

# Nigeria

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## Assessment of the Transportation System and Distribution Costs for Family Planning Commodities

Prepared for the Federal  
Ministry of Health, Nigeria

Tim O'Hearn  
Mike Healy

March 2003





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## **DELIVER**

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Implemented by John Snow, Inc. (JSI), (contract no. HRN-C-00-00-00010-00), and subcontractors (Manoff Group, Program for Appropriate Technology in Health [PATH], Social Sectors Development Strategies, Inc., and Synaxis, Inc.), DELIVER strengthens the supply chains of health and family planning programs in developing countries to ensure the availability of critical health products for customers. DELIVER also provides technical support to USAID's central contraceptive procurement and management, and analysis of USAID's central commodity management information system (NEWVERN).

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### **Abstract**

This report provides a detailed and comprehensive analysis of the costs for distributing family planning commodities in Nigeria. The distribution study analysis is intended for review by the Nigerian Federal Ministry of Health (FMOH), USAID/Nigeria, John Snow, Inc./DELIVER, and other key stakeholders involved in all aspects of family planning in Nigeria.

The report reviews the background information, that led to the family planning distribution cost study, and describes the study assessment process, study methodology, and presentation of six family planning distribution options. The report also addresses the estimated costs associated with each option and the study team's recommended options.



## **DELIVER**

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# Acronyms

AMC	average monthly consumption
CDC	Centers for Disease Control and Prevention
CIDA	Canadian International Development Agency
CLMS	contraceptive logistics management system
COC	combined oral contraceptive
CS	Central Stores
cu. mt.	cubic meter
DCDPA	Department of Community Development and Population Activities
DFID	Department for International Development
FMOH	Federal Ministry of Health
FPLM	Family Planning Logistics Management (project)
FP	family planning
HIV/AIDS	human immunodeficiency virus/acquired immune deficiency syndrome
JSI	John Snow, Inc.
LGA	local government area
LIAT	Logistics Indicators Assessment Tool
LMIS	logistics management information system
LSAT	Logistics System Assessment Tool
NPHCDA	National Primary Health Care Development Agency
NGO	nongovernmental organization
PHC	primary health care
POD	proof of delivery
PPFN	Planned Parenthood Federation of Nigeria
RH	reproductive health
RHCS	reproductive health commodity security
RIF	requisition information form
SDP	service delivery point
SFH	Society for Family Health/Population Services International
SMOH	State Ministry of Health
SOW	scope of work
SPARHCS	Strategic Pathway for Reproductive Health Commodity Security
UNFPA	United Nations Population Fund
USAID	United States Agency for International Development



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Additionally, special thanks goes to the State Ministry of Health (SMOH), at all levels, the Centers for Disease Control and Prevention (CDC), local government areas (LGAs), and all the organizations who provided valuable insights into the family planning distribution system, and the SMOH staff who made available important information during the assessment team's field visits. Much of this report's findings and analysis is based on inputs by staff members from the Federal Ministry of Health (FMOH), Zonal and State Family Planning Stores, the SMOH, LGAs, and the managers and health care providers throughout our time in Nigeria.

An assessment of this scope involves inputs and contributions from so many people that it is nearly impossible to acknowledge all the names and organizations, and the assessment team would surely omit many unwittingly if we attempted to do so. There were many organizations and individuals that contributed to the assessment in many different ways, and we are sincerely grateful for the professional, and in-depth assistance received from all.

The views stated in this report are those of the authors, and do not necessarily reflect the views of the U.S. Agency for International Development, the Federal Ministry of Health, the State Ministry of Health, or the local government areas within Nigeria.



# Executive Summary

In March 2003, the U.S. Agency for International Development (USAID)/Nigeria asked John Snow, Inc. (JSI)/DELIVER to assess the transportation system and conduct a distribution cost study for family planning commodities within Nigeria. The transportation study request was the result of a two-day stakeholders meeting conducted in October 2002, which involved the Federal Ministry of Health (FMOH)/Department of Community Development and Population Activities (DCDPA), National Primary Health Care Development Agency (NPHCDA), USAID/Nigeria, JSI/DELIVER, UNFPA, and other agencies and organizations. The primary focus of the meeting was to reach an agreement on the redesign of Nigeria's logistic system. The redesign transition will have significant implications for the whole system, including some budgetary considerations for the FMOH, as well as for nongovernmental organizations involved in family planning (FP). Considerable changes will take place in the roles and responsibilities of personnel throughout the different levels of the logistics system.

Nigeria is one of the largest countries in Africa and, by far, the most populated, which presents certain challenges for their transportation system and the distribution of FP products. Currently, there are 36 + 1 States (1 is the federal capital, Abuja) and approximately 13,000 PHC facilities, and of those primary health care (PHC) facilities, about 4,000 provide FP services (active FP service delivery points). Additionally, it is estimated that there are about 800 active FP sites at the State and LGA levels (clinics and hospitals).

Within this context, the study team developed key questions for analysis, as well as survey questionnaires for field visits (to be issued at the different levels within the distribution system). The assessment team also evaluated all relevant transportation issues, such as staffing, vehicle availability, capacity, maintenance and vehicle utilization, vehicle types, volume (for FP commodities), outsourcing, and other critical transportation issues. Although some of the key questions evolved during the study, the following questions were explored:

1. As proposed, is it feasible for the redesign plan to eliminate one or more levels from the current distribution process, and distribute contraceptive products from Central Stores (CS) down the supply chain to the service delivery points (SDP) level (CS to the State Stores, the State Stores to the LGAs, and the LGAs to the SDPs)?
2. Do the State Stores have the capacity (storage capacity) to integrate the redesign program with other vertical programs?
3. What is the cost (overall and incremental/marginal) under the proposed delivery system?
4. Is it possible to outsource transportation and/or distribution of products and supplies relating to the redesign plan?

After extensive consultation with key stakeholders and reviewing available records and data, as well as evaluating the survey questionnaires and the information gathered while conducting five field visits, the study team's results were presented to staff members of the FMOH/DCDPA.

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A total of six options were evaluated and presented, including—

Option A1	The current FMOH/DCDPA proposal as described in the contraceptive logistics management system (CLMS) handbook.
Option A2	The current FMOH/DCDPA proposal as described in the CLMS handbook with the resupply periods synchronized throughout the distribution supply chain.
Option B	Commodity flows as in option A2 but operating as a pass through (cross-dock) operation with delivery to each level of the system.
Option C	Similar to option B but with direct delivery from the State to the SDPs.
Option D	Direct delivery from the Central Store to LGAs and onward delivery from LGA to SDPs.
Option E	Direct delivery from Central Store to SDP by a third-party (private sector) parcel carrier (DHL, UPS, and FedEx).

The main findings of the study were, with the exception of option E, that all options can be funded from a reasonable share of the planned margins from the cost recovery system. However, it must be firmly stated that these margins will only apply if the expected number of active SDPs and the average volume per SDP reflects that of the assumptions derived from the provisional Seed Kit distribution plan.

The potential for outsourcing FP supplies exist; however, due to time constraints permitted to conduct this assessment, only limited discussions were completed in private sector transportation, and these discussions were centered on three parcel carriers (UPS, FedEx, and DHL). There are however, obvious opportunities for the private sector to be involved in this system. Further investigation needs to be completed before involving the private sector in either of the recommended options.

## General Recommendations

The study team recommends that either option B or C be adopted for the distribution of FP commodities. Option B most closely matches the supply chain as it relates to the CLMS handbook, but it introduces a positive delivery structure at all levels of the system. Option B removes the uncertainty of a collection process; it functions as a *pass through* (cross-dock) system. Under option B, stock is held at only two points within this system, either at the State or SDP level.

Option C departs from the supply chain of the CLMS handbook by introducing a direct delivery process from the State to the SDPs. Option C is more expensive than option B; however, the fact that a pickup truck can travel from the State to every active SDP, and because LGAs have SDPs in the vicinity for every LGA, provides a valuable opportunity for State FP staff. The State FP staff can accompany the delivery driver for monitoring and evaluation purposes at either the LGA level or the SDP level. Another advantage of option C is that it eliminates the need to use local rural transport for the final delivery. In the teams opinion, these benefits more than outweigh the moderate additional cost of implementing option C.

If option C is adopted, all transport costs are concentrated at the CS and State levels (as illustrated on the *Summary of Costs* table). Under this option, the LGAs or SDPs do not have transport costs. Therefore, using option C will require a redistribution of the Cost Recovery System margins. The margin needs to be allocated in proportion to the cost expected at each level.

Overall, while there is room for Nigeria to improve its distribution system, the FMOH has many knowledgeable and dedicated staff who are doing a high-quality job. They are committed to making the necessary improvements within this system. Nigeria has an opportunity to move forward in a positive way to establish a quality supply system that meet their country's needs.



# I. Introduction

## Background

In October 2002, prior to this distribution study, a two-day stakeholders meeting was held in Abuja, Nigeria. The meeting included 26 key representatives from the Central Store and Zonal offices of the Federal Ministry of Health (FMOH), the Department of Community Development and Population Activities (DCDPA), and the National Primary Health Care Development Agency (NPHCDA). The primary focus of the meeting was to seek agreement on the redesign of the logistic system from all the participants. Redesigning the entire logistic system has significant overarching implications, including (1) budgetary considerations for the Nigerian government and nongovernmental organizations, and (2) changes in the roles and responsibilities of personnel at different levels in the logistics system.

USAID/Nigeria asked JSI/DELIVER to assess the current transport management system to establish a common understanding of the Nigerian contraceptive logistics system's performance and transportation management system; and to identify priority problems to improve the overall contraceptive logistics system performance and the probable cause of those problems.

Currently, the contraceptive supply chain in Nigeria is a vertical system managed primarily by the DCDPA of the FMOH. Within the current distribution process three key conditions exist: (1) the contraceptive logistics system is not functioning according to the original plan, (2) contraceptive availability to clients, especially at service delivery points (SDPs) has suffered as a result of the current distribution system, leaving SDPs understocked or completely out of stock, and (3) the warehouses at the Central and State levels are overstocked, resulting in contraceptive supplies expiring or being damaged and eventually being destroyed.

If the redesigned distribution plan is feasible and implemented as agreed, it would mean eliminating one or more levels within the current distribution product flow. Additionally, following preliminary discussions relating to the proposed redesign distribution plan, the delivery cycle would incorporate changes that reflect the redesign plan, and would result in developing a new delivery schedule.

However, before a redesign of this scope can be implemented, the transportation assessment study was required to evaluate all relevant transportation issues, such as staffing, vehicle availability, capacity, maintenance and vehicle utilization, vehicle types, volume (contraceptives), outsourcing, and other critical transportation issues.

Within this context, several questions arose that related to the distribution of FP products and the different levels involved in that process. The study team researched and evaluated the key statement of work (SOW) questions, and from the study results presented the with FMOH six fundamentally sound options for the redesign. As mentioned earlier, currently, there are 36 + 1 (1 is the Federal Capital, Abuja) States and approximately 13,000 primary health care (PHC) facilities and, of the PHC facilities, approximately 4,000 PHC facilities that offer family planning (FP) services (or active FP SDPs). Additionally, it is estimated that 800 FP sites are active at the State and LGA levels (clinics and hospitals). Thus, the proposed redesign of the FP system and its distribution process is a significant change and required an in-depth evaluation for a successful distribution system.

## **Key Questions for Analysis**

1. As proposed, is it feasible for the redesign plan to eliminate one or more levels of the current distribution process and distribute contraceptive products from Central Stores (CS) down to the SDP level (CS to State Stores, State Stores to local government area [LGAs], and LGAs to SDPs)?
2. Do the State Stores have the storage capacity to integrate the redesign program with other vertical programs?
3. What is the cost (overall and incremental/marginal) under the proposed delivery system?
4. Is it possible to outsource transportation and/or distribution of products and supplies relating to the redesign plan?

## II. Assessment Process

To provide answers to the earlier questions, the study team conducted a multi-dimensional assessment that included the following components:

### 1. Developed and Issued Transportation Questionnaires

In partnership with the FMOH, the study team developed and issued transportation questionnaires while making site visits in five States, including Niger, Abia, Bauchi, Edo, and Oyo. Appendix C lists the individual sites visited and the people contacted. The questionnaires address and evaluate issues such as inventory levels, warehouse space, the delivery process, the delivery cost, vehicle capacity, etc., and how to reach key representatives at all levels within the distribution system. Appendix B provides copies of the questionnaires, as well as the worksheets used during the field visits.

Each questionnaire and worksheet focused on a specific level within the distribution system and related topic area:

- Central Stores (Worksheet A)
- All Stores Except Central Stores (Worksheet A-1)
- Delivered and Collected Quantities (Worksheet B)
- Delivery Resources (Worksheet C)
- Budget—Fiscal 2002 Information (Worksheet D).

The results from the questionnaires proved to be a valuable tool to quantify and assess past and present FP inventory levels; review average monthly consumption (AMC) (volume); number of stockouts; expired inventory; deliveries (facility and quantity); vehicle capacity (year, size, and condition); and vehicle budgets (fixed and variable cost). They also provided information about the perception of local stakeholders regarding the overall distribution system, problems and concerns within the system, and what was needed to improve the distribution system.

### 2. Conducted Site Visits and Interviews

The site selection process was completed through a collaborative effort that included the FMOH, CDC, JSI/DELIVER, and Crown Agents. The site selections were somewhat limited due to security issues from USAID/Nigeria. The team made their field site selections using a non-random process. The selection criteria was based on the following:

- high usage areas (volume)
- UNFPA-supported states
- relative size and population of the location

- community ethnicity
- time available to complete the study (influenced from the knowledge and experience of the FMOH staff).

### 3. Reviewed Documents and Interview Information

The study team collected data and information from the following sources:

- UNFPA and JSI/DELIVER. *National Handbook, Contraceptive Logistic Management (draft)*.
- Documents relating to the volume classification of FP sites as low, medium, and high.
- JSI/DELIVER. *A Baseline Assessment of the Contraceptive Logistics System in Nigeria*.
- Site questionnaire data.
- JSI/DELIVER SPARHCS report.
- NEWVERN information (quantity/volume–summary by year) and FP shipment history (1990–2002).
- Discussions with USAID/Nigeria.
- Discussions with staff members from the FMOH and SMOH, LGA, and State FP coordinators, and SDP staff.

The following narrative is an in-depth discussion of the transportation management study that addresses key elements directly related to Nigeria’s distribution process, as it relates to FP commodities. Additionally, a discussion will be presented addressing issues such as vehicle capacity requirements, cost methodology, cost recovery, distribution options, and the potential for outsourcing FP commodities.

## III. Study Methodology

### Availability of Data

The consultants for this assignment used several sources of data to assess Nigeria's current and proposed FP distribution system. The key data required was the volume of commodities to be delivered to each point in the supply chain and the geographical location of each point relative to its supply point, as well as the road network needed to complete the distribution process. The field visits revealed that although there are significant differences in current performance levels State to State; no State visited demonstrated a level of activity that could be categorized as a fully functioning family planning program.

In addition, the availability of historical data was inconclusive. The lengthy stockouts and breakdowns in the collection system, even when stock was available, means that the data available understates true demand, by orders of magnitude.

The numbers and locations of the health facilities providing family planning services were not always readily available at the State and LGA level. The study team visited clinics that were classified as active FP providers. While these clinics were clearly FP providers, the levels of activity, range of methods available, and available stock indicated that, although the Nigerian FP program was committed in its efforts, many programs visited were struggling to survive. It was recognized by both the study team and FMOH that system improvements could greatly enhance its program by concentrating on core supply chain fundamentals, such as improving the LMIS and the monitoring and evaluation process, and by shortening the supply chain.

The study team reviewed the field data collected, and concluded that much of the data would not be appropriate for the assessment or future transport requirements. However, during this time, useful estimates for the cost of particular elements of transportation costs were obtained and crosschecked between FP supervisors and FP coordinators in different States and LGAs.

### Basis for the Study

Due to the type of data available within the existing operations, the DELIVER team needed to develop an approach that would provide the FMOH with realistic and appropriate results for the distribution of FP commodities within Nigeria. Thus, in keeping with the FMOH National Reproductive Health Policy, as well as introducing the redesign of the logistics system, the team felt it was necessary to incorporate additional information in the study, including newly developed materials by the FMOH/CDCPA, UNFPA, CDC, and JSI/DELIVER:

- *National Handbook—Contraceptive Logistic Management System* (draft)
- *Estimates of FP SDPs and Commodity Volumes Required to Seed Family Planning Activity*

At this point, it is extremely important to state that the *Estimates of Commodity Volumes Required to Seed Family Planning Activity* document is an estimate, and is based on the expected number of

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active family planning SDPs in each state. The active family planning SDPs in each State have been categorized as—

- Primary Low
- Primary Medium
- Primary High.

The Seed Kits appropriate to each category have been defined as indicated in appendix D (size and volume). The Seed Kits provide sufficient FP commodities for approximately a four-month period. Following a comprehensive review of the expected quantities and the sizes of the Seed Kits demonstrate that the physical volume and weight of the Kits will be low (i.e., small parcels). It is intended that the redesign program pilot the contraceptive logistics management system (CLMS) in nine States, to provide these pilot states with Seed Kits at the beginning of the trial, and to resupply the SDPs in accordance with the CLMS at two-month intervals.

To achieve the goals and objectives of the transportation study, it was decided to use all relevant data collected (interviews, documents, and field visits), and to specifically base the study on the volume estimates contained in the provisional distribution of Seed Kits. The study team would also examine various options that would provide for the distribution of the required replenishment volumes.

## IV. Transportation Options

### Transportation Concerns

The *National Handbook for Contraceptive Logistics Management System (CLMS)* (draft) contains details of the proposed supply chain. Appendix E (option A1) provides an outline of the supply chain as described in the *National Handbook for CLMS*. The supply chain is based on delivery from the Central Store in Lagos to the State Stores; collection, thereafter, is by the LGAs from State Stores and collections made by the SDPs from the LGA Stores. Additionally, as a result of the October 2002 stakeholders meeting, the Zonal Stores were eliminated from the proposed distribution pipeline. Proposals to eliminate additional levels of the pipeline from the supply pipeline, such as the LGAs, had been rejected by the FMOH. The LGAs are viewed as a key component of the strategy for the delivery of family planning services in Nigeria.

After close examination of the proposed supply chain (above), the study team raised three major concerns, including the following:

1. The transport system was based on a collection of products beneath the State Store level. This requires the active participation of approximately 750 plus LGAs and approximately 4,000 SDPs to ensure that stock moves down the supply pipeline into the hands of consumers (SDP level). The field visits conducted during the study revealed that the failure of LGAs and SDPs to collect products, even when stock was available, is a major contributor to the present FP commodity/distribution situation.
2. The supply pipeline is extremely long—approximately 16.5 months of stock are set to be in the pipeline.
3. The resupply periods—CS to State, State to LGA, LGA to SDP are asynchronous, and this exacerbates the length of the pipeline.

Following an in-depth review and discussion of these concerns, the study team decided to examine various options that would overcome the perceived limitations within the supply chain, but, at the same time, preserve in these options the planned role of both the State and LGA in the logistics management information system. As work on the *National Handbook for CLMS* advances, and with the advent of the pilot States, it was also decided to limit the consideration of alternative options to those that would, in large measure, parallel the FMOH *National Reproductive Health Policy*, as well as be compatible with the principles established in the *National Handbook for Contraceptive Logistics Management System* (draft).

The study team determined that the State's and LGAs' role in the resupply of SDPs would have more impact and function more efficiently as a system if the two levels (States and LGAs) of the distribution chain focused more on the monitoring and evaluation and the approval of requested commodities. This structure would also enable the States and LGAs to provide the required monitoring of the resupply process rather than the actual physical storage and/or handling of the resupply stock.

## Options Considered

To achieve regular and reliable distribution of family planning commodities in Nigeria, and to ensure availability at the SDP levels, the following six options were considered and evaluated, and presented to the FMOH in March 2003. See appendix E for a detailed discussion of each option.

Option A1	The current FMOH/DCDPA proposal as described (above and in appendix E) in the CLMS handbook.
Option A2	The current FMOH/DCDPA proposal as described in the CLMS handbook with the resupply periods synchronized throughout the distribution supply chain.
Option B	Commodity flows as in option A2, but operating as a pass through (cross-dock) operation with delivery to each level.
Option C	Similar to that of option B but with direct delivery from the State to the SDPs.
Option D	Direct delivery from the Central Store to LGAs and onward delivery from LGA to SDPs.
Option E	Direct delivery from the Central Store to the SDPs by a third-party (private sector) parcel carrier (DHL, UPS, and FedEx).

Options B, C, and D options are based on a *stockless* process at both the State and LGA levels.

Options B, C, and D are a basic three-step process:

1. Supply requests are initiated by the SDPs, followed by a monitoring and approval process by both the LGA and State—State FP staff then pass requests to the Central Store.
2. After reviewing the RIF, the Central Store picks and packs resupply consignments for the individual SDPs.
3. All consignments for SDPs in a particular State are delivered to the State, pre-packed, sealed, and labeled.

Depending on the option selected, the consignments would be onward delivered by one of three ways: the State to the LGA to the SDP, the State to the SDP, or the LGA to the SDP. This process resupplies each SDP on a two-month cycle without holding stock at the State or LGA Stores. Emergency stocks are then held at the SDP, ready for use in an urgent situation.

See appendix E for a detailed description of each option and the associated information flows plus an analysis of the advantages and disadvantages of each option.

# V. Methodology Option

## Overview and Discussion of Transport Legs

Each option contains two or three distinct transport legs, either by delivery or collection. The methodologies that were developed allow for an estimation of the resources required to effect each transport leg of each option and to provide an estimate of the cost for each option. In all cases, the following is assumed:

- Seed Kits have a four-month usage.
- SDP resupply period is two months.
- Resupply volumes will be 50 percent of the Seed Kit volumes.

### 1. Central Store (Lagos) to State

With the exception of option E, this transport leg (CS Lagos to States) is delivered and is common to all options. A series of scheduled delivery routes initiating from the Lagos Store was developed to ensure that each State would receive a resupply delivery every two months. Under options A1 and A2, the resupply would be in bulk and, under the other options, the resupply process would be pre-packed for the SDP. However, in either case the volume of commodities would be the same.

States were allocated routes by reference to their geographical position and the national road network. Using distances derived from a large-scale map of Nigeria and the specific order volumes estimated for each State, the length of the route and the total volume for the route were calculated. Where necessary to balance truckloads, States were reassigned to other routes to accommodate more practical and efficient routes. The four delivery routes are presented in appendix H.

Running times for each route were calculated as follows:

- Length of each route
- Number of deliveries.

From the total running time, as well as the expected volumes to be delivered on each route, it was apparent that a single vehicle could complete all routes in a two-month period. A rigid truck with a body of 20 cubic meters mt. capacity would have sufficient capacity to handle the proposed delivery volumes. Additionally, this size and type of truck would have spare capacity to allow for future growth within the FP program. The standing and operating costs associated with this size vehicle were used in the cost estimates. See appendix J for the different categories included in the standing and operating cost.

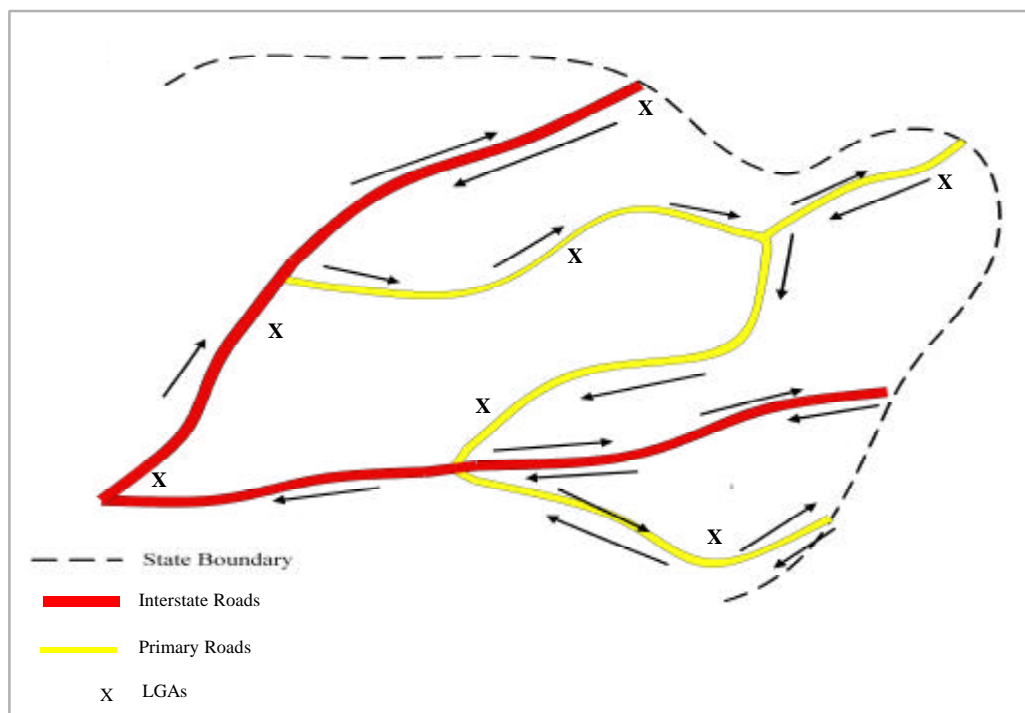
## 2. State to LGA

This transport leg is common to options A1, A2, and B. In options A1 and A2, it is a collection system completed by the LGA. In option B, it is a delivery system by the State to the LGA.

Collection costs were estimated using the simple method of multiplying the number of LGAs in the State by the average cost per collection trip. The collection cost information was obtained from the field visits conducted. Relating to delivery, if maps locating the LGAs within the states had been available, the methodology outlined above (CS to State) would ideally be repeated. However, due to time constraints and the lack of suitable state maps, this was not possible.

However, during field visits it had been noted that LGA Administrations were generally located adjacent to either interstate or primary roads. Therefore, the study team suggested that if individuals were to travel all interstate and primary roads within a state, they would pass all the LGAs in the state. Although simplistic in nature, the team determined that this methodology would be a workable estimate of the kilometers that would be covered with this type of delivery system. (See figure 1.)

**Figure 1.**  
*LGA's Illustration of Principles*



The volumes for each State indicated that State routes could easily be arranged to be within the capacity of a standard, single-cab pickup truck. The kilometers and number of deliveries were used to estimate the number of pickup days required by each state to deliver to its LGAs. During the field visits, the team had obtained an estimate for the cost of hiring a pickup for one day. However, this estimate seemed low compared to the team's experience with hiring a car for one day, so they increased the estimate by 50 percent.

The number of days required for delivery, multiplied by the estimated cost per day, is the estimated delivery cost from the state to LGA.

### **3. LGA to SDP**

From discussions conducted with the FMOH, key stakeholders, and information gathered during the field visits, the study team realized that, in general, there are no LGA transport resources that can be used for a few days, the time required for each two-month period to onward deliveries to the SDPs.

Currently, where collections take place (SDP to LGA), SDPs are dependent on local rural transport (public and private). The SDP in-charge and/or FP staff take the local transport to the LGA and collect the FP commodities. At this point in the FP program, the team determined that there is no practical alternative to using the local transport services either for the collection or the delivery for this leg in the distribution process.

Again, from field visits conducted and discussions with LGA FP supervisors, the staff seemed confident that the operators of local transport can be trusted to deliver FP packages to the SDPs without supervision. They pointed out that the driver/operators often come from the communities they serve and would, therefore, be prepared to deliver to their community clinic.

The estimates used for the return journey fare were used for the collection options and the single fare used for the delivery options. The total cost was estimated from the total SDPs in the state, multiplied by the estimated average fare.

### **4. Private Carrier**

Discussions were conducted with three established parcel carriers in Nigeria (carriers also operate worldwide)—Federal Express (FedEx), United Parcel Service (UPS), and DHL. The three carriers stated that their organization could deliver directly to the SDP level from the Lagos Central Store. In addition, the carriers informed the study team that the deliveries could be completed in approximately three working days. However, as the study team noted, volumes to rural areas are low, and deliveries to locations beyond the immediate locality of their area offices/hubs require additional delivery charges. These distant deliveries are effected using local owner/drivers contracted to the parcel carriers and paid by rates determined by a combination of weight and distance. For the local businessperson, this is a far riskier method of payment than the agreed day rate for scheduled routes of known distance and running time proposed for options B, C, and D.

The study team requested and received delivery rate estimates from all three carriers. Example rates quoted were similar for an SDP in a northern state. Cost estimates for option F were made using the example rates for each zone supplied by UPS. Costs for each state were estimated using the UPS sample rates for the appropriate zone, multiplied by the number of expected active SDPs in the state.



## VI. Transportation Option Cost Comparison

Table 1 displays the estimated costs for each option compared to the estimated income from the proposed cost recovery system:

**Table 1. Summary of Transport Costs per Two-Month Cycle**

	Center	State	LGA	SDPs	Totals
Cost Recovery Income	<b>948,000</b>	<b>1,514,000</b>	<b>1,514,000</b>	<b>6,356,000</b>	<b>10,332,000</b>
Option A1 FMOH	387,800	0	765,000	2,027,500	3,180,300
% of Cost Recovery Margin	40.9%	0.0%	50.5%	31.9%	30.8%
Option A2	487,600	0	1,147,500	2,027,500	3,662,600
% of Cost Recovery Margin	51.4%	0.0%	75.8%	31.9%	35.4%
Option B	567,600	1,687,500	1,013,800	0	3,268,900
% of Cost Recovery Margin	59.9%	<b>111.5%</b>	67.0%	0.0%	31.6%
Option C	567,600	3,225,000	0	0	3,792,600
% of Cost Recovery Margin	59.9%	<b>213.0%</b>	0.0%	0.0%	36.7%
Option D	3,125,600	0	1,013,800	0	4,139,400
% of Cost Recovery Margin	<b>329.7%</b>	0.0%	67.0%	0.0%	40.1%
Option E	14,294,560	0	0	0	14,294,560
% of Cost Recovery Margin	<b>1507.9%</b>	0.0%	0.0%	0.0%	138.4%

Note: At the time of this assessment an exchange rate of \$1 = ₦135 was used.

With the exception of option E, which included the three private parcel carriers, all options can be funded from a reasonable share of the planned margins from the proposed cost recovery system. However, this situation will only continue if the expected number of active SDPs and the average volume per SDP is close to assumptions derived from the provisional Seed Kit distribution plan. After an option is selected, the costs are largely fixed; the Central Store to State Stores delivery routes will take as long and cover the same kilometers regardless of the volume carried (up to the capacity of the chosen truck). The same reasoning applies to State to LGA deliveries. However, costs from State or LGA to SDPs may vary somewhat depending on number of SDPs.

The gulf between current activity and projected activity can be illustrated by evaluating condom usage. Oyo State, for example, was one of the more active states visited during this study. In the six months from September 2002 to February 2003, Oyo State Store issued 25,000 condoms. The Seed Kits for Oyo State contain 84,000 condoms and, therefore, the replenishment assumed for this study is 42,000 per two months; five times the current usage. As mentioned and to reinforce the above illustration, if there is a wide gap between the actual consumption and estimated rates for an extended period of time, the current cost recovery system will not support the cost of distribution.



## VII. Recommended Options

The study team recommends that either option B or option C be adopted for implementation in Nigeria's FP distribution program. Option B most closely matches the supply chain in the contraceptive logistics management system handbook, but it introduces a positive delivery structure from all levels of the system. Option B removes the uncertainty of a collection process and also functions as a *pass through* system. Under option B, stock is held at only two points within this system. FP stock is held at either the State or SDP level. As mentioned earlier, appendix E provides an in-depth discussion (overview, advantages, and disadvantages) as it relates to option B. Also, appendix F offers a comprehensive overview of the process for the information and commodity flow for option B.

Option C departs from the supply chain of the CLMS handbook by introducing a direct delivery process from the State to the SDPs. Option C is more expensive than option B (see table 1). The fact that a pickup truck travels from the State to every active SDP, and because LGAs have SDPs in the vicinity of every LGA, provides a valuable opportunity for State FP staff. Under option C, the State FP staff is able to accompany the delivery driver for monitoring and evaluation purposes at either the LGA level or the SDP level. This option also eliminates the need to use local rural transport for the final delivery. In the team's opinion, these benefits more than outweigh the moderate additional cost of this option.

If option C is adopted by the FMOH, as seen in table 1, all the transport costs are concentrated at the Central Stores and State levels. There are no transport costs borne by the LGAs or SDPs. However, using option C will require a redistribution of the Cost Recovery System margins. Appendix E provides additional details of option C, and appendix F presents a comprehensive overview of the process for the information and commodity flow for option C.

Regardless of the option chosen, the study team recommends that the reordering process be modified to simplify the procedures for the SDP providers and to provide additional information to the State and LGA staff.



## VIII. Private Sector Involvement

As mentioned earlier, due to time constraints, only limited discussions were carried out with private sector transportation companies—three parcel carriers (UPS, FedEx, DHL) located in Nigeria. There are, however, obvious opportunities for the private sector to be included in this system. Additional investigation needs to be completed before the private sector is involved in either of the recommended options.

The transport leg from the Central Store to the State would certainly be attractive to various types of private transportation contractors, because the routes and volumes fully occupy a single truck. Additionally, the long, empty return leg offers carriers the opportunity to earn revenue on the return journey (back-loads); this should either be reflected in the cost recovery rates or as a share of the return journey revenue.

Based on the concerns expressed by the FMOH (during the presentation) relating to the productivity, wages, and diligence of government employed staff, it might be advisable to contract out the picking and packing operations at the Central Store in Lagos. In this type of operation (outside contractors complete the picking and packing), the center would provide a single supervisor to be responsible for the stock, to receive stock requisitions and issue picking orders, and to supervise the contractor. The contractor's staff would pick from a restricted local supply, pack and seal, and label consignments. The contractors would not have access to the bulk stock at the Central Store. Additionally, as part of the smooth transition of the transport operation, much depends upon the available consignments for the next route available after the trucks return to the Central Store. Exploring the use of a transport contractor may be a sensible choice for this aspect of the picking and packing operation.

Moreover, unless pickup trucks can be reliably borrowed/hired from State sources each month, deliveries from State to SDPs can only be affected economically by use of contractors. The distribution pattern is characterized by high levels of activity for short periods every two months; thus, it is uneconomic to consider providing pickups to all States—it is the classic fire engine situation.

*In keeping with the goals and objectives of the proposed system, local State contractors should be chosen carefully to ensure a consistent and reliable service. Appendix G presents a suitable process for the selection and appointment of a contractor.*



## IX. Pilot States

The DCDPA of the FMOH and other FP partners (JSI/DELIVER, UNFPA) intend to pilot the new CLMS program in nine pilot states. These states have been chosen as good representatives of Nigeria. They present something of a challenge from a transport perspective due to the remoteness of some of the pilot states. However, by applying the same methodology used in the main study, a set of two delivery routes have been developed to supply the nine pilot states (see appendix I).

A single truck can complete the two delivery routes within a month, and the proposed 20 m<sup>3</sup> truck would have sufficient capacity for the Seed Kits required for each route. It will, therefore, have more than sufficient capacity for the expected replenishment Seed Kits required for the pilot states. The extra capacity on the replenishment journeys can eventually be used to deliver Seed Kits to additional states as the program is extended.

It is important to note that careful planning will be required to effect the changeover from the pilot routes to the long-term routes without disrupting deliveries. This should, therefore, be a central consideration when choosing the order of the roll-out to additional states.



# Appendices

- A. People Contacted
- B. Sample of Questionnaires and Worksheets
- C. Sites Visited and Contacts
- D. Seed Kits—Quantity, Volume, and Weight
- E. Transportation Options A1, A2, B, C, D, and E
- F. Information and Commodity Flows and Sample Documentation
- G. Suggested Process for Appointing Contractors at the State Level
- H. Primary Delivery Routes
- I. Pilot States Delivery Routes
- J. Examples of Standing and Running Cost



**Appendix A**  
**People Contacted**



# People Contacted

Organization and Name	Position
<b>Federal Ministry of Health</b>	
Dr. A. Dada	Family Planning In-Charge–Population Activities Contraceptives, FMOH/DCDPA
Ralph Olayele	Senior Program Officer, FMOH/DCDPA
Greg Izuwa	Senior Program Officer, FMOH/DCDPA
Y. Abdullahi	Senior Program Officer, FMOG/DCDPA
Musa Odiniya	Principal Program Officer (logistics) FMOH/DCDPA
Dr. Bose Adeniran	Chief Program Officer (services) FMOH/DCDPA, Lagos
Dr. Lawrence Anyanwu	Senior Health Planning Officer/Manager, Central Contraceptive Warehouse, FMOH/DCDPA
Ms. Pauline Aribisala	Assistant Chief Program Officer FMOH/DCDPA
Dr. M.S. Amaeshi	Director FMOH/DCDPA
Dr. Taiwo Avbayeru	Chief Program Officer, M&E Divisions, FMOH/DCDPA
<b>Niger State</b>	
Ms. Abigail Tsado	Acting Director Primary Health Care Department, Niger State
Ms. Azinab Aminu	Deputy FP Coordinator, Niger State MOH, Niger State
Ms. Hadiza Suleiman	Maternal Child Health/Family Planning (MCH/FP), Niger State
Abdullahi Abdul Bobi	Family Planning Stores Officer, Niger State
Fati Suleiman	Assistant Family Planning Stores Officer, Niger State
Dr. Abdul Saganuwan	Medical Officer In-charge, Agaie General Hospital, Niger State
Ms. Iyabo A. Usman	Matron In-charge, Agaie General Hospital, Niger State
Hajia Aishat Baba Yawo	FP Service Provider, Agaie MCH FP Clinic, Niger State
Ms. Jumai Ibrahim	FP Service Provider, Family Support Program, Niger State
Ms. Elizabeth Adams	Assistant Service Provider, Family Support Clinic, Niger State
Ms. E.A. Osgelle	Nursing Officer I, Federal Medical Center Family Planning Unit, Abia
Ahmed Liman Kwata	Director Primary Health Care, LGA Niger State
<b>Abia State</b>	
Ms. Sarah Onwuka	State Reproductive Health (RH) Coordinator, Abia
Francisca Kalu	RH Deputy Coordinator, Abia
Ms. E.A. Osgelle	Nursing Officer I, Federal medical Center Family Planning Unit
G.N. Odachi	Principal Nursing Officer In-Charge, Federal Medical Center Family Planning Unit
Ms. Flora C. Ichi	RH/FP Supervisor, Umuahia North LGA
Eunice Ukwa	RH/FP Provider–Senior Nursing Officer, Aribisala, Kalu
Rachel O. Onwukwe	Senior Community Health Technician, Aribisala, Kalu
Mrs. Chinaza V. Jorah	Community Health Extension Worker, Aribisala, Kalu
Dr. Abai A.A	Senior Medical Officer, Akahaba General Hospital
Mr. Helen Udeagha	In-Charge Principal Nursing Officer, Akahaba General Hospital
Mrs. Comfort O. Obasi	Assistant Chief Nursing Officer, Akahaba General Hospital
Mrs. C.N. Huonah	Principal Public Health Nursing Officer, Isiama Health Center
Mrs. F. E. Omoruyi	RH Supervisor, Ikpoba Okha LGA
<b>Edo State</b>	
Mr. B. I. Ukenye	Zone Logistics Officer, South South Zone
<b>Benin City</b>	
Dr. P. Equakun	Director PHC

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Organization and Name	Position
Dr. W. Imongan	State FP Coordinator
Mrs. S. D. Ojo-Edokpayi	RH Deputy Coordinator
Mrs. J. N. Agbonlahor	MIS Officer
Mrs. A. Aerefetalar	RH Supervisor, Esan West LGA
<b>South West Zone</b>	
Mrs. Oyesiji	Acting Zonal Coordinator, Zonal Store
Mr. K. Adebiji	Zonal Store Keeper
<b>Bauchi State</b>	
Mrs. M. Habib	Senior Stores Officer, Bauchi State
Salamatu Yisa	Assistant Maternal Child Health (MCH) Coordinator, Bauchi LGA
Mrs. Hafsat Abdullahi	Chief Health Sister, Family Planning Clinic
Mrs. Caroline Dogo	Chief Health Officer (CHO), Family Planning Clinic
Adamu Ahmed	Administration Officer/Logistics, Zonal Store
Ibrahim Bavangeri	Senior Stores Officer, Zonal Store
Alhaji Abubarka Usman	State Logistician
Ahmed Saleh	Director PHC, Dass LGA
Alhaja Hussaina Usman	FP Coordinator, Dass LGA
Mrs. Dinatu S. Abbas	Assistant Coordinator Health Education Women Affairs PHC
Mrs. Rebecca Y. Adamu	Assistant Chief Nursing Sister State Trainer for UNFPA
Addukardiri Mohammed Bunjang	Monitoring and Evaluation Officer PHC
Maryam Hashim	Senior Nursing Sister, Town Maternity Clinic
Dr. Augustine Atawodi	Medical Officer In-Charge, Town Maternity Clinic
Mrs. Ramatu Benjamin	Senior Nursing Sister, Wandu Maternity Clinic
<b>PPFN</b>	
Paul Gotus	Account Officer, PPFN, Bauchi
<b>Private Carriers</b>	
Seun Oyeleye	Service Center Coordinator, DHL
Kayode Bankole	Major Accounts Administrator, UPS
Ms. Grace	Accounts Representative, FedEx
<b>USAID/Nigeria</b>	
Foyin Oyebola	Program Manager RH, USAID-Nigeria
<b>CDC</b>	
Timothy Johnson, Dr.P.H, MSc.	Chief, Program Services and Evaluation Section, Division of Reproductive Health, CDC
<b>CIDA</b>	
Dr. Martin K. Osubor	Development Officer, Development Section, CIDA
<b>US Embassy</b>	
David Kasten	Assistant Regional Security Officer
<b>JSI/DELIVER</b>	
John Durgavich	Country Team Leader, JSI/DELIVER

## **Appendix B**

# **Sample Questionnaire Forms and Worksheets**



## Interview Guide Used during Field Visits

March 3–21, 2003

### Central Store Version

#### Inventory/Stock

How many family planning products do you stock?

Please complete a row in **Worksheet A** for each product stocked (Please treat different pack sizes of a product as a separate row)

Is your store dedicated to family planning products?

If not what other products are stored?

Approximately how much space is used for storing family planning products (Sq. Ms)?

#### Deliveries

How many points do you supply?

Please complete a row in **Worksheet B** for each supply point, please categorize each supply point in category column, e.g. Teaching Hospital, Zonal Store, State Store, State hospital, these names are examples only; please use the actual names recognized in Nigeria.

For each delivery point please complete a copy of **Worksheet C**

#### Delivery Resources

Do you have any delivery trucks available to you, if so how many?

If you have delivery trucks please complete a row in **Worksheet C** for each truck.

#### Delivery Costs

Do you have a transport/delivery budget?

If so, please provide a copy for fiscal 2002 or complete **Spreadsheet D**.

If not who pays your delivery costs?

**All worksheets are also available as an Excel Spreadsheet**

**Process Time** (please indicate in days or hours):

**Incoming Stock**

How long does it take you to receive a shipment?

How long does it take you to unpack and check each delivery?

How long does it take before new stock is available for dispatch?

**Outgoing Stock**

How long does it take you to process a typical delivery order?

How long does it take to pick and pack a typical order?

What is the major cause of delay?

What do you like about the current distribution system for family planning products?

Please describe the things that currently go wrong with the receiving and distribution process at CMS.

How could the current distribution system for family planning products be improved?

## Interview Guide Used during Field Visits

March 3–21, 2003

### Zonal, State and Local Government Stores version

Store Name:

Type of Store (Zonal, State, LGA)

Location:

### Inventory/Stock

How frequently should you be resupplied with family planning products by CS, Zonal Store, State Store (mark as appropriate)?

In practice, how frequently are you actually resupplied?

How would you describe the availability of family planning products from your supply point?

Do you obtain supplies of family planning products from any other sources; if so from where?

How many family commodities do you stock?

Please complete a row in **Worksheet A** for each family planning product stocked (you do not need to complete the pack measurements (columns G to I)

(Please treat different pack sizes of a product as a separate row)

Is your store dedicated to family planning products?

If not what other products are stored?

Approximately how much space is used for storing family planning products (Sq. Mt.)?

### **Deliveries**

How many points do you supply?

Please complete a row in **Worksheet B** for each supply point, please categorize each supply point in column B, e.g., State store, State hospital, Health Facility, these names are examples only; please use the names recognized in Nigeria.

For each supply point (or sample of supply points if you have been asked to provide data for a sample only) please complete a copy of **Worksheet B**.

Do you ever collect supplies?

If so, from which locations and how frequently?

### **Delivery/Collection Resources**

Do you have any delivery trucks available to you, if so how many?

If you have delivery trucks please complete a row in **Worksheet C** for each truck.

What other products, if any, do you deliver with family planning products?

### **Delivery Costs**

Do you have a transport/delivery budget?

If so, please provide a copy for fiscal 2002 or complete **Worksheet D**.

If not, who pays your delivery costs?

### **All worksheets are also available as an Excel Spreadsheet**

**Process Time** (please indicate in days or hours):

#### **Incoming Stock**

How long does it take you to receive a shipment?

How long does it take you to unpack and check each delivery?

How long does it take before new stock is available for dispatch?

## Outgoing Stock

How long does it take you to process a typical delivery order?

How long does it take to pick and pack a typical order?

What is the major cause of delay?

Do you have a computer available with MS Excel?  
Access?

Enter Version

What do you like about the current distribution system for family planning products?

Please describe the things that currently go wrong with the receiving and distribution process at this store and other locations.

How could the current distribution system for family planning products be improved?

Worksheet A

Facility Name

Central Store

Date

Stocks

Pack Dimensions

Product	Product Code	Pack Qty	Qty in Stock	Qty within 6 months of expiry	Qty expired	Average Monthly Usage	Height in cms	Width in cms	Length in cms
Condoms female									
Condoms male									
Depo-Provera 150 mg									
Exluton/Ovrette									
IUCD									
Lo-Femenal/Duofem									
Microgynon									
Neogynon									
Neo-Sampoon									
Nordiol									
Noristerat 200 mg									
Norplant									
Postinor - 2									
Syringe disposable 2ml 21G									

**Worksheet A (All Stores except CS)**

Facility Name

**Stocks**

State

Date

Product	Product Code	Pack Qty	Qty in Stock	Qty within 6 months of expiry	Qty expired	Average Monthly Usage	Frequency of stock outs
Condoms female							
Condoms male							
Depo-Provera 150 Mg							
Exluton/Ovrette							
IUCD							
Lo-femenal/Duofem							
Microgynon							
Neogynon							
Neo-Sampon							
Nordiol							
Noristerat 200 mg							
Norplant							
Postinor - 2							
Syringe disposable 2ml 21G							

Worksheet B  
Delivered/Collected Quantities

Facility Name   
 State   
 Date

Facility	Category	Distance in Kms	Expected Delivery Frequency	Actual delivery frequency	Fiscal 2002 Quantities														Cost per delivery		
					Condoms female	Condoms male	Depo-Provera 150 Mg	Exluton/Ovrette	IUCD	Lo-Femenal/ Duofem	Microgynon	Neogynon	Neo-Sampon	Nordiol	Noristerat 200 mg	NORPLANT	Postinor - 2	Syringe disposable 2ml 21G			
1																					
2																					
3																					
4																					
5																					
6																					
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14																					
15																					
16																					
17																					
18																					
19																					
20																					
21																					

**Worksheet D**

**Budget - Fiscal 2002**

**Facility Name**

**State**

Date	

	Example		Enter your Data Below	
	Budget	Actual	Budget	Actual
<b>Fixed Costs</b>				
Vehicle depreciation	16789800	16770000		
Licenses	45670	46500		
Insurance	567800	670000		
Staff Salaries				
Office costs				
Office equipment depreciation				
Telephones	n/a	n/a		
Electricity charges				
<b>Variable Costs</b>				
Driver salaries	1987000	2185700		
Driver allowances	496750	546425		
Driver overtime	198700	218570		
Vehicle repair and	1827120	1918476		
Fuel and oil	4567800	4796190		
Tires (if not included in R&M)	na			
Accident repairs	150000	255000		
Hired transport	456000	512000		



**Appendix C**  
**Sites Visited and Contacts**



## Sites Visited and Contacts

<b>North Central</b>		
Niger State	Niger State MOH, Minna	<ul style="list-style-type: none"> <li>Ms. Abigail Tsado, Acting Director Primary Health Care Department</li> <li>Ms. Hadiza Suleiman, Maternal Child Health/Family Planning (MCH/FP)</li> </ul>
	MOH FP Store, Minna	<ul style="list-style-type: none"> <li>Ms. Hadiza Suleiman, Maternal Child Health/Family Planning (MCH/FP)</li> <li>Abdullahi Abdul Bobi, Family Planning Stores Officer</li> <li>Fati Suleiman, Assistant Family Planning Stores Officer</li> </ul>
	Niger State Local Government Area (LGA), Agaie	<ul style="list-style-type: none"> <li>Ahmed Liman Kwata, Director Primary Health Care</li> <li>LGA Staff, Agaie</li> </ul>
	Niger State, Agaie General Hospital	<ul style="list-style-type: none"> <li>Dr. Abdul Saganuwan, Medical Officer In-charge</li> <li>Ms. Iyabo A. Usman, Matron In-charge</li> </ul>
	Niger State, Agaie MCH FP Clinic	<ul style="list-style-type: none"> <li>Hajja Aishat Baba Yawo, FP Service Provider</li> </ul>
	Niger State, Family Support Program Clinic and Paiko Model Clinic	<ul style="list-style-type: none"> <li>Ms. Jumai Ibrahim, FP Service Provider</li> <li>Ms. Elizabeth Adams, Assistant Service Provider</li> </ul>
<b>South East</b>		
Abia State	Abia State UNFPA/MOH, Umuahia	<ul style="list-style-type: none"> <li>Ms. Sarah Onwuka, State Reproductive Health (RH) Coordinator</li> <li>Francisca Kalu, RH Deputy Coordinator</li> </ul>
	<ul style="list-style-type: none"> <li>Federal Medical Center Family Planing (FP) Unit, Umuahia</li> </ul>	<ul style="list-style-type: none"> <li>Ms. E.A. Osgelle, Nursing Officer I</li> <li>G.N. Odachi, Principal Nursing Officer In-Charge</li> </ul>
	<ul style="list-style-type: none"> <li>Umuahia North Local Government Area (LGA)</li> </ul>	<ul style="list-style-type: none"> <li>Ms. Flora C. Ichi, RH/FP Supervisor</li> </ul>
	<ul style="list-style-type: none"> <li>Urban Clinic, Umuahia North LGA</li> </ul>	<ul style="list-style-type: none"> <li>Ms. Flora C. Ichi, RH/FP Supervisor</li> <li>Eunice Ukwu, RH/FP Provider–Senior Nursing Officer</li> </ul>
	E.K. Pankume Health Center Abiriba, Ohafia LGA	<ul style="list-style-type: none"> <li>Onwukwe Rachel O, Senior Community Health Technician</li> <li>Mrs. Chinaza V. Jorah, Community Health Extension Worker</li> </ul>
	Akahaba General Hospital, Abiriba	<ul style="list-style-type: none"> <li>Dr. Abai A.A., Senior Medical Officer</li> <li>Mr. Helen Udeagha, In-Charge Principal Nursing Officer</li> <li>Mrs. Comfort O. Obasi, Assistant Chief Nursing Officer</li> </ul>
	Isiama Health Center	<ul style="list-style-type: none"> <li>Mrs. C.N. Huonah, Principal Public Health Nursing Officer</li> </ul>
<b>North East</b>		
Bauchi State	Bauchi Store, Bauchi	<ul style="list-style-type: none"> <li>Mrs. M. Habib, Senior Stores Officer</li> </ul>
	Bauchi LGA	<ul style="list-style-type: none"> <li>Salamatu Yisa, Assistant Maternal Child Health (MCH) Coordinator</li> </ul>
	Cofar Wase Family Planning Clinic, Bauchi	<ul style="list-style-type: none"> <li>Mrs. Hafsat Abdullahi, Chief Health Sister</li> </ul>
	Yelwa Domicilliary Clinic	<ul style="list-style-type: none"> <li>Mrs. Caroline Dogo, Chief Health Officer (CHO)</li> </ul>

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<b>North East</b>	Planned Parenthood Federation Of Nigeria (PPFN)	<ul style="list-style-type: none"> <li>Paul Gotus, Account Officer, PPFN</li> </ul>
	National Primary Health Care Development Zonal Headquarters NE MOH Bauchi	<ul style="list-style-type: none"> <li>Adamu Ahmed, Administration Officer/Logistics</li> <li>Ibrahim Bavangeri, Senior Stores Officer</li> <li>Alhaji Abubarka Usman, State Logistician</li> </ul>
	Dass LGA, Bauchi State	<ul style="list-style-type: none"> <li>Ahmed Saleh, Director PHC Dass LGA</li> <li>Alhaja Hussaina Usman, FP Coordinator, Dass LGA</li> <li>Mrs. Dinatu S. Abbas, Assistant Coordinator Health Education Women Affairs PHC</li> <li>Mrs. Rebecca Y. Adamu, Assistant Chief Nursing Sister State Trainer for UNFPA</li> <li>Addukardiri Mohammed Bunjang, Monitoring and Evaluation Officer PHC</li> </ul>
<b>South South</b>		
Edo State	Zonal Office	<ul style="list-style-type: none"> <li>Mr. B. I. Ukenye, Zone Logistics Officer</li> </ul>
	Benin City MOH	<ul style="list-style-type: none"> <li>Dr. P. Equakun, Director PHC</li> <li>Dr. W. Imongan, State FP Coordinator</li> <li>Mrs. S. D. Ojo-Edokpayi, RH Deputy Coordinator</li> <li>Mrs. J. N. Agbonlahor, MIS Officer</li> </ul>
	Esan West LGA	<ul style="list-style-type: none"> <li>Mrs. A. Aerefetalar, RH Supervisor</li> </ul>
	Ikpoba Okha LGA	<ul style="list-style-type: none"> <li>Mrs. F. E. Omoruyi, RH Supervisor</li> </ul>
<b>South West</b>		
Oyo State	South West Zonal Store	<ul style="list-style-type: none"> <li>Mrs. Oyesiji, Acting Zonal Coordinator</li> <li>Mr. K. Adebisi, Zonal Store Keeper</li> </ul>
	Oyo State MOH	<ul style="list-style-type: none"> <li>Dr. F. Ogundiran, Director of PHC</li> <li>Dr. Mrs. O. Oyelakin, RH Coordinator</li> <li>Mrs. M. M. Ojediran, FP Coordinator</li> <li>Mrs. V. Odugbesaan, Logistics Officer</li> </ul>

**Appendix D**

**Seed Kits—Quantity, Volume, and Weight**



# Seed Kits—Quantity, Volume, and Weight

Primary Low Commodity	Represented By	Quantity	Volume cubic meters	Weight (kg)
Condoms	Condoms Male	144	2.33	0.70
COCS	Microgynon	20	0.25	0.07
POPS	Exluton/Overette	0	0.00	0.00
Injectables	Depo Provera 150 Mg Inj	25	0.29	0.23
IUCD	IUCD	0	0.00	0.00
Syringes	Syringe disposable 2m 121 g	25	0.78	0.31
<b>Pack Totals</b>			<b>3.65</b>	<b>1.32</b>
<b>Primary Medium</b>				
Condoms	Condoms Male	432	6.99	2.10
COCS	Microgynon	100	1.23	0.37
POPS	Exluton/Overette	20	0.45	0.13
Injectables	Depo Provera 150 Mg Inj	100	1.16	0.92
IUCD	IUCD	10	1.65	0.50
Syringes	Syringe disposable 2m 121 g	100	3.14	1.26
<b>Pack Totals</b>			<b>14.62</b>	<b>5.28</b>
<b>Primary High</b>				
Condoms	Condoms Male	1440	23.31	6.99
COCS	Microgynon	200	2.45	0.74
POPS	Exluton/Overette	100	2.23	0.67
Injectables	Depo Provera 150 Mg Inj	400	4.62	3.70
IUCD	IUCD	40	6.61	1.98
Syringes	Syringe disposable 2m 121 g	400	12.56	5.02
<b>Pack Totals</b>			<b>51.79</b>	<b>19.11</b>
<b>Replenishment Kits</b>				
<b>Primary Low</b>				
Condoms	Condoms Male	72	1.17	0.35
COCS	Microgynon	10	0.12	0.04
POPS	Exluton/Overette	0	0.00	0.00
Injectables	Depo Provera 150 Mg Inj	12.5	0.14	0.12
IUCD	IUCD	0	0.00	0.00
Syringes	Syringe disposable 2m 121 g	12.5	0.39	0.16
<b>Pack Totals</b>			<b>1.83</b>	<b>0.66</b>
<b>Primary Medium</b>				
Condoms	Condoms Male	216	3.50	1.05
COCS	Microgynon	50	0.61	0.18
POPS	Exluton/Overette	10	0.22	0.17
Injectables	Depo Provera 150 Mg Inj	50	0.58	0.46
IUCD	IUCD	5	0.83	0.25
Syringes	Syringe disposable 2m 121 g	50	1.57	0.63
<b>Pack Totals</b>			<b>7.31</b>	<b>2.64</b>
<b>Primary High</b>				
Condoms	Condoms Male	720	11.66	3.50
COCS	Microgynon	100	1.23	0.37
POPS	Exluton/Overette	50	1.12	0.33
Injectables	Depo Provera 150 Mg Inj	200	2.31	1.85
IUCD	IUCD	20	3.31	0.99
Syringes	Syringe disposable 2m 121 g	200	6.28	2.51
<b>Pack Totals</b>			<b>25.90</b>	<b>9.55</b>



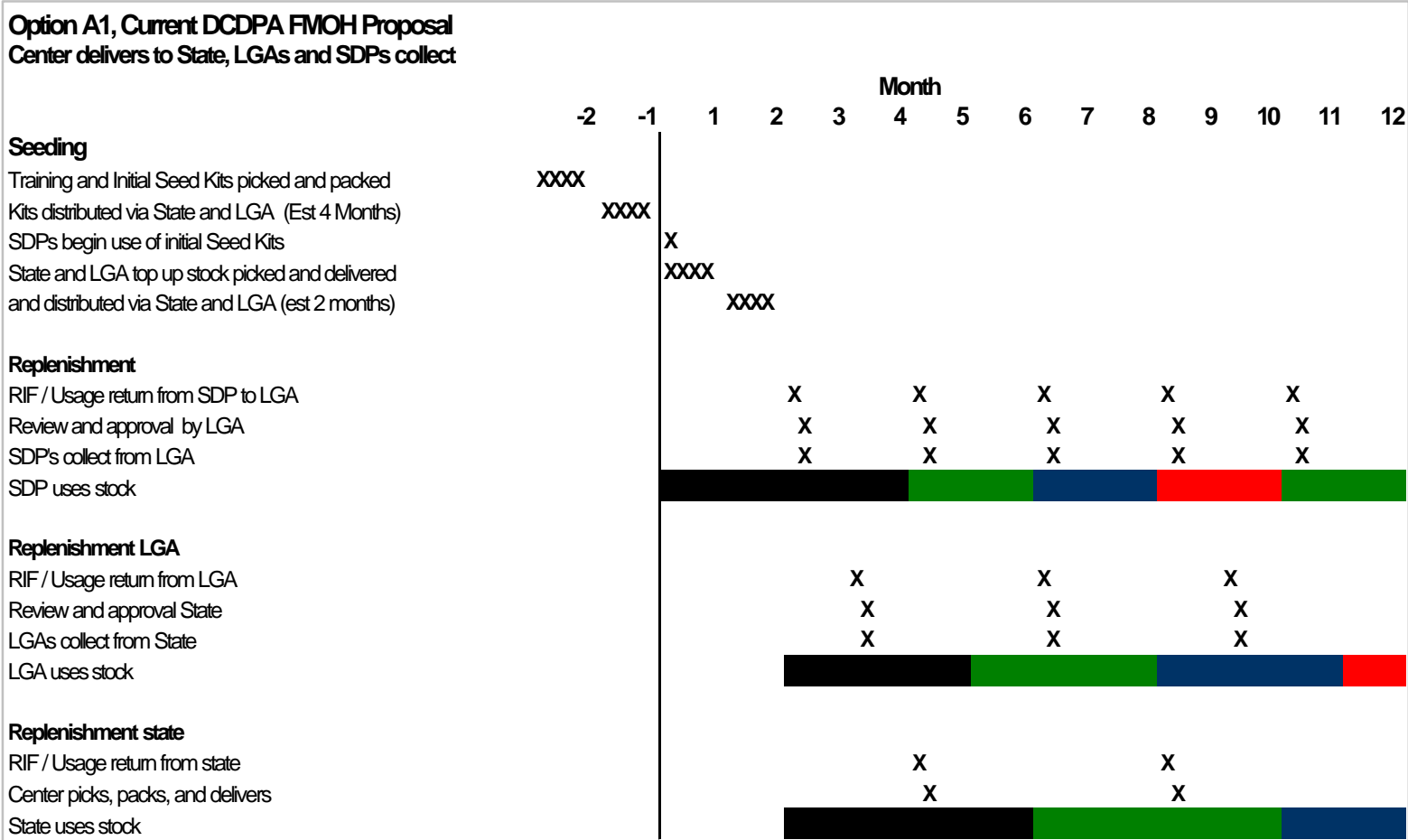


**Appendix E**  
**Transportation Options**  
**A1, A2, B, C, D, and E**



# Transportation Options

## Option A1



*Option A1 (The current DCDPA FMOH draft proposal, National Handbook—Contraceptive Logistic Management System)*

### **Description:**

Option A1 is the transportation system described in the CLMS Handbook. This option was developed and intended to operate as follows:

- Every second month the SDP provider will complete a requisition information form (RIF), and take the completed RIF to their respective LGA.
- The LGA reproductive health (RH) Supervisor will examine the RIF and authorize issue.
- The SDP FP provider will collect stock from the LGA Store, wait while it is picked and packed, and take it back to the SDP.
- Every three months the LGA Store will complete its RIF and take the completed RIF to the State.
- The State Coordinator will inspect the RIF and authorize issue.
- The LGA RH Supervisor will collect stock from the State Store, wait while it is picked and packed, and take the FP products back to the LGA.
- Every four months the State Store will complete a RIF and send it to the Central Store in Lagos.
- The Central Store will pick and pack the replenishment stock and deliver to the State Store.

### **Advantages:**

- SDPs should be resupplied regularly every two months.
- Stock is available at both the LGA level and State level for service emergency orders.

### **Disadvantages:**

- The pipeline is an improvement from past practice, but it is still too long. Under this option, the average stock holding is seven months at the State Store, five and a half months at the LGA Store, and four months at the SDP—an average of 16.5 months stock in the pipeline,
- The supply periods are asynchronous, which adds to the length of the pipeline.
- When initiating the pilot States, it will be necessary to determine the available stock at both the State and LGA levels, and to provide additional stock to seed these levels.

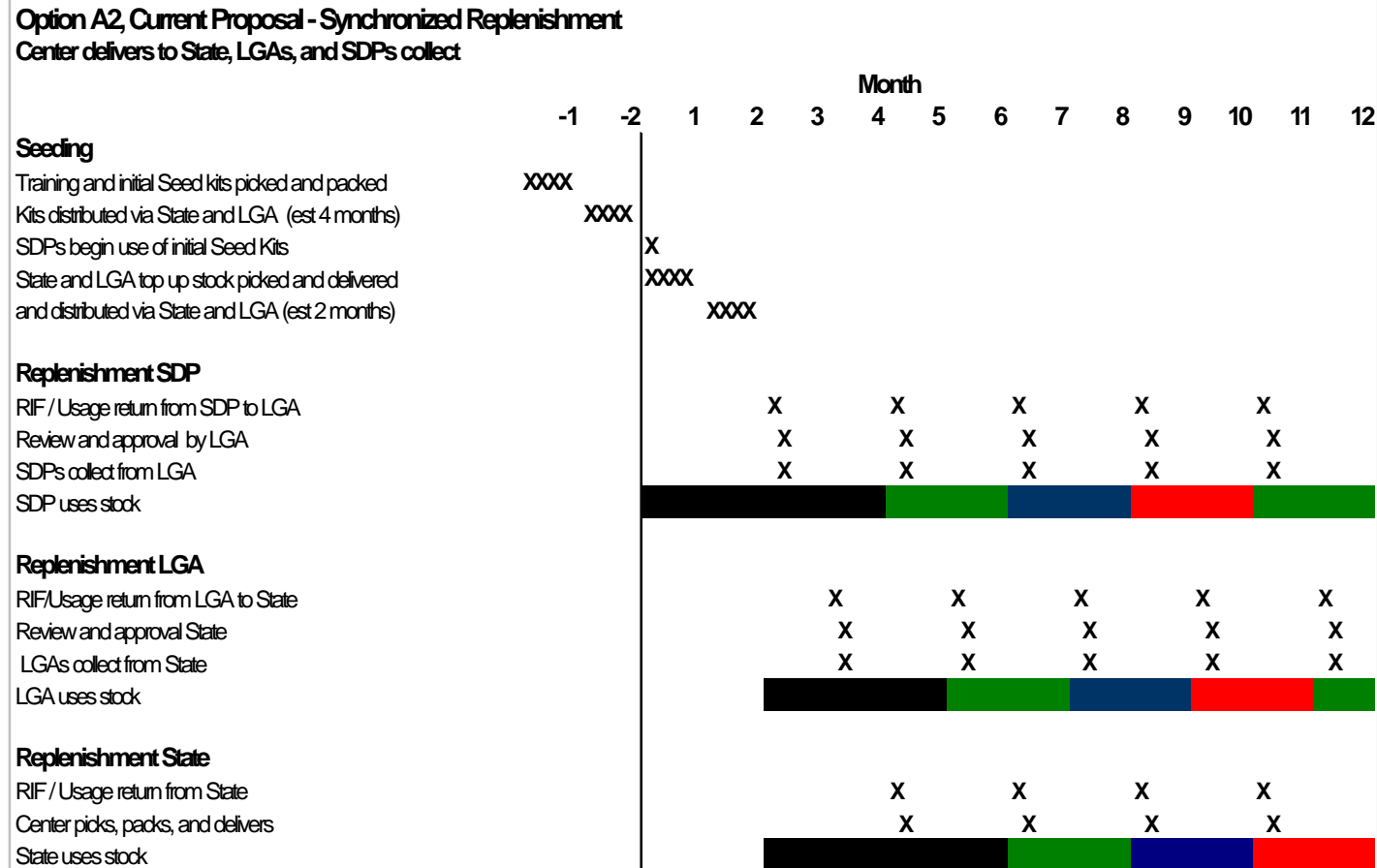
## **Nigeria: Assessment of Transportation System and Distribution Costs**

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- It requires a long time for changes in demand at SDP level to be reflected in the demand at Central Stores. This situation necessitates a parallel data system for demand forecasting.
- Staff at both the LGA and SDP level must find a way to transport collections. Under the current arrangements, failure to collect at these levels has been a major cause of failure.
- Payment for transport cost is dependent upon the availability of funds at both LGA and SDP levels.
- If the transport cost at the SDP level is funded from their margin in the cost recovery system, small remote SDPs will have the highest transport cost but the lowest available funds.
- To make stock collections, RH staff are diverted from their normal duties.
- FP providers are expected to complete a stock requisition form and perform their own calculations for reorder quantities.

# Transportation Options

## Option A2



*Option A2* (As in option A1, option A2 reflects the current DCDPA FMOH proposal but with synchronized replenishment.)

### **Description:**

This option for the transport system is also described in the CLMS Handbook, however, it is *modified* to provide synchronized replenishment to all levels.

### **Advantages:**

- SDPs are resupplied regularly every two months.
- Stock is available at both the LGA level and State level to service emergency orders.
- Pipeline stock is reduced to 12 months.

### **Disadvantages:**

- When initiating the pilot states, it will be necessary to determine the available stock at both the State and LGA levels and provide additional stock to seed these levels.
- It requires a long time for changes in demand at SDP level to be reflected in the demand at Central Stores. This situation necessitates a parallel data system for demand forecasting.
- Staff at both the both the LGA and SDP level must find a way to transport collections. Under the current arrangements, failure to collect at these levels has been a major cause of failure.
- Payment for transport cost is dependent upon the availability of funds at both LGA and SDP levels.
- If the transport cost at the SDP level is funded from their margin in the cost recovery system, small remote SDPs will have the highest transport cost but the lowest available funds.
- To make stock collections, RH staff are diverted from their normal duties.
- FP providers are expected to complete a stock requisition form and perform their own calculations for reorder quantities.

# Transportation Options

## Option B

### Option B, pass through delivery

Delivery; center to State to LGAs to SDPs

	Month													
	-1	-2	1	2	3	4	5	6	7	8	9	10	11	12
<b>Seeding</b>														
Initial Seed kits pick and packed	XXXX													
Kits distributed via State and LGA (est 4 months)		XXXX												
Begin use of initial Seed Kits			X											
Top up Seed Kits pick and packed and distributed via State and LGA ( 2 months)				XXXX	XXXX									
<b>Replenishment</b>														
Stock return from SDP				X		X		X		X		X		
LGA Coordinator calculate consumption, raises RIF				X		X		X		X		X		
RIF/Usage return to State from LGA				X		X		X		X		X		
RIF/ Usage Return to Center from State				X		X		X		X		X		
Center picks/ packs and dispatches to States						XXXX		XXXX		XXXX		XXXX		XXXX
State delivers to LGA							X		X		X		X	
LGA delivers to SDP							X		X		X		X	
SDP uses stock														

### *Option B (Pass Through, or Cross-Dock System)*

#### **Description:**

A pass through or cross-dock operation provides various advantages, such as stock moving in bulk over long distances to reduce transport costs and the division of the shipments into smaller convenient loads for local delivery. However, option B differs from traditional distribution systems in that no stock is held at the point where the shipments are sub-divided; the *break bulk point*. Instead, the incoming load is unloaded from the long distance truck, sorted into the local delivery routes on the dock, and then reloaded onto the local delivery vehicle (hence the term cross-dock).

Option B is similar in terms of product flow to option A. However, it differs in that it introduces two break bulk points at the State and LGA levels rather than holding stock at those levels (i.e., no stock is held at either the State or LGA level). Orders for SDPs are picked and packed at the Central Store and delivered via the State and LGA to the SDP.

Stock is held only at two points, the Central Store and the SDP. The SDP has a minimum stock equal to the resupply period plus one month's safety stock. The resupply period outlined in the gantt chart on the previous page is 10 weeks; therefore, the minimum stock level is 3.5 months, and the average stock level is 4.5 months.

It is also suggested, under this option, that the return information required from the SDP provider is modified to a simple stock report. The step-by-step process is as follows:

1. In the first week of each two-month cycle, the SDP provider reports the stock on hand to the LGA RH supervisor (the cycle is phased to the delivery route).
2. In the second week, from the latest report, the RH supervisor from the respective LGA computes the stock on hand at the end of the previous period, plus the deliveries during the period, which present the overall SDP's product usage and average monthly consumption. The RH supervisor then calculates the order quantity necessary to return the SDP's stock level to five months at the point of delivery.
3. The RH supervisor raises a RIF for the SDP and all other SDPs within the LGA's area, and passes the RIF to the FP State Coordinator.
4. In the third week, the State Coordinator examines the RIFs and extracts monitoring data from the accompanying summary computation.
5. In the fourth week of the process, the State Coordinator forwards the RIFs to the Central Store.
6. During the second month, the Central Stores pick and pack FP stock for SDPs in the delivery route order, and dispatches the stock to the State. The boxes are sealed and addressed to the individual SDPs. The Central Store provides the State FP staff with a summary of all deliveries into the State by the LGA and SDP.
7. In the ninth and tenth weeks, the State Coordinator, using a prearranged and approved contractor, forward delivers to the LGA.

8. In the tenth week, the LGA RH Supervisor arranges onward transport by a prearranged and fully approved local public transport operators.
9. Upon delivery, the SDP provider signs for the sealed box of products. During the unpacking process, the provider checks the contents of the box against the packing slip. The SDP signs the packing slip and forwards paperwork to the LGA FP supervisor.
10. The LGA FP supervisor notes any variances related to the information, and passes the signed packing slip to the State FP MIS clerk who checks the received quantities against the delivery summary.

### **Advantages:**

- SDPs are resupplied regularly every two months.
- Stock moves quickly to where it is required, and the pipeline is reduced to 4.5 months of stock.
- Safety stock is held at SDPs, not remotely.
- Workload at the Central Store is continuous and balanced.
- Changes in demand at the SDP level are quickly reflected in demand at the Central Stores. A parallel data system for demand forecasting is not required.
- Delivery from the Central Stores is to a published schedule; therefore, State FP/RH coordinators and LGA RH supervisors can prearrange reliable onward transport.
- If the transport costs at State and LGA level is funded from their margin in the cost recovery system, the entire margin due to the State and to the LGA are pooled respectively. Distant LGAs are subsidized by nearer LGAs, and small remote SDPs no longer have to directly fund their own transport cost but are subsidized by the larger SDPs within the LGA.
- RH Staff are not diverted from their normal duties.
- Local public transport operators identify with the community served by the SDP.
- Low cost of final delivery.

### **Disadvantages:**

- There is no emergency stock at either the State or LGA level.
- State and LGA may perceive lack of stock holding as lack of control. However, the actual control and power of this system remains with both the State and the LGA.

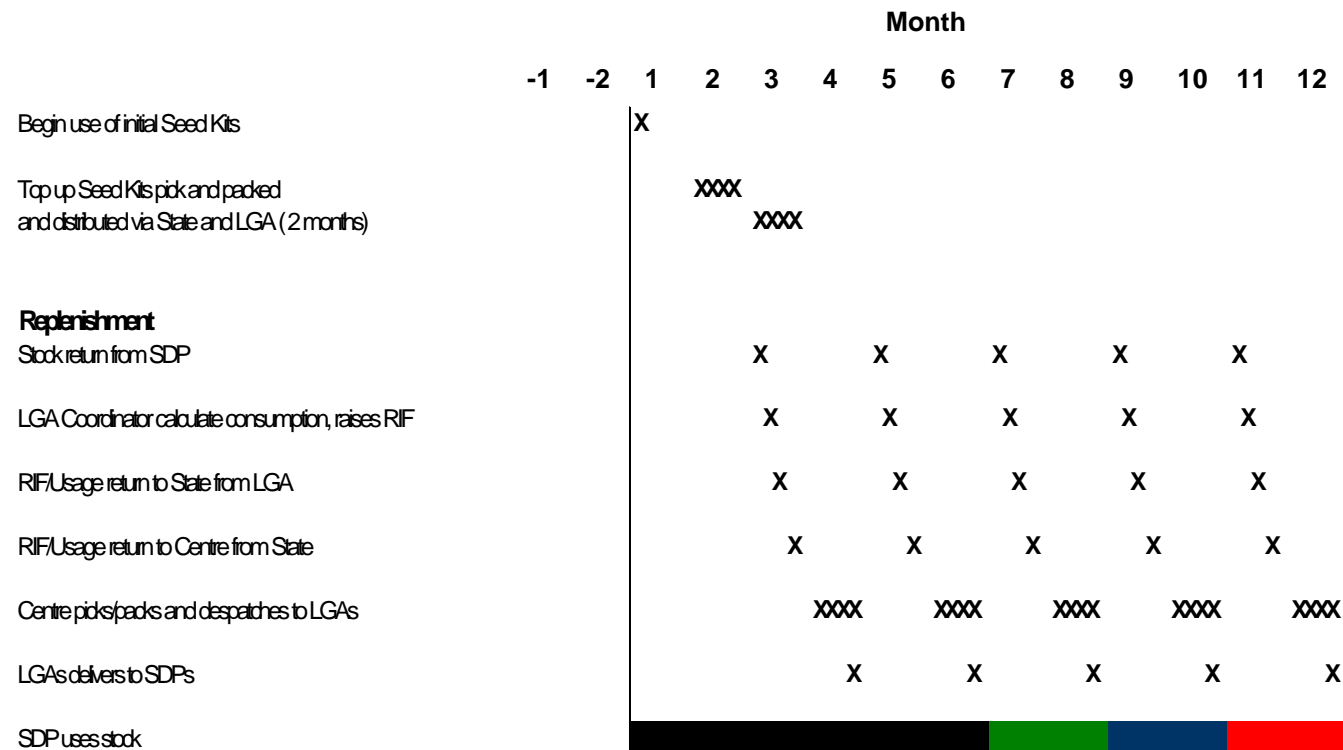
- Any local programs and new initiatives are dependent upon stock at the SDPs. Therefore, staff in planning such initiatives must plan for and include the additional demand required for the FP commodities in the RIF for the SDP.

**Cost Recovery System:**

The planned cost recovery system is intended to operate on a cash-and-carry basis. In this pass through system, this would operate on a cash-on-delivery system. The SDP provider would forward the payment for the delivery to the LGA FP supervisor. The LGA staff would then forward the total payment from their SDPs, less their margin to the State, with the relevant packing slips.

# Transportation Options

Option C, Pass through DELIVER—Central Stores direct to the State, and State delivers to the SDP



*Option C (Pass Through Delivery—Central Stores direct delivers to the State, and State delivers to the SDPs)*

### **Description:**

Option C is similar to option B in terms of information and commodity flow. However, option C is different because the Central Stores dispatch the pre-addressed boxes to the State and the State Coordinator. Following this activity, the State Coordinator forward delivers directly to the SDP using pre-arranged and approved local transport operators, following established pre-determined delivery routes.

### **Advantages:**

- SDPs are resupplied regularly every two months.
- Stock moves quickly to where it is required, and the pipeline is reduced to 4.5 months of stock.
- Safety stock is held at SDPs, not remotely.
- Workload at the Central Store is continuous and balanced.
- Changes in demand at SDP level are quickly reflected in demand at the Central Stores. A parallel data system for demand forecasting is not required.
- Delivery from the Central Stores is to a published schedule; therefore, State FP/RH coordinators and LGA RH supervisors can pre-arrange reliable onward transport.
- If the transport costs at State and LGA level is funded from their margin in the cost recovery system, the entire margin due to the State and the LGA are pooled respectively. Distant LGAs are subsidized by nearer LGAs, and small remote SDPs no longer have to directly fund their own transport cost but are subsidized by the larger SDPs within the LGA.
- RH staff are not diverted from their normal duties.
- Local public transport operators identify with the community served by the SDP.
- Low cost of final delivery.
- One less handling of the boxes.
- One less potential source of error and or delay.
- One less change of responsibility in the supply chain.
- The opportunity to use the in-State delivery journey for monitoring and evaluation purposes.

**Disadvantages:**

- There is no emergency stock at either the State or LGA level.
- State and LGA may perceive lack of stock holding as lack of control. However, the actual control and power of this system remain with both the State and LGA.
- Any local programs and new initiatives are dependent upon stock at the SDPs. Therefore, staff in planning such initiatives must plan for and include the additional demands required for the FP commodities in the RIF for the SDP.
- If resupply does not physically pass through LGA, perceived loss of control at LGA level may be exacerbated.

# Transportation Options

Option D

	Month													
	-1	-2	1	2	3	4	5	6	7	8	9	10	11	12
<b>Option D, Pass Through Delivery</b>														
<b>Deliver; Center to LGAs to SDPs</b>														
<b>Seeding</b>														
Training & Initial Seed kits pick and packed	XXXX													
Kits distributed via State and LGA (Est 4 Months)		XXXX												
Begin use of Initial Seed Kits			X											
Top up Seed kits pick and packed and distributed via State and LGA ( 2 Months)				XXXX										
					XXXX									
<b>Replenishment</b>														
Stock return from SDP				X		X		X		X		X		
LGA Coordinator calculate consumption, raises RIF				X		X		X		X		X		
RIF / Usage return to State from LGA				X		X		X		X		X		
RIF / Usage Return to Center from State					X		X		X		X		X	
Center Picks/ Packs and dispatches to LGAs						XXXX		XXXX		XXXX		XXXX		XXXX
LGAs delivers to SDPs						X		X		X		X		X
SDP uses stock														

*Option D (Pass Through Delivery, Central Stores delivers direct to LGA, and LGA forwards delivery to the SDP).*

**Description:**

Option D has similar information and commodity flow to option B, but it is somewhat different because Central Stores deliver the pre-addressed FP boxes directly to the LGA. The LGA RH supervisor then onward delivers to the SDP using pre-arranged and approved local public transport operators, as in option B.

**Advantages:**

- Primary transport from Central Stores receives commodities much closer to the SDPs (within 30 kilometers on average).
- FP boxes are delivered to SDP within 24 hours of arriving at the LGA.
- SDPs are resupplied regularly every 2 months.
- Stock moves quickly to where it is required, and the pipeline is reduced to 4.5 month's stock.
- Safety stock is held at SDPs, not remotely.
- Workload at the Central Store is continuous and balanced.
- Changes in demand at SDP level are quickly reflected in demand at the Central Stores. A parallel data system for demand forecasting is not required.
- Delivery from the Central Stores is to a published schedule, therefore, LGA RH supervisors can pre-arrange reliable onward transport.
- If the transport costs at State and LGA level are funded from their margin in the cost recovery system, the entire margin due to the State and the LGA are pooled respectively. Distant LGAs are subsidized by nearer LGAs, and small remote SDPs no longer have to directly fund their own transport cost, but are subsidized by the larger SDPs within the LGA.
- RH staff are not diverted from their normal duties.
- Local public transport operators identify with the community served by the SDP.
- Low cost of final delivery.
- One less handling of the boxes.
- One less potential source of error and or delay.

- One less change of responsibility in the supply chain.
- LGA staff has the opportunity to use the delivery journey for monitoring and evaluation.

### **Disadvantages:**

- State staff cannot use the delivery journey for monitoring and evaluation purposes.
- If resupply does not physically pass through State, perceived loss of control at State level may be exacerbated.
- More independent contractors are used than in option C.
- There is no emergency stock at either the State or LGA level.
- State and LGA may perceive lack of stock holding as lack of control. However, the actual control and power of this system remains with both the State and LGA.
- Any local programs or new initiatives are dependent on stock at the SDPs. Therefore, staff in planning such initiatives must plan for and include the additional demands required for the FP commodities in the RIF for the SDP.

*Option E*                      *(Third-party carriers)*

**Description:**

Under option E, it recognizes the small size of the individual SDP consignments (low volume). Option E uses the services of established third-party parcel carriers. The carrier collects daily from the Central Store and delivers to the SDP within three days of collection. The reorder process is similar to option B.

**Advantages:**

- Speed of delivery.
- DCDPA of the FMOH is not involved with any transport operations at any level.
- Orders do not have to be processed in route order, they can be processed as received.
- Carrier collects all boxes packed each day; therefore, no space is required to store packed boxes for the next route.
- Rates include insurance.
- Proof of delivery is supplied to the Central Store.
- Cost is responsive to both the number of SDPs and the size of the consignments.

**Disadvantages:**

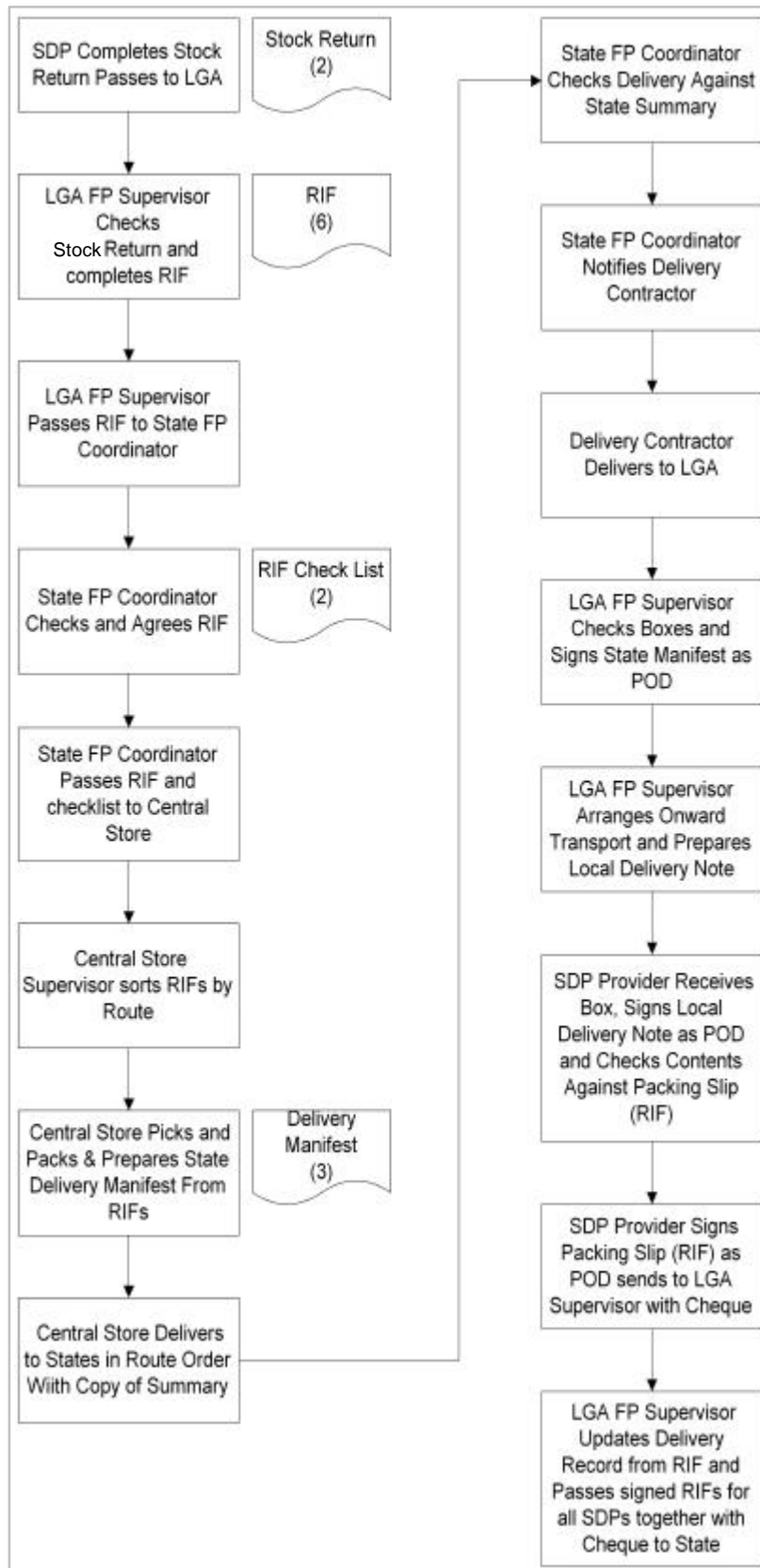
- Expense of deliveries using parcel carriers.
- Lack of opportunities for State and LGAs staff to conduct monitoring and evaluation activities.

## **Appendix F**

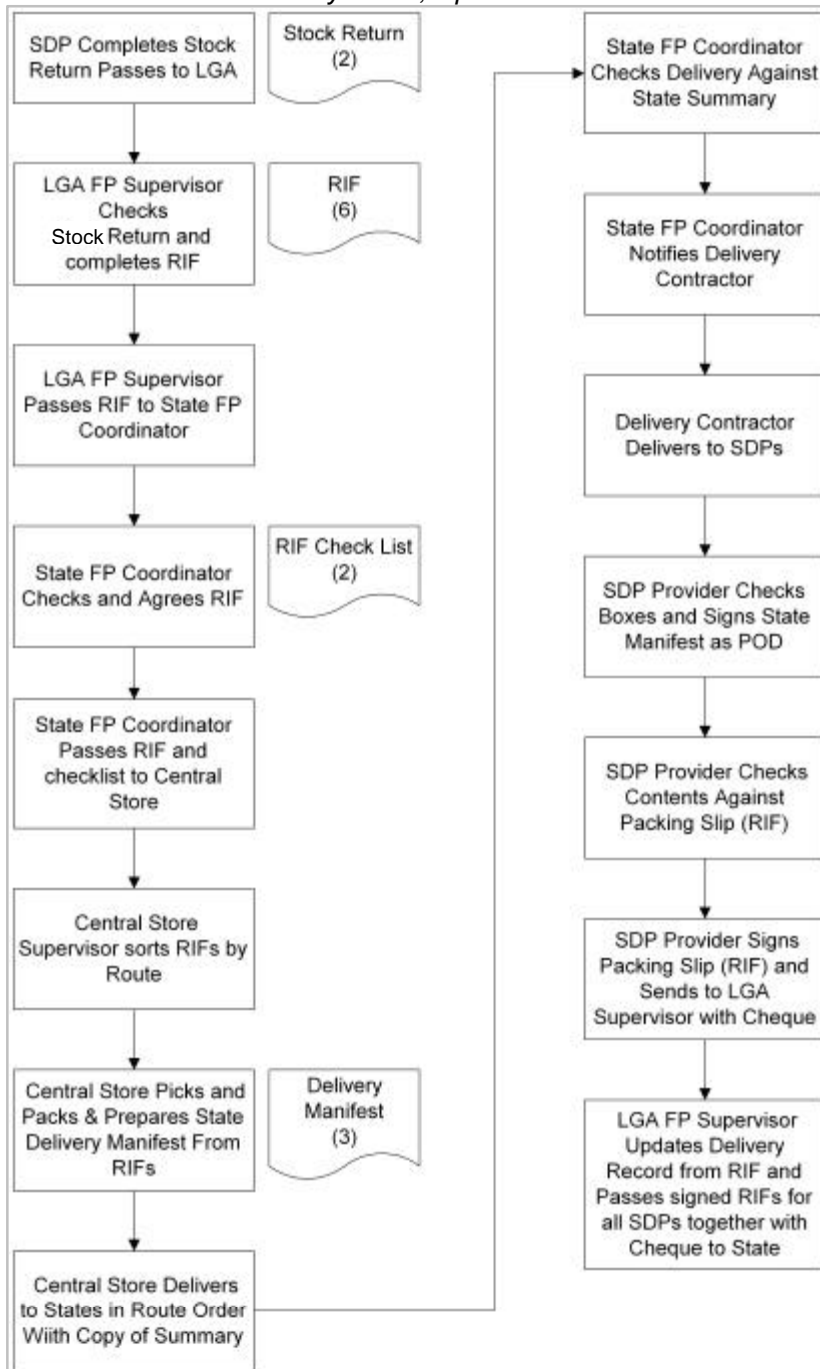
# **Information and Commodity Flows and Sample Documentation**



**Figure 2.**  
*Information and Commodity Flows, Option B*



**Figure 3.**  
Information and Commodity Flows, Option C



# Documents

## 1. Stock Return

State		LGA	
SDP		Date	
<b>Commodity</b>		<b>Stock on Hand</b>	
Condom Female			
Condom Male			
Depo-Provera® 150 mg Inj			
Exluton/Ovrette			
IUCD			
Lo-Femenal/Duofem			
Microgynon			
Neo-Sampoon			
Noristerat 200 mg Inj			
NORPLANT			
Postinor 2			
Disposable syringe			
Signed			

No of Copies 2

Disposition of copies: 2—Filed at SDP

1—To LGA FP Supervisor

## 2. RIF

*As per CLMS Handbook*

Number of Copies                      6

Disposition of copies

6                      Filed at LGA

5                      Filed at State

4                      Filed at Central Store

3                      Filed at SDP after delivery                      )

2                      Filed at LGA after delivery                      ) Packing Note

1                      Filed at State after delivery                      )

## 3. Delivery Summary/Manifest (see below)

Number of copies                      3

Disposition of copies

3                      Filed at the Central Store

2                      Filed at the State

1                      Delivery Manifest returned by contractor and filed at the State after delivery





**Appendix G**

**Suggested Process for Reviewing/Hiring  
Contractors at the State Level**



# Suggested Process for Reviewing/Hiring Contractors at the State Level:

1. Produce a well-defined map of the State showing the location of all SDPs.
2. Every two months, advertise for interested local contractors by providing an outline of the delivery requirements and likely period of usage.
3. Short-list interested parties, and issue Request for Quotation stating that selection will be based on price and the quality/roadworthiness of the offered vehicle.
4. Supply a copy of the map and expected size of consignments for each SDP to the short-listed interested transport parties and ask them to complete the following:
  - a. Quote the number of days they will require to deliver to all SDPs.
  - b. Quote their charge per day, assuming the controlled price of fuel (or some other standard price if the controlled price is not realistic).
  - c. Quote the percentage increase/decrease in their charge per day for every ₦5 change in the price per liter (fuel) quoted in b (above).
5. Evaluate and review the shortlist of offers received.
6. Inspect the offered vehicles for—
  - a. suitability
  - b. appearance
  - c. roadworthiness
  - d. cleanliness, including the cleanliness of the cab
  - e. insurance coverage.
7. Select contractor.
8. Issue to the selected contractor, a service level agreement that states—
  - a. The minimum acceptable standard of vehicle.
  - b. The maximum time from notification of arrival of Central Stores to commencement of deliveries.
  - c. That deliveries will be completed in the quoted number of days after commencement.
  - d. The requirement for the contractor to indemnify the State against loss or damage in transit.
  - e. Insurance requirements, to include coverage for the FP coordinator if the vehicle is used for monitoring.
  - f. Mechanism and normal period for rate reviews, special provision for reviews if vehicle fuel price changes by (₦=Naira, Nigerian currency) ₦5 or more. Reviews only applied after ₦5 changes to prevent constant demands for financial increases.



**Appendix H**  
**Primary Delivery Routes**  
**A, B, C, D, and Delivery**



# Primary Delivery Routes

## Route A

		<b>Kms</b>	<b>Trip Time in Hours</b>	<b>Wait Time in Hours</b>	<b>Total Time in Hours</b>
	Central Store			8.0	8.0
Lagos	Lagos	10	0.2	2.5	2.7
Ogun	Abeokuta	99	2.0	2.5	4.5
Oyo	Ibadan	77	1.5	2.5	4.0
Kwara	Ilorin	162	3.2	2.5	5.7
Kebbi	Birnin Kebbi	621	12.4	2.5	14.9
Sokoto	Sokoto	139	2.8	2.5	5.3
Zamfarra	Gusau	219	4.4	2.5	6.9
7	Central Store	945	18.9		18.9
		<hr/>			
		2272	45	26	71

## Route B

		<b>Kms</b>	<b>Trip Time in Hours</b>	<b>Wait Time in Hours</b>	<b>Total Time in Hours</b>
	Central Store			8.0	8.0
Osun	Osogbo	247	4.9	2.5	7.4
Ekiti	Ado-Ekiti	120	2.4	2.5	4.9
Ondo	Akure	50	1.0	2.5	3.5
Kogi	Lokoja	183	3.7	2.5	6.2
FCT	Abuja	193	3.9	2.5	6.4
Niger	Minna	156	3.1	2.5	5.6
Kaduna	Kaduna	297	5.9	2.5	8.4
Kano	Kano	200	4.0	2.5	6.5
Katsina	Katsina	172	3.4	2.5	5.9
Jigawa	Dutse	302	6.0	2.5	8.5
10	Cental Store	1279	25.6		25.6
		<hr/>			
		3199	64	33	97

## Nigeria: Analysis of Distribution Costs for Family Planning Products

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### Route C

		<b>Kms</b>	<b>Trip Time in Hours</b>	<b>Wait Time in Hours</b>	<b>Total Time in Hours</b>
	Central Store			8.0	8.0
Benue	Makurdi	885	17.7	2.5	20.2
Nassarawa	Lafia	99	2.0	2.5	4.5
Plateau	Jos	141	2.8	2.5	5.3
Bauchi	Bauchi	122	2.4	2.5	4.9
Yobe	Damaturu	321	6.4	2.5	8.9
Borno	Maiduguri	133	2.7	2.5	5.2
Gombe	Gombe	318	6.4	2.5	8.9
Adamawa	Yola	237	4.7	2.5	7.2
Taraba	Jalingo	153	3.1	2.5	5.6
9	Central Store	1095	21.9		21.9
		3504	70	23	93

### Route D

		<b>Kms</b>	<b>Trip Time in Hours</b>	<b>Wait Time in Hours</b>	<b>Total Time in Hours</b>
	Central Store			8.0	8.0
Edo	Benin City	320	6.4	2.5	8.9
Delta	Asaba	129	2.6	2.5	5.1
Anambra	Awka	47	0.9	2.5	3.4
Enugu	Enugu	50	1.0	2.5	3.5
Ebonyi	Abakalliki	84	1.7	2.5	4.2
Cross River	Calabar	192	3.8	2.5	6.3
Akwa-Ibom	Uyo	123	2.5	2.5	5.0
Abia	Umuahia	80	1.6	2.5	4.1
Imo	Owerri	70	1.4	2.5	3.9
Rivers	Port Harcourt	112	2.2	2.5	4.7
Bayelsa	Yenagoa	125	2.5	2.5	5.0
11	Central Store	540	10.8		10.8
		1872	37	36	73

## **Appendix I**

# **Delivery Routes for Pilot States**



# Delivery Routes for Pilot States

## Route A

		<b>Kms</b>	<b>Trip Time In Hours</b>	<b>Wait Time in Hours</b>	<b>Total Time in Hours</b>
	Central Store			8	8
Ogun	Abeokuta	99	1.98	2.5	4.48
Oyo	Ibadan	77	1.54	2.5	4.04
Sokoto	Sokoto	890	17.8	2.5	20.3
Bauchi	Bauchi	777	15.54	2.5	18.04
	Central Store	1211	24.22	0	24.22
		<hr/>			
		3054	61.08	10	79.08

## Route B

		<b>Kms</b>	<b>Trip Time In Hours</b>	<b>Wait Time in Hours</b>	<b>Total Time in Hours</b>
	Central Store			8	8
Edo	Benin City	320	6.4	2.5	8.9
Anambra	Akwa	169	3.38	2.5	5.88
Enugu	Enugu	70	1.4	2.5	3.9
Nassarawa	Lafia	353	7.06	2.5	9.56
Borno	Maidaguri	881	17.62	2.5	20.12
	Central Store	1675	33.5	0	33.5
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		3468	69.36	12.5	89.86



## **Appendix J**

# **Example of Standing and Running Cost**



## Example of Standing and Running Cost Used in Distribution Assessment

Standing Costs	Running Costs
<p><b>Capital costs</b></p> <ul style="list-style-type: none"> <li>Depreciation</li> <li>Lease costs</li> </ul> <p><b>Taxes</b></p> <ul style="list-style-type: none"> <li>Licenses</li> <li>Test fees</li> </ul> <p><b>Insurance</b></p> <ul style="list-style-type: none"> <li>Vehicle insurance</li> <li>Goods in transit insurance</li> </ul> <p><b>Driver costs</b></p> <ul style="list-style-type: none"> <li>Basic salary</li> <li>Benefits</li> </ul>	<p><b>Fuel and lubricants, oil</b></p> <p><b>Maintenance and repairs</b></p> <p><b>Tires (often incorporated in maintenance)</b></p> <p><b>Driver allowances</b></p> <ul style="list-style-type: none"> <li>Overnight allowance</li> <li>Meal allowances</li> </ul> <p><b>Other</b></p> <ul style="list-style-type: none"> <li>Mobile phones</li> <li>Tolls</li> <li>Disposable materials</li> </ul>

Currently, in Nigeria, lease costs do not apply; therefore, the study team assumed that Central Stores owns the vehicle, and they used depreciation when calculating standing cost. Also, *top-up* lubricants have not been included in the calculation, but these costs are usually small.

Relating to running cost, allowances for the category *other* have not been included in the calculation.