated in WHO's Annual AIDS Medicines and Diagnostics Service (AMDS) Partners & Stakeholders Meeting in Geneva. The systems strengthening director presented on project lessons learned in laboratory logistics.
- The project was asked to provide input on developing a proxy estimate of last mile costs for the supply chain component of the World Health Organization's Unified Health Model. The project worked with LLamasoft, Futures Institute, Project Optimize (PATH), and VillageReach to help define the last mile and the activities associated with these costs.
- The project began discussions on holding a supply chain costing meeting to bring Project Optimize, VillageReach, and other appropriate partners together to discuss the costing work that each project has completed and the lessons learned. The meeting will help harmonize definitions and methodologies, leading to a more unified approach and better comparability across projects and countries.

Additionally, as some of the previous examples in the report have mentioned, in the first year we partnered with IPPF to provide training on quantification methodologies, with the President's Malaria Initiative (PMI) on the End-Use verification tool, and with SCMS on activities in several countries.

Field Office Regional and Local Hires

The project continues to focus on employing and retaining exceptional local and regional professionals to staff field offices, drawing on their experience and expertise working in their particular environments. Of the 15 project-presence countries who receive TO4 funding, 90 percent of field office staff are regional or local hires. Nine of these countries are completely staffed with regional or local hires. See table 11 in appendix A for more information.

Strengthen Environments for Commodity Security

Task Order 4 is building on the strong foundation for commodity security that the USAID | DELIVER PROJECT developed under TO1 and under previous USAID-funded projects. The focus now is to use the systems, resources, and commodity security committees that already exist globally and in countries, to transfer full ownership to the USAID-supported countries and to institutionalize best practices. The work of TO4 focuses on supporting countries to ensure that appropriate systems, leadership, policies, and financing are in place and that they have a sustained commitment to CS and product availability.

Country Commitment

Country commitment is difficult to measure and define. But, in countries like Rwanda and Ethiopia, many attribute the impressive gains in CS to the commitment from the *top* leadership, as it is often mirrored throughout the health program and systems.

Countries with Active Coordination Mechanisms in Place

Country coordinating bodies are one of the most effective mechanisms for keeping CS on the agenda. For CS to become a reality, various stakeholders must work together—with active multisectoral coordination helping to maintain focus. According to the CS indicators, most of the countries surveyed (35 of 40) have a committee that works on contraceptive security issues. Of these, only two (Gambia and Nigeria) indicated that the committee did not meet in the past year.

Thirteen out of 15 project-presence countries reported having a committee that worked on CS in the last year. In these countries, staff provided routine support by working with key stakeholders to generate essential commodity information that could be used to make key decisions on resource allocation, forecasting, procurement, and planning. In decentralized countries, the project also supports coordinating mechanisms at the lower levels. For example, to support reproductive health commodity security (RHCS) in the Southern Nations, Nationalities and People's Region (SNNP) in Ethiopia, the project participated in a consultative meeting with RHB representatives and reproductive health partners. The meeting focused on strengthening the region's RHCS coordinating committee so they could create the needed groundwork to implement the RHCS operational plan.

To ensure rational and coordinated efforts, it is critical to have diverse representation within the coordinating mechanisms. According to the *2011 CS Indicators*, all reporting countries indicated that the Ministry of Health participated on the committee; almost all countries reported that the United Nations (UN) agencies, other donors, and a variety of NGOs participated. While most of the committees also include social marketing groups (83 percent) and the Central Medical Stores (70 percent), only 33 percent include the commercial sector; even fewer (25 percent) include a representative from either the ministries of finance or planning.

In addition to supporting to the CS committees, the project also provides similar technical assistance to other in-country coordinating bodies and for other program areas. For example, in Ghana, the project supported the MOH by providing critical data for the donors' meeting; this helped the MOH mobilize resources for contraceptive procurements. In Nigeria, the project supported the TB and leprosy control teams at the Kano and Kogi States review meeting.

Countries with Commodity Security Strategies

The explicit inclusion of CS in national strategies also indicates government leadership and commitment, ensuring that critical CS issues are a government priority. According to the CS indicators, 32 of the 40 responding countries (80 percent) reported having either a CS strategy or a strategy that includes a CS component. While developing a strategy is the first step, to be effective, the strategies must be implemented. Country respondents indicated that 84 percent of the strategies were being implemented.

The project continues to work with countries to both develop and support the implementation of CS strategies that comprehensively address the numerous challenges our in-country partners face when trying to ensure product availability. Within project-presence countries, all but Tanzania have a strategy. As of 2011, Ghana, Paraguay, and Zambia project-presence countries have new strategies; Malawi and Pakistan have draft strategies. Of the presence countries that have strategies, Zambia's is still pending government approval before it can be implemented.

Budget Line Item for Contraceptives

Many countries advocate for establishing a budget line item for contraceptives as a way to mobilize government resources. While a budget line is often not enough to guarantee that contraceptives will be funded, it can be a good predictor and it helps ensure that contraceptives are prioritized in the health budgets. According to the *CS Indicators*, 23 of the 39 responding countries (59 percent) reported having a government budget line item for contraceptive procurement. Of those countries with a budget line item, 17 funded contraceptive procurements. Five countries—Mali, Mozambique, Senegal, Uganda, and Zambia—had a budget line item but failed to release funds for contraceptives. Of those without a budget line, only four countries—Dominican Republic, Malawi, the Philippines, and Russia—funded contraceptive procurement.

In the TO4 project-presence countries, 12 out of 15 (80 percent) have a line item. Liberia, Malawi, and Nigeria were the only project countries without one. It is interesting to note that, despite not having a line item, Malawi used government funds for contraceptives.

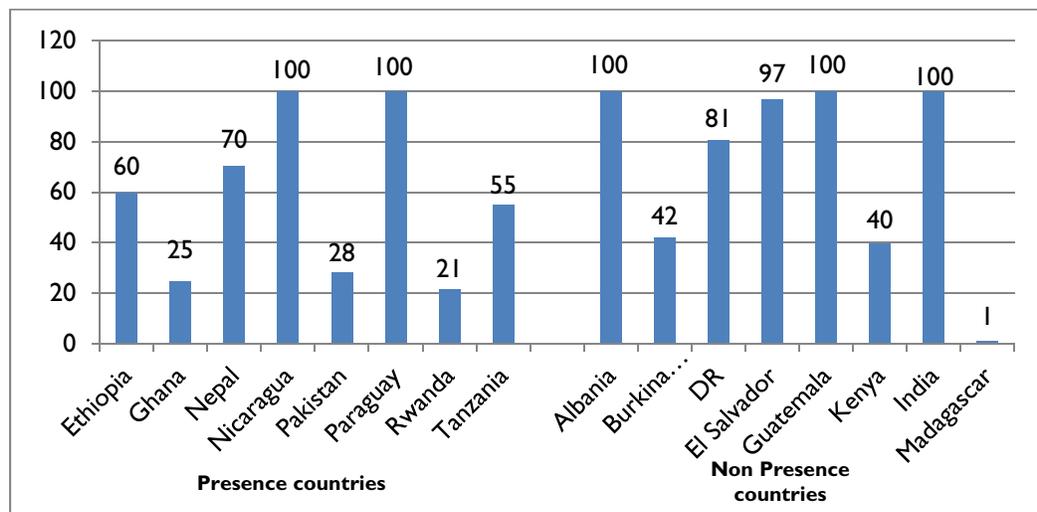
Mobilizing Resources for Commodities

Financing of contraceptives, other commodities, and the supporting health systems are fundamental requirements for commodity security. Using government resources (e.g., basket funds, World Bank credits, and other funds that donors provide to the government for their use) to finance these commodities and systems indicates a strong national commitment to CS. According to the *2011 CS Indicators*, 61 percent of responding countries (22 out of 36) reported that their country spent government funds on contraceptive procurement during FY2010. Of these countries, at least 95 percent (21 of 22) used internally generated funds. Of the countries using government funds for contraceptives, the percentage sourced from internally generated revenue varied significantly: from 2 percent in Bangladesh to 100 percent in Albania, the Dominican Republic, El Salvador, Guatemala, Honduras, Madagascar, Paraguay, and Ukraine.

Some countries are trying to diversify their funding base by leveraging Global Fund to Fight AIDS, Tuberculosis, and Malaria (GFATM) funds for contraceptives. However, in the most recent fiscal year, despite these efforts, only 10 of 39 respondent countries (26 percent) reported that they were able to effectively procure condoms using Global Funds. To date, only Rwanda has successfully used Global Funds to procure contraceptives other than condoms.

Figure 6 shows the share of internally generated funds, in total spending on contraceptives, in FY2010, by project and non-project-presence countries. Out of the 15 project-presence countries, all but Liberia, Mozambique, Nigeria, Zambia, and Zimbabwe used government funds to procure contraceptives; and, of those using national financing, most (70 percent) reported using internally generated funds. Note that in the non-presence countries, Guatemala, the DR, Albania, and El Salvador have graduated from USAID population and project support. See appendix C for a complete list of countries, including the breakdown and amounts of funding spent on contraceptives in the public sector.

Figure 6. Government Share of Total Spending for Public Sector Contraceptives, 2011



Project Leadership and Advocacy

The project has strategically identified the critical information required to understand and track supply chain and broader CS issues. Through routine data collection, the project collects information on stock availability, supply chain, and procurement performance; and the policy environment and commodity financing. Because of this wealth of information, as well as our understanding of the country context, numerous partners rely on the USAID | DELIVER PROJECT to inform their advocacy efforts and programmatic and policy decisions, both at the national and regional/global levels.

The PPMR is one tool that provides stakeholders with a clearer understanding of the stock situation, at the country level, in 22 countries. It is one of the project’s most commonly used advocacy and decisionmaking tool with commodity stockouts receiving increased attention and recognition for their impact on health programs⁷. The CARhs relies on this information to identify critical stock

⁷ USAID | DELIVER PROJECT. 2010. *The Procurement Planning and Monitoring Report: Reducing Contraceptive Stockouts Through Data and Partnerships*. Arlington: USAID | DELIVER PROJECT.

issues and to coordinate efforts to prevent or mitigate stock imbalances. It has made approximately 90 supply decisions since it was first introduced. Most recently, the CARhs used the PPMR to coordinate and facilitate a transfer of 80,000 donated Jadelle implants between Rwanda and Burkina Faso; this helped alleviate significant overstock and potential expiry of this very costly commodity in Rwanda and provided products for planned provider training in Burkina Faso. As a result of the success of the CARhs, there is also an initiative to begin a PPMR in West and Central Africa where a *regional* CARhs group would meet to review the data and to respond to supply shortages with shipments.

Data collected through annual CS indicators has been invaluable for advocates and other stakeholders. For example, to post a call to advocates to continue promoting the use of GFATM funding for contraceptive procurements, the project used blogs (like the blog hosted by the Population Media Center); and listserves (like those through the Coalition). The article cited the CS indicator data to highlight that, despite efforts, only Rwanda has successfully leveraged this funding source for contraceptives other than condoms.

At the country level, the project supports government counterparts and stakeholders by providing critical information for advocacy and decisionmaking. One of the best examples is the country forecasts and quantifications. This activity is the basis for mobilizing resources; it gives donors the confidence to commit resources to help address the national commodity requirements. The project also provides support to higher-level commodity security advocacy efforts. For example, in Ghana, the project assisted the family planning program in preparing a submission to Parliament that would focus on the need to include family planning commodities and services in the National Health Insurance Scheme (NHIS) benefits package. The project was a key participant in two advocacy meetings held with other reproductive health partners to determine and agree on strategies that could be used to defend submissions made to Parliament for including family planning services and commodities as part of NHIS benefit packages. We also helped draft a presentation for the defense to Parliament.

The project funded a consultancy for AccessRH to develop a practical tool that could help them manage their inventory of products. Desk research was combined with a short visit to Copenhagen to meet and train staff in the application of a spreadsheet tool. This applied commercial inventory management practices with some simple modeling to allow AccessRH staff to estimate the level of inventory needed for different service delivery levels.

Perhaps the most prominent example of partner reliance on project data is from the recent Reproductive Health Survey (RHSC) meeting in Addis Ababa, Ethiopia. To celebrate the 10th anniversary of the Istanbul conference, the coalition was challenged with showing how CS has evolved over the past 10 years and to highlight key accomplishments. Both the multimedia presentation and the report, *Reproductive Health Commodity Security: Leading from behind to forge a global movement*, relied heavily on project data. In addition, numerous partners referenced project data and resources in making the case for specific CS issues.

Market Analysis and Development

To have the broadest impact and to meet the needs of diverse clients, efforts to improve commodity security must engage a wide array of partners—government, social marketing groups, NGOs, private sector for-profit providers, and suppliers. For this critical component of CS, the project has supported several total market initiatives that help stakeholders better understand in-country market environments and how to leverage the relative competencies of the various sectors to reach the

widest audience. As a result of these efforts, the project has advanced data availability, tools, and skills that provide the evidence base to help countries leverage all sectors in increasing access.

During FY2011, the project supported eight Latin America and the Caribbean (LAC) countries in analyzing market data based on recent *Demographic and Health Survey* (DHS) and reproductive health surveys. The project worked with counterparts, focusing in-depth analysis on specific population segments that have higher unmet need and lack of information, barriers of service providers' offering family planning services in some countries, and potential opportunities to improve access and method mix among these groups.

One strength of the project's approach is that it is highly participatory. For example, in Paraguay, country-level counterparts were deeply involved in the analysis process and identification of key issues and messages. The analysis was disseminated during one of the CS committee meetings, which the MOH vice-minister convened.

In addition to the LAC market development activities, the project also supported the MOH in Ghana when they conducted and disseminated key market segmentation findings. Building on the study done last year, the project facilitated a subsequent multi-stakeholder discussion about market approaches to determine strategies for the private (profit, not-for-profit) and public sectors. The discussion included experts from academia, the commercial sector, NGOs, Ghana Statistical Services, donor partners, the public sector, and social marketing organizations. The partners identified next steps to address key issues; they will share findings more broadly to inform policy decisions.

As part of our market development approach, the project has combined mapping through a GIS within market analyses to help highlight equity-related variables, thus giving decisionmakers and advocates the data they need to prioritize resources, ensuring more equitable access to services and supplies.

In addition, through the CS indicators, the project collects valuable information on the various sectors. For example, countries report on the makeup of their CS coordinating committees and whether NGOs, social marketing organizations, and the commercial sector are represented. The indicators also collect data on which contraceptive methods are offered by the various sectors, helping to identify gaps in the total market, as well as potential competencies of the various sectors. For example, emergency contraceptives are more likely to be offered through private-sector facilities than through any other sector; while long-acting and permanent methods are more likely to be offered through the public sector.

To determine whether a country had a supportive policy environment for CS, the survey included indicators related to government policies, such as taxes, import duties, fees, and advertising restrictions that may impact the private sector.

Knowledge Management and Communications

As the USAID | DELIVER PROJECT transitioned from TO1 to TO4, the communications strategy evolved to encompass broader information sharing and knowledge management. This transition enabled the project to serve as a strategic resource on supply chain and commodity security information for a broader public health audience, as well as for the supply chain management community. While past data indicated a strong use of project resources—for example, the website—CSL identified the need to evaluate how project experiences and knowledge are packaged, shared, and used. Over the past year, the project has continued to gather, analyze, document, package, and disseminate its lessons learned, best practices, and other information, while evaluating existing knowledge management and dissemination processes, in addition to evaluating—as possible—the ultimate use of this information.

Strategic Information Sharing and Expanded Dissemination

As the USAID | DELIVER PROJECT expanded into multiple task orders, addressing a broader range of health issues, engaging new partners, and supporting new countries, it became clear that our approach to knowledge management would need to adapt and change. The project's technical work in commodity security, systems strengthening, and capacity building continues to expand its focus and reach new partners and programs and to further strengthen country stakeholders' understanding of and capacity in supply chain management. As the project engages other donors and funders to mobilize resources for global RHCS, innovative approaches and technologies must be developed—then well documented to facilitate replication—and successfully disseminated through appropriate communications vehicles. For example, many innovative approaches that have already been developed for individual countries may have wider applicability.

The USAID | DELIVER PROJECT has extensive experience in developing and implementing tools that strengthen country capacity to build and maintain effective, sustainable supply chains. The project has also applied proven practices to develop and share tools for improving commodity security, both among project countries and globally. During the past year, the project has shared these experience, tools, and approaches at conferences and events; transferred tools and innovations to countries; expanded and used a community of practice (IAPHL) for public health logisticians; and increased our effort to publish or support publication of project information in outside publications.

Adaptation or Adoption of Core or Field-Funded Innovations and Tools

The project is an important technical resource for countries looking to identify tools and solutions that address their SCM and commodity security needs. Often, through project technical assistance, these tools and innovations are adapted and/or adopted in-country to address country challenges or needs. Over the past year, at least 11 countries documented adaptations and use of both field- and core-funded tools and innovations.

One example that illustrates the adaptation and use of a core-funded innovation in-country was an assessment that took place in Nigeria using the project's supply chain costing tool. The FMOH received project support to conduct a supply chain costing study to document the cost of the

Nigerian Contraceptive Logistics Management System (CLMS) at each distribution tier. The findings from this study were the third set of data designed to help guide the FMOH's decision about charging a user's fee for contraceptives. In Pakistan, a field-developed tool from Bangladesh was successfully applied and adapted to the Pakistani context. In this case, the field office in Pakistan has launched a web-based LMIS and warehouse management system (WMS) from modified software developed and used by the project in Bangladesh. The project continues to work with the MOH in Pakistan to develop, implement, and enhance the system. The web-based LMIS has enabled the MOH in Pakistan to receive essential logistics data from SDPs and to use it for informed decisionmaking, which increases the availability of essential commodities.

Submission of Articles to Peer-Reviewed Journals

During the past year, the project has actively monitored opportunities to develop and submit articles to peer-reviewed journals, or to be information resources for public health publications or information resources. An abstract accepted to the Global Health Metrics and Evaluation conference, *CS Index Trends 2003–2009*, presented an opportunity to have the abstract published in *Lancet*, a well-known and respected journal. The conference took place in Seattle during March 2011 and was hosted by the Institute for Health Metrics and Evaluation at the University of Washington; *The Lancet*; London School of Hygiene and Tropical Medicine; Harvard School of Public Health; and University of Queensland, School of Population Health. At the American Academy for the Advancement of Science Annual Conference in Washington, DC, the project participated on an academic panel with a presentation on applied supply chain modeling.

Dissemination of Project Materials and Resources

The project website is one of the most effective ways to share, with its partners, the project's tools, resources, lessons learned, and best practices. The site continues as a primary vehicle for sharing and disseminating information. Over the past year, there were 375,427 visits to the project website and 466,668 downloads from the site, including software. The website received an average of 31,135 unique visitors each month. There were 544,115 pages viewed, with the most visited pages being the *My Commodities* page (14,485 views), procurement news (10,664 views), resources, and the product catalog (7,271 views).

These numbers demonstrate a continued increase in activity on the resources page and in publications downloads from the last fiscal year. In 2011, *Concepts of Logistics System Design*, the *Logistics Handbook: A Practical Guide for the Supply Chain Management of Health Commodities*, the *Logistics Management Information System Assessment Guidelines*, the *Guidelines for the Storage of Essential Medicines and Other Health Commodities*, and the *Guidelines for Warehousing Health Commodities* were the most frequently downloaded documents. Visitors were directed to the project website through cross-linking and sharing of project materials on partner, funder, and other organizations' websites. Examples of the top ten websites linking to the USAID | DELIVER PROJECT website included MSH.org, the Procurement & Supply Management (PSM) Toolbox, globalhealth.org, k4health, USAID, ibpinitiative.org, and the Centers for Disease Control and Prevention.

The project has fulfilled orders for more than 9,100 print publications, tools, and software requested by individuals and organizations in more than 59 countries. The top five publications disseminated by mail were the *Guidelines for the Storage of Essential Medicines and Other Health Commodities*, *Logistics Handbook: A Practical Guide for the Supply Chain Management of Health Commodities*, *Contraceptive Security Index 2009: A Tool for Priority Setting and Planning* (wall chart), *Guidelines for the Proper Storage of Health Commodities* (wall chart), and *Quick Reference: Quantification Planning* (fact sheet). The top three requested publications were *The Logistics Handbook*, *Lessons in Logistics Management for Health Commodities* CD, and the PipeLine 5.0 CD.

Growth and Use of the International Association of Public Health Logisticians

Another outlet for sharing and disseminating project lessons learned, best practices, and resources is IAPHL, which the project created and facilitates. During this reporting period, IAPHL membership increased from 568 members in 76 countries to 907 members in 90 countries. The countries with the largest membership include the U.S. with 23 percent of all members, Nigeria (15 percent), and Ethiopia (6 percent). Next, between 2 to 4 percent of all members are Tanzania, Zambia, and Zimbabwe (4 percent); then Uganda, Rwanda, Ghana, Malawi, Bangladesh, Kenya, and Liberia. (See appendix D for membership numbers, by country.) Sixty-two percent of all IAPHL members are men and 34 percent are women. The project researched and selected potential organizations to house IAPHL and we developed a concept paper with recommendations for the organization's future. A membership survey was conducted to gauge the needs of the membership and the project started a new program of facilitated online discussions for existing members.

To engage new members, outreach was conducted to the project's field offices and contacts; a LinkedIn page was created; and flyers were distributed at project trainings, meetings, and conferences. The IAPHL flyer was revised and translated into French, Spanish, and Portuguese. Toward the end of the period, JSI committed \$100,000 in funding to conduct fundraising efforts that would diversify IAPHL's funding base and they began to research fundraising options.

Number of Regional/Global Events Attended by Project Staff

From October 2010 through September 2011, the project attended and presented at more than 15 global, regional, and local meetings, events, and workshops. They include, but are not limited to, presentations at the Global Health Metrics and Evaluation conference, the World Health Organization's Professionalizing Health Supply Chain Management Conference, the Access RH Board Meeting, the American Association for the Advancement of Sciences annual meeting, and the West Africa Regional Conference on Population Development and Family Planning.

Of particular note, the project actively participated in the June 2011 RHSC meeting—Access for All—held in Addis Ababa, Ethiopia. Monitoring and evaluation (M&E) and CS advisors contributed extensive project data that was used to develop the opening multimedia presentation, a subsequent report, and key messages; and to highlight accomplishments in CS. Staff also participated in the systems strengthening working group as panelists, facilitators, and participants. In addition, the project's Director of Country Programs was a speaker on the opening panel.

Evaluating and Expanding Dissemination

During the past year, to begin developing and implementing a comprehensive knowledge management strategy, the KM team actively evaluated the communications channels used by the project: key dissemination tools and methods (e.g., website, dissemination lists, social media, newsletters, IAPHL), and audience needs.

The team used qualitative and quantitative tools to conduct an internal audience survey. The survey provided insight into how information is used by the field and home offices; information gaps; and preferred formats for receiving SCM, commodity security, and project information. In the coming year, the project will use similar tools to implement an external audience survey that will identify external audience needs. The results will enable us to finalize the revised knowledge management strategy.

When evaluating existing and potential dissemination tools, the project considered new approaches—social media, expanded support to countries in developing and distributing materials, new tools for

measuring the use of project information, and updating existing materials. The project expanded dissemination of its information and documentation by researching and developing contacts with additional websites, publications, and social media sites. Dissemination continued through channels such as the PSM Toolbox, the Health Information and Publications Network (HIPNET) listserv, POPLINE, and IAPHL; while reaching out to additional dissemination sources, such as the Zunia Knowledge Exchange, the Technical Network for Strengthening Immunization Services library (www.technet21.org), and USAID's GH 360 internal blog, as well as the USAID Impact Blog and website. For example, on World AIDS Day, a success story developed in Zambia on HIV work was featured on the USAID website's HIV section. USAID's Impact Blog featured another success story on the last mile in Zambia. The project also targeted the social media sites of other organizations. For example, a blog article prepared by a project technical advisor was posted on the Population Media Center site. The article, *Countries Slow to Use Global Fund Grants to Fund Contraceptives: A Call-to-Action for Family Planning and HIV/AIDS Advocates*, uses CS indicator data collected by the project to indicate where advocacy efforts are still needed to increase countries' use of Global Fund grants for contraceptives.

The project continues to share current and cutting-edge logistics information and practices from the commercial sector and academia by publishing an SCM e-newsletter every quarter. To improve the visibility of new publications, the team improved the format of the *Supply Chain Management Newsletter*; it now highlights a feature article each issue. An online service now handles the dissemination and list management for the newsletter, which enables readers to easily subscribe or unsubscribe. As a result of these changes, our mailing list has more than 500 individuals from many different organizations. The online service also provides valuable reporting tools for monitoring the number of visitors that access articles.

Assess and Improve the Project Website

As a pillar of the project's dissemination strategy, the website must be evaluated, improved, and updated regularly. Early in the year, the KM team surveyed project staff and conducted a web demonstration for USAID CSL to ask for feedback about what improvements would maximize the value of the website. Based on the results, and considering our expanded dissemination efforts, the KM team developed a plan to improve the website's content, architecture (e.g., navigation, organization), profile, and measurement tools.

Initial changes to the website involved restructuring and updating the content on the *About Us* page, and renaming and restructuring the *Countries* page. The *Countries* page is now titled *Where We Work*; it includes a new mapping feature and adaptable country summary text. We added new features to the site, including an internal publication archive that reduces the number of older documents on the site and improves the ability of the search function to quickly find current documents. We also added a sort function, by language, to the resources section, enabling users to easily find resources in their desired language.

In addition, the project began testing Google Analytics and Tiny URL. Google Analytics will replace Web Trends as the project's website usage tracking service. It is a more powerful tool that will provide more precise data on page views, visits, how users come to the site, the locations of users, and materials downloaded. Tiny URL enables the KM team to create a unique URL for each product disseminated and for each method of dissemination. For example, the KM team recently completed and distributed a report on the project's work in Bangladesh. We used Tiny URL to create a unique URL for each dissemination method employed. We were then able to track which dissemination method generated the most views of the document.

Toward the end of the project year, the KM team developed a new content structure for the website; we are implementing these changes in stages. The *Where We Work* page was the initial section. Additional areas of the website, including the home page, will be updated in the next project year.

Conclusion

Challenges

One key challenge the project faces is the impact of political and economic uncertainty on project activities and performance. For example, the World Bank praised the highly successful Essential Medicines pilot in Zambia, the USAID Mission, and the TO1 Mid-Term Evaluation as being a pioneering example of how to test and demonstrate the impact of alternative implementation models. The successful crossdock option was ready to be expanded across the country when the MOH put a hold on all further changes pending the outcome of the next general election. Since then there have been no further adoption of this promising approach.

Elsewhere, economic challenges in Malawi will adversely affect the roll-out of the parallel supply chain because fuel shortages delayed the scheduled commodity distribution. This, in turn, will jeopardize gains in CPR and other health indicators. Additional support will be needed in Malawi, particularly as the planned Essential Medicines distribution system is rolled out.

Another challenge is that countries are interested in moving toward an automated and better integrated LMIS, but they face a number of challenges in designing and implementing such projects. The project will need to strengthen management of LMIS projects, coordinating with other partners through the Open LMIS to ensure that appropriate solutions are developed and implemented.

Key Accomplishments

A key accomplishment of the project was the seamless transition from TO1 to TO4. Country and core teams have recognized the new task order's change in emphasis and the need to align work with GHI principals. The project's substantial contribution to the RHSC meeting in Ethiopia helped make that event a success, increasing attention to supplies among policymakers and advocates that will be reflected in future funding and policy commitments. The project's work with the People that Deliver initiative has helped ground that movement, with practical tools and experience from the field. The human resource assessment tool, in particular, is helping to shift the project from training to a more holistic view of supply chain human resource development and capacity building. Work in support of AccessRH around inventory modeling helped with a practical decisionmaking tool to manage inventory levels.

Establishing the parallel supply chain in Malawi in the face of difficult circumstances has helped ensure product availability despite a dysfunctional public sector system. Continued progress in Ethiopia and Rwanda in strengthening the family planning supply chain has been crucial to the CPR gains in those countries. Supply chain strategy work in Ghana supported the GHS and mission to identify possible actions that could address problems with contraceptive product availability. In Nigeria, application of the costing tool helped states budget out distribution costs for contraceptive delivery. In Tanzania, the ILS Gateway development has improved reporting rates and accountability. In Paraguay, according to an Abt Associates assessment report, the project's work has positioned the country well for graduation from USAID family planning support. In Pakistan, the adaptation of the web-based LMIS from Bangladesh has been a key south-to-south sharing that will increase data visibility.

Finally, the continued development and use of the PPMR has positioned it as an early warning system, helping donors and governments anticipate and head off FP stock problems.

Vision and FY2012 Priorities

The impressive increase in CPR in Ethiopia, Rwanda, and Malawi—and the consistent performance of Zimbabwe, despite its economic problems—show what can be accomplished in sub-Saharan Africa with the right commitment, policies, funding, and supply chain systems. To increase product availability and health performance, the priority for the project in the coming year is to consolidate and build on these gains and to support other countries in emulating them. Application of the recently developed supply chain evolution model to help frame country-level strategies for public health supply chain improvement will help identify priority interventions.

Other priorities will include the dissemination of identified best practices and innovations, including supply chain and transport modeling; better inventory modeling, particularly in the context of better LMIS operation; and increased understanding of what supply chain integration means in presence-countries. More work is needed on sustainability, including defining performance metrics, benchmarking, and application of the supply chain evolution model to measure where countries are in terms of sustaining supply chain performance.

Appendix A

Table 8 presents the results that summarize whether the protocols, procedures, guidelines, and/or systems are in place for key supply chain functions within the public sector from the 15 presence countries.

These results show areas where countries possess elements necessary for sustainability, and also uncover areas where they are lacking. In six countries (Malawi, Mozambique, Pakistan, Rwanda, Zambia, and Zimbabwe), these basic building blocks existed in some form within the public sector. In six other countries, only one of these core building blocks was missing (Ghana, Liberia, Nepal, Nicaragua, Paraguay, and Tanzania). All 15 countries reported a procurement unit, functioning LMIS, and supervision guidelines, with only one country reporting the absence of procurement guidelines. Areas with the most room for improvement were in the development of waste disposal/management protocols and clear transportation guidelines.

In addition, in many of these countries, to ensure sustainability, the project assisted other in-country organizations (such as UNFPA, PSI, Clinton HIV/AIDS Initiative (CHAI), UNICEF, and IPPF affiliates; as well as local NGOs and social marketing organizations) in developing these basic systems for key supply chain functions. Project-assisted in-country organizations could include any partner receiving technical assistance from the project.

Table 8. Countries with Basic Systems for Key Supply Chain Functions

	Procuremen	Procurement	LMI	Supervisio	Warehous Managemen	Transportatio	Wast Managemen
Ethiopi							
Ghan							
Hondura							
Liberi							
Malaw							
Mozambiqu							
Nepa							
Nicaragu							
Nigeri							
Pakista							
Paragua							
Rwand							
Tanzani							
Zambi							
Zimbabw							
Total	14	15	15	15	12	11	11
Total	1	0	0	0	3	4	4
%	93	100	100	100	80%	73	73
		=		=			

At the country level, numerous in-service trainings took place during FY2011. Table 9 lists where trainings took place and the total numbers of trainees per country—for a total of 16, 269 individuals trained this year. It also shows percentage of trainees by gender, where available.

Table 9. Total Number of Trainees by Country and Gender

Country	Total	% Women	% Men
Ethiopia	4,491	23	77
Ghana*	2,424	49	51
Honduras	104	82	18
Liberia	379	37	63
Malawi	153	37	63
Mozambique*	419	55	45
Nepal*	1,104	38	62
Nicaragua	814	67	33
Nigeria	1,521	43	57
Pakistan	142	14	86
Paraguay	78	87	13
Rwanda	1,469	53	47
Tanzania*	1,353	49	51
Zambia*	1,570	48	52
Zimbabwe	248	28	72
	Total: 16,269	41	59

*Information for gender of participants was not available for all trainings. Percentages were calculated only for trainings when information was available.

Table 10. Staff Turnover in Six Project-Presence Countries

	Number and percentage of people trained since Oct 1, 2010, who are still responsible for performing the supply chain functions for which they were trained by the project.			
	Central Level		Regional Level	
	Women	Men	Women	Men
Honduras	5 (100%)	1 (100%)	66 (100%)	14 (100%)
Mozambique	17 (94%)	20 (95%)	N/A	N/A
Nicaragua	4 (100%)	1 (100%)	345 (100%)	N/A
Pakistan	N/A	4 (80%)	15 (100%)	87 (100%)
Rwanda*	1 (100%)	4 (100%)	24 (100%)	37(100%)
Zambia	1 (100%)	2 (100%)	N/A	N/A

*In Rwanda, district-level staff are noted in the column for "Regional Level," because Rwanda does not have a regional health level.

Table 11. Number of Local and Regional Hires in Field Offices

TO4 Presence Countries	Regional Hires		Local Hires		Total Field Office Staff (% regional/ local hires)
	Men	Women	Men	Women	
Ethiopia			48	16	66 (97%)
Ghana	1		8	2	11 (100%)
Honduras				2	2 (100%)
Liberia*		1	4	1	6 (100%)
Malawi*	2		10	4	17 (94%)
Mozambique*			6	4	12 (83%)
Nepal			7	6	13 (100%)
Nicaragua			2	4	6 (100%)
Nigeria*			22	16	52 (73%)
Pakistan			11	1	12 (100%)
Paraguay	1		2	4	7 (100%)
Rwanda*	1		7	3	11 (100%)
Tanzania*	1		7	6	14 (100%)
Zambia*	1		91	15	121 (88%)
Zimbabwe*			4	5	11 (82%)
Totals	7	1	229	89	361 (90%)

*Some staff share time with other task orders or SCMS.

Appendix B

Table 12. Central-Level Stockouts by Country and Products

	Ghana	Honduras	Liberia	Nicaragua	Nigeria ²	Paraguay	Tanzania ¹	Zambia ¹	Total # Stockouts
Oct 2010	3 (Depo - SM, Depo, Progestin-only Pills – MOH)		0	1 (Depo)	4 (Noristerat, IUDs, FC, MC)	0	4 (Depo, Implanon – Mainland, Depo, combined oral contraceptives (COCs) - Zanzibar)		12
Nov 2010	1 (Progestin-only Pills-MOH)		0	1 (Depo)		0			2
Dec 2010	2 (Depo - SM, Progestin-only Pills-MOH)		0	0		0		1 (IUD)	3
Jan 2011	1 (Depo-SM)		0	NA		0	0		1
Feb 2011	2 (Depo-SM, Jadelle)		NA	1 (Depo)	0	0			3
Mar 2011	3 (IUD, FC – MOH, Depo-SM)	1 (IUD)	2 (Cycle Beads, Jadelle)	0		0		1 (MC)	7
Apr 2011	3 (IUD, FC – MOH, Depo-SM)	NA	1 (Jadelle)	NA		0			4
May 2011	1 (Depo-SM)	NA	0	0		0	0		1
June 2011	0	1 (IUD)	1 (FC)	0	1 (FC)	0			3
July 2011	0	0	0	0		0		0	0
Aug 2011	3 (IUD, FC, Jadelle - MOH)	NA	1 (FC)	0		0	0	0	4
Sep 2011	0	NA	0	0		1 (ECP)			1

1. Tanzania and Zambia report quarterly

2. Nigeria reports 3x annually

NA = Country did not report for this month. Honduras did not begin reporting in the PPMR until early 2011.

SM = Social marketing program

Appendix C

Table 13. Funding for Contraceptives in the Public Sector

Country ^a	Internally Generated Funds Spent (U.S.\$)	All Other Government Funds Spent (U.S.\$) ^b	Total Government Funds Spent (U.S.\$)	In-kind Donations (U.S.\$)	Global Fund Grants (U.S.\$)	Total of In-kind and Global Fund Grants (U.S.\$)
Sub-Saharan Africa						
Burkina Faso ¹	365,205	404,000	769,205	1,066,253	0	1,066,253
DRC			0	5,859,613	0	5,859,613
Ethiopia ²	481,849	9,000,000	9,481,849	6,421,656	0	6,421,656
Ghana ¹	1,237,550 ^c		1,237,550	60,222	0	60,222
Kenya ²	4,478,168	629,918	5,108,086	2,327,890	1,450,000	3,777,890
Liberia ²			0	7,213,274	606,300	7,819,574
Madagascar ¹	58,625	0	58,625	798,187	0	798,187
Malawi ²	1,223,717 ^c		1,223,717	5,639,717	0	5,639,717
Mali			0	6,693,039	186,698	6,879,737
Mozambique			0	2,733,719	0	2,733,719
Nigeria				6,209,890	0	6,209,890
Rwanda ¹	1,454,420 ^c		1,454,420	5,000,000	0	5,000,000
Uganda ²			0	4,575,402	772,108	5,347,510
Tanzania ²	1,800,000	5,000,000	6,800,000	1,982,561	0	1,982,561
Zambia			0	4,355,176	1,211,960	5,567,136
Zimbabwe ^b			0	6,588,411	0	6,588,411
Europe and Asia						
Albania ¹	67,000	0	67,000			0
Armenia			0	13,105	39,688	52,793
Azerbaijan			0	0	31,356	31,356
Bangladesh ²	714,285	35,714,285	36,428,570	7,142,857	0	7,142,857
Georgia			0	18,361	23,529	41,890
Nepal ²	2,242,941	347,701	2,590,642	1,085,706	insignificant quantity	1,085,706
Pakistan ²	1,600,000	3,150,000	4,750,000	12,000,000	0	12,000,000
Philippines			0	728,769	0	728,769
Ukraine ¹	275,000	0	275,000	382,500	764,000	1,146,500
Latin America and the Caribbean						
Bolivia			0	540,000	0	540,000
Dominican Republic ¹	652,174	0	652,174	157,500	0	157,500
El Salvador ¹	675,674	0	675,674	0	24,300	24,300
Guatemala ¹	1,500,000	0	1,500,000	0	0	0
Haiti			0	2,198,963	0	2,198,963
Honduras ¹	2,699,112	0	2,699,112	890,003	0	890,003
Nicaragua ¹	321,935	721,759	1,043,694	0	0	0
Paraguay ¹	566,000	0	566,000	0	0	0

Notes for government financing:

- a. Respondents were asked about the most recent complete fiscal year (typically fiscal year 2010). The time periods reported are indicated next to the country name: (1) January–December 2010 (2) July 2009–June 2010 for internally generated funds and

government funds. For countries with no note the time period is January–December 2010. Countries reported for the same time period across funding sources with the exception of Uganda and Pakistan. Uganda reported in-kind donations for January–December 2010 but July 09–June 10 for all other sources. Pakistan reported internally generated fund from July 09– June 10, but January–December 10 for all other funding sources.

- b. The amounts attributed to all other government funds include basket funds and funds donors gave to the government for their use.
- c. The government expenditures for Ghana, Rwanda, and possibly Malawi are a combination of internally generated and basket funds. (Malawi was not able to determine whether any of the funds were internally generated.)
- d. The following countries did not use government funds for contraceptive procurement during the given time period; however, they are included in the table since in-kind donations or Global Fund grants were noted: Armenia, Azerbaijan, Bolivia, Democratic Republic of Congo, Georgia, Haiti, Mali, Mozambique, Nigeria, the Philippines, Zambia, and Zimbabwe (for January–December 2010); plus Liberia and Uganda (for July 2009–June 2010).
- e. Although government funds were spent on contraceptive procurement, because of decentralization, data on amounts was not available for the Philippines or Russia (for January–December 2010). Financial details were not provided for India (for April 2010–March 2011). Respondents in Afghanistan, Bolivia, and Zimbabwe did not have information on whether government funds were spent on contraceptive procurement in calendar year 2010. Gambia did not have information on whether government funds were spent on contraceptive procurement in calendar year 2009. Where no data were available, the countries were not included in the table.
- f. Amounts are approximate.

Notes for donations:

- g. Respondents were asked about the most recent complete fiscal year (typically fiscal year 2010). The time periods reported are indicated next to the country name: (1) January–December 2010 (2) July 2009–June 2010. The time period covered may differ slightly by funding source.
- h. The in-kind donation information for Zimbabwe includes only products distributed through the DTTU system only (male and female condoms, the injectable Petogen, the combined oral contraceptive Control, and the progestin-only pill Secure). In addition, this information includes only products distributed to clients, not products in storage facilities.
- i. Respondents in South Sudan did not have information on whether in-kind donations were provided or Global Fund grants used in the January–December 2010 time period, while respondents in Afghanistan indicated that in-kind donations were provided, but they did not know the value of the donations. These countries are not included in the table.

Appendix D

Table 14. International Association of Public Health Logisticians Membership by Country

Country	Membership	% of Total
United States of America	211	23.3%
Nigeria	134	14.8%
Ethiopia	57	6.3%
Tanzania	34	3.8%
Zambia	34	3.8%
Zimbabwe	34	3.8%
Uganda	27	3.0%
Rwanda	25	2.8%
Ghana	21	2.3%
Malawi	18	2.0%
Bangladesh	17	1.9%
Kenya	17	1.9%
Liberia	16	1.8%
Indonesia	13	1.4%
United Kingdom	12	1.3%
India	11	1.2%
South Africa	11	1.2%
Dem. Republic of the Congo	10	1.1%
Nepal	10	1.1%
Pakistan	10	1.1%
Botswana	9	1.0%
Madagascar	9	1.0%
France	7	0.8%
Mozambique	7	0.8%
Spain	7	0.8%
Australia	6	0.7%
Cote d'Ivoire	6	0.7%
Honduras	6	0.7%
Netherlands	6	0.7%
Senegal	6	0.7%
Switzerland	6	0.7%
Burkina Faso	5	0.6%
Haiti	5	0.6%

Namibia	5	0.6%
Papua New Guinea	5	0.6%
Belgium	4	0.4%
Cameroon	4	0.4%
Thailand	4	0.4%
Viet Nam	4	0.4%
Guatemala	3	0.3%
Guyana	3	0.3%
Mali	3	0.3%
Peru	3	0.3%
Philippines	3	0.3%
Tajikistan	3	0.3%
Colombia	2	0.2%
Denmark	2	0.2%
Fiji	2	0.2%
Finland	2	0.2%
Ireland	2	0.2%
Malaysia	2	0.2%
Niger	2	0.2%
Paraguay	2	0.2%
Ukraine	2	0.2%
Not specified	2	0.2%
Albania	1	0.1%
Azerbaijan	1	0.1%
Barbados	1	0.1%
Benin	1	0.1%
Bolivia	1	0.1%
Congo	1	0.1%
Costa Rica	1	0.1%
Dominican Republic	1	0.1%
Ecuador	1	0.1%
Egypt	1	0.1%
Eritrea	1	0.1%
Georgia	1	0.1%
Greece	1	0.1%
Guinea	1	0.1%
Jordan	1	0.1%
Lesotho	1	0.1%
Malta	1	0.1%
Mexico	1	0.1%

Mongolia		0.1%
Morocco		0.1%
Myanmar		0.1%
Nicaragua		0.1%
Norway		0.1%
Palestinian Territory		0.1%
Portugal		0.1%
Romania		0.1%
Saudi Arabia		0.1%
Sri Lanka		0.1%
Sudan		0.1%
Swaziland		0.1%
Syrian Arab Republic		0.1%
Timor-Leste		0.1%
United Arab Emirates		0.1%
Uzbekistan		0.1%
Yemen		0.1%
Total members	906	
Total countries	90	

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