

National Reproductive Health Commodities Quantification Bangladesh 2012-2016

February 2013



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National Reproductive Health Commodities Quantification Bangladesh 2012-2016

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February 2013



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CONTENTS

Acronyms and Abbreviations	iv
Executive Summary	vi
Introduction and Background	1
Introduction.....	1
Background.....	2
Brief Introduction to DGFP Web LMIS (dgfplmis.org).....	4
Procuring Contraceptives.....	4
Scope of FP Quantification Exercise	5
Objectives of the Exercise	5
Quantification Methodology.....	6
Methods.....	6
Input Data and Assumptions.....	9
Quantification Results.....	15
Forecasted Users and Acceptors by Method: Scenario I (Current CPR = 61.1 Percent 2012-2016)	15
Forecasted Contraceptive Commodities Requirements: Scenario I.....	16
Forecasted Users and Acceptors by Method: Scenario II (Achieve CPR = 72 Percent by 2016)	16
Forecasted Contraceptive Commodities Requirements: Scenario II	17
Forecasted Users and Acceptors: Scenario III (Achieve TFR = 2.0 by 2016)	18
Forecasted Contraceptive Commodities Requirements: Scenario III.....	18
Estimated Cost of the Commodities	20
Challenges, Recommendations, and Conclusion	22
Challenges.....	22
Recommendations.....	22
Conclusion	23
References.....	24
Annex A. Other Data	26
Annex B. List of Books and Reports Consulted and Contributors	32
Annex C. Shipment Summary by Supplier.....	33

ACRONYMS AND ABBREVIATIONS

BDHS	Bangladesh Demographic and Health Survey
BDT	Bangladeshi Taka
CPR	contraceptive prevalence rate
CYP	couple year protection
DDS	drugs and dietary supplements
DGFP	Directorate General of Family Planning
FP	family planning
FWG	forecasting working group
HPNSDP	Health, Population, and Nutrition Sector Development Program
IUD	intrauterine device
KfW	Kreditanstalt für Wiederaufbau
LAPM	long-acting permanent method
LMIS	Logistics Management Information System
MIS	management information system
MOHFW	Ministry of Health and Family Welfare
MSH	Management Sciences for Health
MSR	medical surgical requisite
MWRA	married women of reproductive age
NIPORT	National Institute of Population Research and Training
RH	reproductive health
SIAPS	Systems for Improved Access to Pharmaceuticals and Services
SOW	scope of work
SPS	Strengthening Pharmaceutical System
TFR	total fertility rate
USD	US dollars
WHO	World Health Organization
WRA	women of reproductive age

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EXECUTIVE SUMMARY

Bangladesh is one of the world's most densely populated countries, struggling with the negative effects of high population growth rates. The government has recognized that the massive population is an obstacle to economic development and has developed the National Population Policy to reduce fertility to replacement level by 2016. The Family Planning (FP) Program is implemented by the leadership of the Directorate General of Family Planning (DGFP). DGFP has built a nationwide, community-based FP service delivery system. Because of the integrated efforts of governmental and nongovernmental organizations that work in FP, the total fertility rate (TFR) has declined steadily from 2.7 in 2007 to 2.3 in 2011, and the use of contraceptive methods among married women has increased from 56 percent in 2007 to 61.1 percent in 2011; unmet need for contraceptives has decreased from 17 percent in 2011 to 12 percent in 2011 (BDHS 2007, 2011). The Health, Population, and Nutrition Sector Development Program (HPNSDP) result framework has set the target to reduce unmet need for FP services to 9 percent by 2016 and to reduce the TFR from 2.3 in 2011 to 2.00 per eligible woman for the same period. Achieving the targets requires, among other programmatic inputs, commensurate amounts of contraceptives and related supplies.

To ensure the sustainable availability of FP commodities and achievement of the goals, commodity demand has to be quantified properly and resources have to be allocated. Thus, this quantification exercise was organized by DGFP in collaboration with SIAPS to develop a five-year (2012-2016) forecast of FP commodities with a two-year supply plan; results of the exercise can be used for evidence-based procurement decisions to guide future procurement actions and ensure sustainable availability of commodities for the program. The exercise sets the stage for the establishment of a consistent mechanism for regular updates of the national forecast and supply plans for FP commodities through DGFP's forecasting working group (FWG) to ensure FP commodity security at the national level.

To meet the objectives of the assignment, three scenarios were considered—

- Current contraceptive prevalence rate (CPR) of 61.1 percent continues with some changes in the method mix (scenario I)
- Country achieves a CPR of 72 percent by 2016 with some changes in the method mix (scenario II)
- Country achieved TFR of 2.0 by 2016 with some changes in the method mix to ensure the slight increase in the long-acting permanent method¹ (scenario III)

The morbidity method was applied to perform the forecasting exercise. Under these three scenarios, the estimated cost of the commodities for FP users during the forecasted period will be \$109.2 million, \$123.1 million, and \$124.4 million, respectively.

¹ Long-acting permanent method- Female sterilization, Male sterilization, IUD and Implant

- For scenario I, the estimated commodities for the public sector are 511.1 million cycles of pills, 591.5 million condoms, 70.9 million doses of injectables, 1.9 million implants, and 1.77 million intrauterine devices (IUDs) for 2012-2016.
- For scenario II, the estimated commodities for the public sector are 566.4 million cycles of pills, 655.5 million condoms, 78.6 million doses of injectables, 2.2 million implants, and 2.1 million IUDs for 2012-2016.
- For scenario III, the estimated commodities for the public sector are 580.2 million cycles of pills, 671.5 million condoms, 80.5 million doses of injectables, 2.1 million implants, and 2.0 million IUDs.

The result viewed as consistent estimate with specified other goals. Scenarios II and III could come true if some proportion of those using traditional methods shifts to modern methods, or if short-term users switch to long-acting or permanent methods (LAPMs). For the different scenarios, scenario III has the smallest variation and is very close to recent trends. So, this scenario can be used for the forecasted period.

Generally, the total estimated cost for 2012-2106 for contraceptives (oral pills, male condoms, injectables, implants, and IUDs), permanent methods, and drugs and dietary supplements (DDS) kits determined using the morbidity forecasting methodology (scenario III) is \$211.4 million.

Challenges

- Successful forecasting and quantification remains a challenge because of inconsistent data (consumption data and service data don't match). Therefore, certain assumptions and decisions have to be made to cater for this deficiency.
- Quantification capacities at the country level and at the program level are limited.
- Because the census 2011 data (detailed) was not available, there is some chance that the estimate of married women of reproductive age (MWRA) is in error.
- Obtaining the days out of stock of products at the facility level for use in the consumption forecasting methodology was not possible.

Recommendations

- The FP commodity requirement forecasts should be reviewed and updated bi-annually by the FWG. This will ensure adequate funding and commodity security for supplies and supply chain operations, especially by supporting donor coordination efforts. The government, nongovernmental organizations, and the private and social marketing sectors need to coordinate among themselves.

- A reliable supply pipeline is required to ensure contraceptive commodity security for clients. This will only be achieved through close collaboration between the government and other reproductive health (RH) stakeholders as well as all the partners who support the provision of commodities for the FP program.
- Consideration be made for scheduled deliveries at all levels for bulky commodities due to space constraints
- Comparative analysis of contraceptives usage is required, and the interrelationships between contraceptives should also be examined. The domino effect of oral pills needs to be assessed as well.
- Quantification and supply planning should be institutionalized by introducing it as a new module in MOHFW's procurement training.

Conclusion

The findings of this assessment indicate that the forecasted contraceptive commodities are very close to the actual figures in the Logistics Management Information System (LMIS) consumption report. The successful implementation of the quantification will depend on program achievement and availability of resources. However, if programmatic input is provided to increase the number of acceptors of FP methods, then the projected requirements can be modified based on trends in service statistics data obtained in subsequent years.

INTRODUCTION AND BACKGROUND

Introduction

Bangladesh is one of the world's most densely populated countries struggling with the negative effects of high population growth rates. It is situated in the southern part of Asia, bordered on the west, north, and east by India, on the southeast by Myanmar, and on the south by the Bay of Bengal. Bangladesh has a total area of 147,570 square kilometers; it is now the world's eighth most populous country with a population of 164.4 million (UN, 2010) people, but it occupies only 1/3000 of the world's land space.

The FP Program implemented by the DGFP has built a nationwide community-based service delivery system that relies primarily on non-clinical methods, such as oral pills and condoms. The emphasis on short- and long-acting clinical methods, which was relatively high in the 1980s, faded, but these methods are once again receiving attention. The current pattern of temporary contraceptive use, with oral pill users close to 45 percent of all married couples, is reaching saturation, but other individual methods do not even account for 20 percent each. With persistent early marriage and low fertility, many women complete their childbearing by their mid- to late twenties, leaving them with two decades of reproductive life in which to avoid unwanted pregnancies. However, the proportion of couples relying on LAPMs (IUD, implants, male or female sterilization) remains very low (less than 15 percent). Diversified and mass-scale FP services will need to be undertaken to bring back the tempo of the 1980s and achieve a TFR of 2.0 by 2016.

Because of the integrated efforts of government and nongovernmental organizations, the TFR declined steadily from 2.7 in 2007 (BDHS 2007) to 2.3 (BDHS 2011) in 2011. This result is also consistent with the increased use of contraception among married women in the past four years from 56 percent in 2007 to 61 percent in 2011. Unmet need decreased among currently married women from 17 percent in 2007 to 12 percent in 2011. It is worthwhile to mention that the HPNSDP result framework has set the target to reduce unmet need for FP services to 9 percent by 2016 and to reduce TFR from 2.3 in 2011 to 2.00 per eligible woman for the same period.

The government has recognized that a massive population forms an obstacle to economic prosperity and has developed the National Population Policy to reduce fertility to replacement level by 2016. This requires a further TFR decline of 0.30 children per couple. But even at replacement fertility, the country will be adding around two million people annually to the population, and many in the FP field feel that the decline needs to be greater with a target of 0.6 below present fertility (to TFR 1.7). This decline is projected to have substantial benefits across many sectors. It will not fall any lower, so all future population growth will be determined entirely by the fertility level.

The FP services under the HPNSDP will be diversified along with the emphasis on LAPM of contraception and reducing unmet needs.

Background

Systems for Improved Access to Pharmaceuticals and Services (SIAPS), a USAID-funded global program, has been providing technical assistance to Bangladesh's MOHFW and its entities such as the DGFP, the Directorate General of Health Services, and the National Tuberculosis Program. The main aim of the program is to strengthen the procurement system and address supply chain management issues related to FP and other essential health commodities.

Because DGFP is responsible for contraceptive security for the whole country, it must know the total contraceptive requirement, including private sector needs. However, the DGFP's minimal capacities for accurate quantification and forecasting has compelled the national programs to rely on the use of non-validated Excel spreadsheets for projecting the future needs of RH commodities in the country. Therefore, it has been difficult to maintain appropriate inventory to meet the needs of clients. The results have been constant stock imbalances, stock outs of some important contraceptives, and a preponderance of emergency orders, which, in the end, threatens the integrity of the FP programs.

Under DGFP, the Logistics and Supply unit is involved in procurement, storage, and supply management and ensuring that adequate supplies are distributed on time to the service delivery points so that users and potential clients can have easy access to contraceptives to meet their needs. To meet this objective, a buffer of critical supplies for a minimum of 18 months will be built-up for any given point of time at every stage.

DGFP has been procuring contraceptives directly through the Logistics and Supply Unit on the basis of needs assessed by the line directors in maternal and child health, clinical contraceptive service delivery, and field service delivery programs. The Logistics and Supply Unit prepares the procurement plan and processing schedule for contraceptives and medical surgical requisite (MSR) following International Development Agency (IDA) procurement procedures. After that, most of the contraceptives (condoms, oral pills, injectables, IUDs, and implants) including DDS kits are procured by the Logistics and Supply Unit.

The present countrywide distribution system consists of one central warehouse (18,000 square feet) in Dhaka, 3 regional warehouses in Chittagong, Khulna, and Bogra and 17 newly upgraded regional warehouses (formerly district reserve stores). One out of 20 regional warehouses (Bhola) is rented. The central warehouse, Chittagong regional warehouse, and Khulna regional warehouse are offshore consignment recipients. All other warehouses perform as distributors for their respective catchment areas. Out of 485 upazila FP stores (approximately 297,150 square feet), 210 were constructed by USAID.

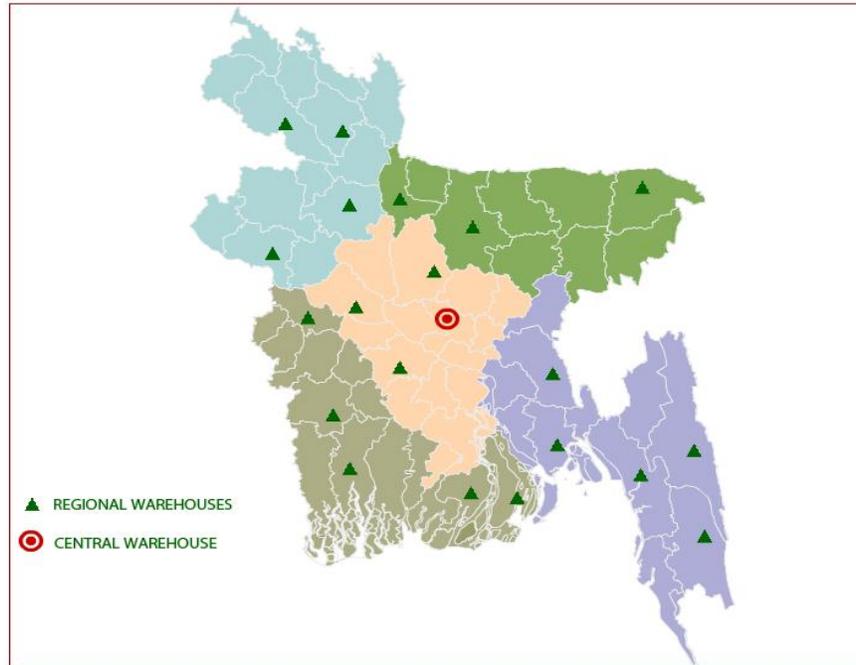


Figure 1. Map of regional and central warehouses

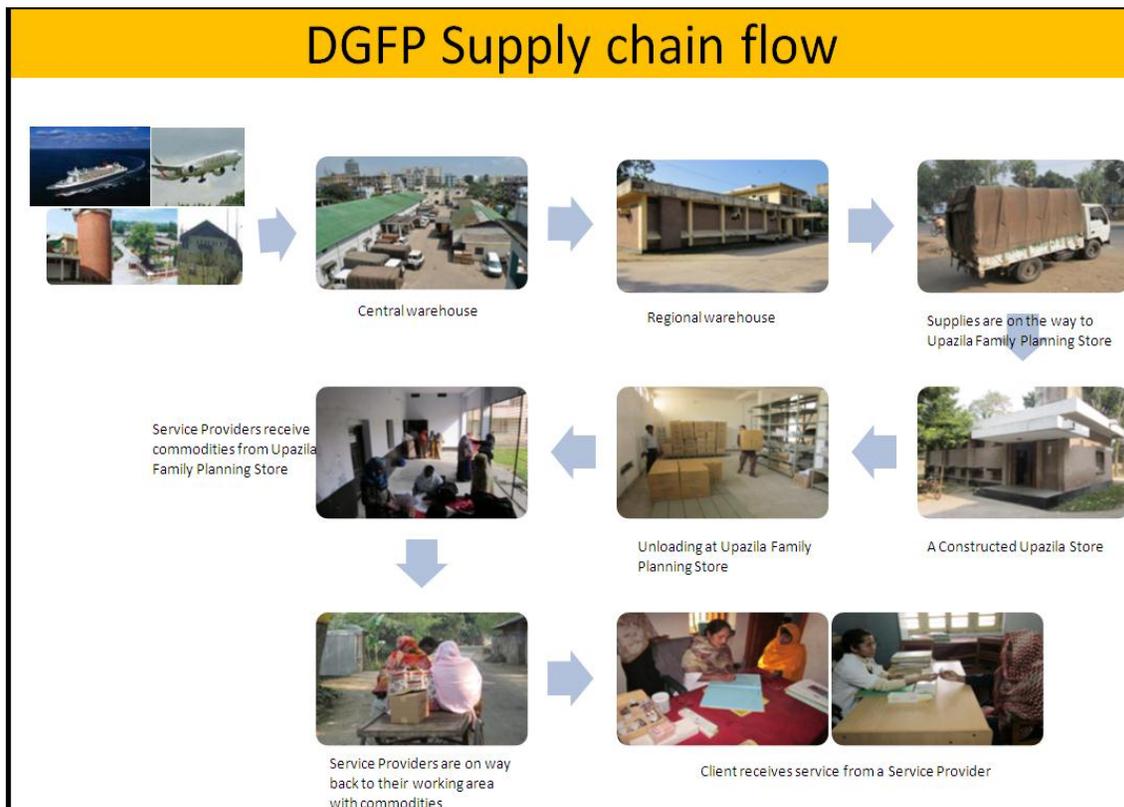


Figure 2. DGFP supply chain flow

Brief Introduction to DGFP Web LMIS (dgfplmis.org)

To ensure availability of RH commodities at all levels, the DGFP uses web-based LMIS software, originally developed by the USAID|DELIVER PROJECT and updated by the Strengthening Pharmaceutical Systems (SPS) Program for the DGFP. The web-based LMIS is a tool that acts as a central repository of logistics data, stock status of commodities, and consumption data from all tiers. This system has been extensively used during the exercise.

National, regional, and upazila officials of DGFP enter essential logistics data into the portal and the dashboard of the web-based LMIS, which prepares charts, maps, and tables for decision makers. The portal is unique in terms of information management in the public sector.

LMIS Uses and Advantages

- Monitors stock position at all levels through interactive dashboard
- Monitors consumption trends for RH commodities
- Quickly identifies upazila and field-level stock-out situations and takes necessary action
- Facilitates stock adjustments, considering requirements of commodities
- Monitors monthly logistics report submissions and data accuracy
- Improves supply chain monitoring at all levels
- Serves as an information source for forecasting future needs based on consumptions trends

Procuring Contraceptives

The major sources of funds for procuring contraceptive are—

- Government of Bangladesh
- IDA-Pool fund managed by the World Bank
- USAID
- KfW, the German government-owned development bank

The goal is to develop a data-driven quantification and procurement system, prevent stock outs, and minimize losses due to over stocks at all levels in the supply chain. This quantification exercise will provide the Government of Bangladesh policy makers and donors with a framework for computing contraceptive requirements during the plan period. This will help DGFP to plan a long-term procurement cycle and to mobilize necessary financing. In addition, planners will be able to develop a medium-term (five-year) forecast for DGFP with three-year supply planning that can guide evidence-based procurement decisions and future procurement actions at the DGFP and MOHFW.

SIAPS has facilitated an in-depth evaluation of procurement management capacity of the DGFP. The assessment was conducted by an international consultant and as a result, many recommendations were made for improvement of the supply chain. One important recommendation was to immediately form an FWG to advocate at the highest levels to secure

guaranteed funding. Membership of the FWG was finalized in a procurement manual workshop held in October 2010.

Accordingly, DGFP has constituted an FWG to ensure FP commodity security at the national level with the concurrence of MOHFW. The FWG is chaired by the DGFP and consists of members from all the stakeholder organizations, both government and nongovernment.

Terms of Reference for the FWG

- Prepare estimates based on all available data and projections; SIAPS will provide technical assistance and facilitate the development of a five-year forecasting and quantification and three-year supply plan for major contraceptives including DDS kits
- Assist the DGFP to secure guaranteed funding and timely release of funds by advocating for this at the highest levels
- Seek additional donor support to bridge any shortfall in funding

The major suppliers of contraceptives for DGFP are the Government of Bangladesh/Essential Drug Company Limited, KfW, USAID, and UNFPA.

Scope of FP Quantification Exercise

The scope of the forecast was national, covering all FP and all funding sources. The commodities to be quantified included oral pills, condoms, injectables, IUDs, implants, and DDS kits. The forecast covers the period January 2012-December 2016.

Objectives of the Exercise

- Develop an evidence-based forecast of requirements to support the DGFP for 2012-2016
- Develop two-year procurement and supply plans for the FP program, taking forecasts, service capacity, available funds, and stock on hand, on order, and buffer into consideration
- Identify any supply gaps and underfunded categories and forward recommendations
- Identify constraints in data management to support regular forecasting and supply planning
- Develop recommendations for institutionalization of formal data collection, forecasting, supply planning, and monitoring systems for FP commodities
- Provide technical assistance and technical know-how to DGFP staff in forecasting and supply planning exercises

QUANTIFICATION METHODOLOGY

Methods

Before the international consultant made the trip to conduct this short-term technical assistance, the following occurred—

- Policy documents, fact sheets, previous quantification reports, annual program progress reports, DHS reports (BDHS 1993-4, BDHS 1996-7, BDHS 1999-00, BDHS 2004, BDHS 2007), and strategic plans were collected and reviewed
- Training materials were developed
- Data collection tools were drafted based on the review of the documents and existing data collection system
- Meetings were arranged with shareholders before the trip as a head start to the in-country activities

A consultants' meeting was conducted on March 4, 2012, to agree on the scope of work (SOW), the methodologies that would be used, the list of participants for the trainings and workshops, and the schedule of the activities, and the SOW was adjusted accordingly. A meeting was held with Dr. Zubayer Hussain, Country Project Director, SIAPS Bangladesh to come to a consensus on the SOW for the short-term technical assistance; the program areas to be quantified were clearly defined and coordination matters were also clarified.

The quantification exercise considered factors such as the estimated current need, national programmatic strategies, distribution trends, commodities in stock at all levels, commodities to be delivered, and current costs of the items. This forecast is based on the various assumptions for RH commodity needs agreed on by various stakeholders at the FWG meeting. The procurement plan was developed taking into consideration the current stock situation, procedures, and lead times of the different procuring agencies.

The following processes were undertaken during the exercise—

- Determine an appropriate methodology for forecasting national RH commodity needs for Bangladesh
- Develop data collection protocols, assemble programmatic data inputs, collect and collate product consumption and inventory data, interpret data, select modeling techniques, and build consensus with stakeholders regarding which assumptions to apply and adjusting final model estimates with specific reference to program scale-up projections and targets

- Calculate the order requirement for condoms, injectables, IUDs, implants, oral contraceptive pills, and DDS kits based on the in-country stock status, program capacity, and funding availability; adjust quantities according to available budget
- Develop a two-year rolling supply plan for the above commodities by using PipeLine[®] software to cover all sources of funds and commodities, including the private sector
- Advise on the current procurement capacities at the DGFP and other relevant bodies for the successful conduct of future forecasts, continued updates of supply plans, and making recommendations for strengthening

Subsequently, separate meetings and discussions were held with different government officials, department heads and non-governmental organization partners (annex B). As a result of the discussions, more documents, data, and information on the following were obtained—

- Collaborating partners in the logistics management of RH commodities
- Roles of the partners in the logistics management of RH commodities and the links among them
- Program areas covered, current quantification methodology, and availability of data for quantification of the commodities
- Data and assumptions for the forecasting and supply planning of the RH commodities
- Challenges of the existing logistics systems

The major documents collected and reviewed for the exercises are given in annex B.

The data and information collected were then compiled, analyzed, and evaluated. The analyses and evaluations were then prepared as informative handouts for the consultative quantification meeting with the stakeholders. The handouts contained—

- Data and assumptions tabulated on the basis of the information obtained at the time
- A comparison and triangulation of data from different sources
- Trends based on historical data to show progress of the programs
- Different scenarios to show the impact of using one data source against another and explanations of how they affect the quantification
- Tables to record recommendations and suggestions agreed upon by the workshop participants

It was decided that the local consultant and the Senior Technical Advisor for Quantification and Management Information Systems from SIAPS would train government technical staff as soon as the report was published. The on-the-job training will be conducted using the real data from the current quantification exercise.

The consultative technical session with FWG members was conducted on March 18, 2012, at the DGFP/IEM Conference Room, Dhaka. The objectives of the consultative meeting were to—

- Review and validate the available data, assumptions, and methodologies presented by the consultants
- Build additional assumptions based on future programmatic goals when there are no adequate data
- Reach consensus and agree on assumptions, data, and methodologies for the current quantification
- Draw up recommendations for future strengthening of supply chain management of health commodities in Bangladesh in general and RH programs in particular

The consultative meeting was actively attended by 38 representatives from the appropriate stakeholders—government agencies, logistics partners, implementing partners, and funding agencies.

Based on the feedback given during the consultative meeting and discussions held afterward, the following three scenarios were considered for the forecasting. In each scenario, there will be some changes in the method mix to ensure the slight increase in LAPM—

- Scenario I – Current CPR = 61.1 percent to continue
- Scenario II – Country will achieve CPR = 72 percent by 2016
- Scenario III – Country will achieve TFR = 2.0 percent by 2016

Five-year (2012 -2016) forecasts of the RH commodities were undertaken, supply plans were developed, and the technical report was written. RH commodities quantified in this exercise were contraceptives and DDS kits.

Different tools (Spectrum, Reality Check, basic Excel) were used to forecast the requirements for the commodities. FamPlan module (FamPlan 2008) was used to forecast the RH commodities whereas Pipeline was used for the supply planning of the major commodities (contraceptives and DDS kits). Prices used for valuation of RH commodities were obtained from DGFP. The specific forecasting methodologies, key assumptions, and forecasting results for each commodity category are included in the corresponding subsections presented in the quantification results. Finally, analysis was done on the forecasted results and recommendations were included.

Input Data and Assumptions

The following assumptions were adopted based on the discussions at the consultative quantification workshop and subsequent discussions with specific technical staff from DGFP.

The forecast period was determined to be January 2012 to December 2016.

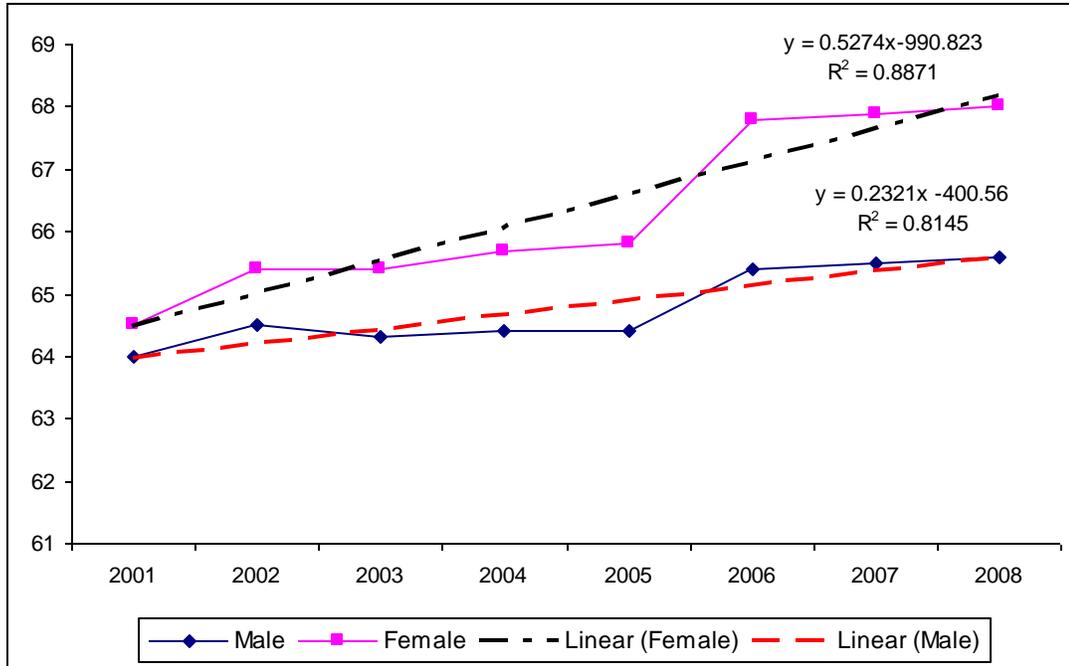
The morbidity method was adopted for the forecast.

The data from the Bangladesh Population Census 2001 (Bangladesh Bureau of Statistics 2003; table A-3) was used as a base in DemProj (DemProj 2008) to calculate the population of women of reproductive age; the following assumptions were used in the calculation—

- Life expectancy by sex: based on the trend from the Sample Vital Registration System report 2009 for the years 2006-2009 (BBS 2009), model life tables with the expected age pattern of mortality were selected (figure 1). The mortality pattern of the United Nations General Model life tables was selected for the population projection. Life expectancy at birth in 2016 for males is assumed to be 67.7 years with an annual increase of 0.23 years and for females is assumed to be 70.8 years with an annual increase of 0.30 years (table 1).
- Migration: because of the lack of valid data, international migration was assumed to be zero
- Sex ratio at birth: estimated at 1.05 male births per 1.0 female birth; this ratio was assumed to be constant throughout the forecast period
- TFR: 2.3 in 2011 (BDHS 2011) and 2.0 target (set in the HPNSDP) for 2016 as stipulated in MOHFW's five-year strategy were used as bases to calculate TFR for the forecast period; to reach the desired level of fertility (TFR = 2.0) in 2016, an annual decrease of TFR by 0.06 was calculated (figure 2 and table 2)

Table 1. Life Expectancy at Birth by Sex from 2009 to 2016

Year	2009	2010	2011	2012	2013	2014	2015	2016
Male	65.8	66.3	66.6	66.8	67.0	67.3	67.5	67.7
Female	68.7	69	69.3	69.6	69.9	70.2	70.5	70.8



Source: Sample Vital Registration System-2009

Figure 1. Life expectancy at birth by sex from 2001 to 2008

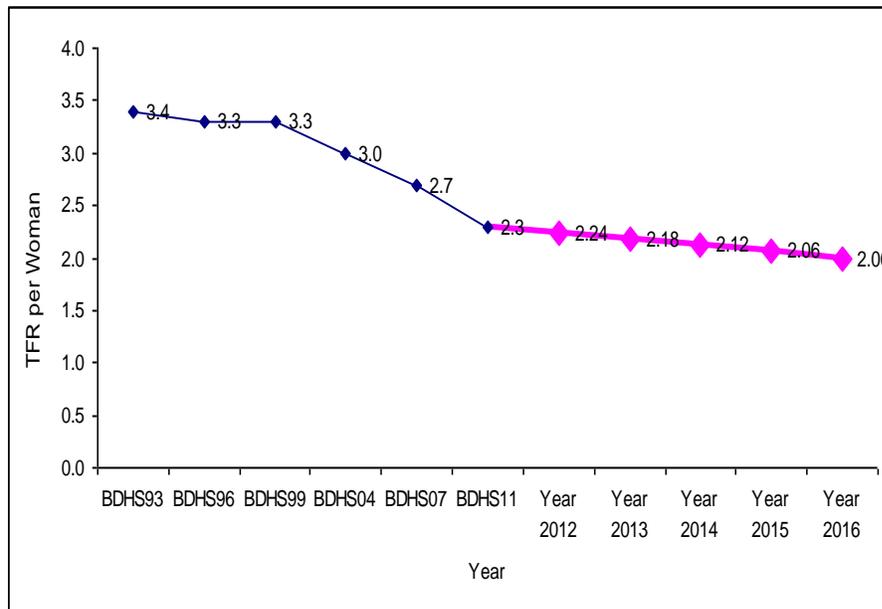


Figure 2. Trends in current fertility rates and TFR in forecasted period

Table 2. Projected TFR per a Woman of Reproductive Age Group

	2011	2012	2013	2014	2015	2016
TFR per woman of reproductive age group	2.30	2.40	2.18	2.12	2.06	2.00

- Based on the total population (table 3), the population of women of reproductive age (WRA) in Bangladesh for the forecast period was projected in tables 4 and 5.

Table 3. Projected Total Population by Sex (Millions)

Year	2001	2011	2012	2013	2014	2015	2016
Total	130.01	153.12	155.16	157.19	159.20	161.20	163.16
Male	67.07	78.43	79.42	80.40	81.37	82.34	83.28
Female	62.94	74.69	75.74	76.79	77.83	78.86	79.88

Table 4. Projected Women of Reproductive Age (Millions)

Age	2001	2011	2012	2013	2014	2015	2016
15-19	5.95	8.27	8.21	8.16	8.10	8.02	7.94
20-24	6.36	7.69	7.92	8.06	8.13	8.18	8.22
25-29	6.16	5.86	6.09	6.45	6.89	7.31	7.64
30-34	4.66	6.23	6.11	5.95	5.80	5.74	5.81
35-39	3.98	6.00	6.15	6.23	6.26	6.23	6.16
40-44	2.91	4.51	4.77	5.08	5.40	5.70	5.92
45-49	2.09	3.82	3.95	4.04	4.13	4.25	4.43
Total	32.11	42.38	43.20	43.97	44.71	45.43	46.12

The forecast of FP commodities was agreed for the MWRA group only. The proportion of the MWRA group that would need FP commodities was determined to be 80.0 percent of women of reproductive age group. Table 5 provides the projected number of MWRA for the forecast period.

Table 5. Projected Total Number of MWRA

	2012	2013	2014	2015	2016
MWRA (millions)	34.56	35.18	35.77	36.34	36.90

The use of contraception among married women in Bangladesh has increased gradually from 44.7 percent in 1993-94 to 61 percent in 2011 (table A-3). Most recently, contraceptive use increased by 5 percentage points in the past four years from 56 percent in 2007 to 61.1 percent in 2011. In this forecast, CPR was calculated based on BDHS 2011 figures and the target set for 2016 by the program. For 2016, it was assumed that the total CPR will grow to 72 percent;

LAPMs (IUD, implants, and female and male sterilization) is assumed to consist of 20 percent of the share and short-acting methods 52 percent. Reality check was used to calculate the projected trends. Table 6 shows the projected trends of total CPR and CPR by method.

Table 6. CPR Percentage by Method

Method	BDHS 2011	2012	2013	2014	2015	2016
Pill	27.2	28.2	29.1	30.1	31.1	32.1
Injections	11.2	11.6	12.0	12.4	12.8	13.2
Male condom	5.5	5.7	5.9	6.1	6.3	6.5
Implant-Norplant	1.1	1.5	1.8	2.2	2.6	3.0
IUD	0.7	1.3	1.9	2.6	3.3	4.0
Female sterilization	5.0	5.2	5.4	5.5	5.7	5.9
Male sterilization	1.2	1.3	1.3	1.4	1.5	1.5
Traditional	9.2	8.9	8.2	7.5	6.7	5.8
Any method	61.1	63.3	65.5	67.6	69.8	72.0
Any modern method	51.9	53.8	55.6	57.5	59.3	61.2

Table 7 shows the assumptions made for couple year protection (CYP), contraceptive effectiveness, and contraception method discontinuation rates with their respective sources.

Table 7. CYP, Contraceptive Effectiveness, and Contraceptive Method Discontinuation Rates by Method

Methods	CYP (USAID)	Contraceptive effectiveness (%; WHO)	Discontinuation rates (%; BDHS 2011)
Oral contraceptives	15 cycles	94.0	39.0
Male condoms	150 condoms	86.0	47.0
IUD	4.6 years	99.2	22.4
Injectables	4 doses	99.7	36.1
Implant single rod	2.5 years	99.9	7.8
Implant double rod	3.2 years	99.9	7.8
Female sterilization	13 years	99.5	0.7
Male sterilization	13 years	99.8	0.7

The source mix (public and private) of each FP contraceptive was projected mainly on the basis of the average obtained from BDHS reports with some adjustments, especially for the short-acting methods. Generally, the public sector is the major source of contraceptives. In addition, the LAPMs are almost exclusively source from the public sector. According to information in BDHS 2011, the public sector contribution is expected to be higher due to the increased number of government field workers available for distributing FP supplies.

Table 8. Source Mix by Method

RH commodity	Public source (%)	Private source (%)
Oral contraceptives/pills	70	30
Male condoms	40	60
IUD	98	2
Injectables	89	11
Implant single rod	100	0
Implant double rod	100	0
Female sterilization	100	0
Male sterilization	100	0

In addition to the major assumptions listed earlier, the following assumptions given in table 9 were made for 2012-2016 based on BDHS1993-BDHS 2007 reports.

Table 9. Post-Partum Menorrhoea and Abstinence Insusceptibility, MR Rate, Median Age of Sterility, Sterility Coefficient

Sex	Post-partum menorrhoea and abstinence insusceptibility	MR rate	Median age of sterility	Sterility coefficient (BDHS 07)
Female	9.7 months	4.3%	26.8	2.60%
Male	-	-	36.0	

DDS kits were calculated from the DGFP circular and subsequent discussions with experts. The usage rates per health facility/satellite health clinics for all health facility categories in Bangladesh were provided by DGFP and were assumed to be constant for the period. In addition, a total of 35,928 health facilities and satellite clinics were assumed to exist throughout the forecast period. Table A-2 has the details on the number of facilities and usage rates.

It was assumed for the forecasting period that the following stock levels will be maintained at the different distribution and storage levels in Bangladesh.

Table 10. Minimum and Maximum Stock Levels for the Program

Min max levels	Min MOS	Max MOS
Central	2	5
District/region	2	3
Upazila	2	3
SDP	2	3
Total (country/program)	8	14
Shipment intervals (central)		3
Desired stock levels for program		13

Wastage rates for the commodities were assumed to be included in the CYP calculations, however, the wastage rate for DDS kits was assumed to be 5 percent for the forecast period.

Prices were obtained from DGFP and were assumed to be constant throughout the forecast period. Prices were converted to USD, and USD was used in the calculations to avoid the possible price changes due to devaluations.

QUANTIFICATION RESULTS

On the basis of the data and assumptions adopted during the national quantification workshops, expert discussions, review of additional documents, and the tools indicated earlier, the total value of forecasted pharmaceuticals and supplies required for the FP programs for Bangladesh’s public sector for the period January 2012 to December 2016 were obtained. Table 12 below provides a summary of the values of the various classes and categories of pharmaceuticals required for FP. The forecast is for absolute requirements and wastage only. Buffers, freight and logistics costs, current inventory position, etc., are not reflected in the figures. These parameters will be used to develop supply plans and to calculate the final quantities for procurement and cost requirements.

Forecasted Users and Acceptors by Method: Scenario I (Current CPR = 61.1 Percent 2012-2016)

To estimate the required commodities according to the current CPR trend stipulated for scenario I, some changes of method mix were required for LAPM. The forecasting accuracy of scenario I could be assessed by comparing the gap between required commodities with prevailing contraceptive uses and commodities for specific programmatic goals. Table 11 shows the projected users by contraceptive method mix for different methods. Result indicates an increase in users of pills, injectables, implants, and permanent methods. If the method mix of 2011 continues through 2012-2016, the total method users will increase to 21.1 million in 2012 and 22.6 million in 2016. Among them, 18.2 million and 20.8 million couples will be modern method users in 2012 and 2016, respectively. The results also indicate that the total cumulative modern method users during the forecasted period will be 97.5 million. Among them, 48.7 million will be pill users, 19.9 million injectables users, 9.9 million condom users, 4.1 million IUD users, and 3.5 million implant users; 11.2 million will be permanent method acceptors.

Table 11. Forecasted Number of Users (Scenario I)

	2012	2013	2014	2015	2016	Total
Pill	9,421,176	9,584,731	9,740,568	9,891,787	10,040,489	48,678,751
Condom	1,906,263	1,940,229	1,972,662	2,004,189	2,035,234	9,858,577
Female sterilization	1,736,818	1,767,764	1,797,315	1,826,039	1,854,324	8,982,260
Injectables	3,825,235	3,906,328	3,984,778	4,061,824	4,138,309	19,916,474
IUD	423,614	625,185	832,902	1,046,632	1,266,368	4,194,701
Male sterilization	427,850	439,785	451,521	463,190	474,888	2,257,234
Implant	482,920	595,004	710,158	828,398	949,776	3,566,256
Traditional	2,956,826	2,699,074	2,428,567	2,146,710	1,854,324	12,085,501
Total	21,180,702	21,558,100	21,918,471	22,268,769	22,613,712	109,539,754

Forecasted Contraceptive Commodities Requirements: Scenario I

Table 12 shows the projected requirements of contraceptive commodities for scenario I. Under this scenario, the projected commodities are 1478.7 million condoms, 730.1 million cycles of pills, and 79.7 million doses of injectables will be required for 2012-2016. By applying the source mix, the required commodities for the public sector are 511.1 million cycles of pills, 591.5 million condoms, and 70.9 million doses of injectables will be required. The other commodities required are one- and two-rod implants and IUDs at 1.52 million, 381.6 thousand, and 1.77 million, respectively. It is worth mentioning that 20 percent of implant users are assumed to be two-rod users during the forecasted period.

Table 12. Total Commodities Required under Scenario I

Commodity		2012	2013	2014	2015	2016	Total
Pill	Public	98,922,360	100,639,672	102,275,960	103,863,768	105,425,136	511,126,896
	Private	42,395,296	43,131,288	43,832,556	44,513,040	45,182,200	219,054,380
	Total	141,317,656	143,770,960	146,108,516	148,376,808	150,607,336	730,181,276
Condom	Public	114,375,800	116,413,744	118,359,744	120,251,352	122,114,040	591,514,680
	Private	171,563,696	174,620,608	177,539,600	180,377,024	183,171,072	887,272,000
	Total	285,939,496	291,034,352	295,899,344	300,628,376	305,285,112	1,478,786,680
Injectables	Public	13,617,836	13,906,528	14,185,810	14,460,092	14,732,381	70,902,647
	Private	1,683,103	1,718,784	1,753,302	1,787,202	1,820,856	8,763,247
	Total	15,300,939	15,625,312	15,939,112	16,247,294	16,553,237	79,665,894
IUD	Public	287,864	336,865	387,045	438,494	288,964	1,739,232
	Private	5,875	6,875	7,899	8,949	5,897	35,495
	Total	293,739	343,740	394,944	447,443	294,861	1,774,727
Implant (one rod)	Public	244,272	282,611	321,943	362,302	315,666	1,526,795
	Private	0	0	0	0	0	0
	Total	244,272	282,611	321,943	362,302	315,666	1,526,795
Implant (two rod)	Public	61,068	70,653	80,486	90,576	78,917	381,699
	Private	0	0	0	0	0	0
	Total	61,068	70,653	80,486	90,576	78,917	381,699

Forecasted Users and Acceptors by Method: Scenario II (Achieve CPR = 72 Percent by 2016)

Table 13 shows the projected users by contraceptive method mix for different methods. Results indicate an increase in users of pills, injectables, implants, and permanent methods. If the method mix of 2011 continues through 2012-2016, the total method users will increase to 21.9 million in 2012 and 26.6 million in 2016. Among them, 18.8 million and 24.5 million couples will be modern method users in 2012 and 2016, respectively. The results also indicate that the total cumulative modern method users during the forecasted period will be 101.1 million. Among them, 53.9 million will be pill users, 22.0 million injectables users, 10.9 million condom users, 4.7 million IUD users, and 3.9 million implant users; 12.5 million will be permanent method acceptors.

Table 13. Forecasted Number of Users (Scenario II)

	2012	2013	2014	2015	2016	Total
Pill	9,757,317	10,268,683	10,783,176	11,303,512	11,831,673	53,944,361
Condom	1,974,277	2,078,681	2,183,812	2,290,221	2,398,312	10,925,303
Female sterilization	1,798,786	1,893,909	1,989,695	2,086,646	2,185,129	9,954,165
Injectables	3,961,716	4,185,078	4,411,300	4,641,515	4,876,568	22,076,177
IUD	438,728	669,797	922,054	1,196,004	1,492,283	4,718,866
Male sterilization	443,116	471,168	499,850	529,296	559,606	2,503,036
Implant	500,150	637,462	786,172	946,625	1,119,212	3,989,621
Traditional	3,062,324	2,891,676	2,688,515	2,453,081	2,185,129	13,280,725
Total	21,936,414	23,096,454	24,264,574	25,446,900	26,647,912	121,392,254

Forecasted Contraceptive Commodities Requirements: Scenario II

Table 14 shows the projected requirements of contraceptive commodities for scenario II. Under this scenario, the projected commodities required are 1638.8 million condoms, 809 million cycles of pills, and 88.3 million doses of injectables during 2012-2016. By applying the source mix, the required commodities for the public sector are 566.4 million cycles of pills, 655.5 million condoms, and 78.6 million doses of injectables for 2012-2016. The other commodities required are implants (one- and two-rod) and IUDs at 1.78 million, 446.5 thousand, and 2.1 million, respectively.

Table 14. Total Commodities Required under Scenario II

		2012	2013	2014	2015	2016	Total
Pill	Public	102,451,832	107,821,168	113,223,344	118,686,880	124,232,568	566,415,792
	Private	43,907,924	46,209,076	48,524,292	50,865,804	53,242,528	242,749,624
	Total	146,359,756	154,030,244	161,747,636	169,552,684	177,475,096	809,165,416
Condom	Public	118,456,632	124,720,848	131,028,696	137,413,264	143,898,720	655,518,160
	Private	177,684,960	187,081,280	196,543,024	206,119,888	215,848,080	983,277,232
	Total	296,141,592	311,802,128	327,571,720	343,533,152	359,746,800	1,638,795,392
Injectables	Public	14,103,710	14,898,876	15,704,226	16,523,792	17,360,580	78,591,184
	Private	1,743,155	1,841,434	1,940,972	2,042,266	2,145,690	9,713,517
	Total	15,846,865	16,740,310	17,645,198	18,566,058	19,506,270	88,304,701
IUD	Public	319,995	390,026	465,069	545,354	340,514	2,060,958
	Private	6,531	7,960	9,491	11,130	6,949	42,061
	Total	326,526	397,986	474,560	556,484	347,463	2,103,019
Implant (one rod)	Public	269,971	323,049	380,049	441,119	371,980	1,786,168
	Private	0	0	0	0	0	0
	Total	269,971	323,049	380,049	441,119	371,980	1,786,168
Implant (two rod)	Public	67,493	80,762	95,012	110,280	92,995	446,542
	Private	0	0	0	0	0	0
	Total	67,493	80,762	95,012	110,280	92,995	446,542

Almost 12 million cumulative users would be added during the forecasted period if we could achieve scenario II. The requirements for contraceptive commodities can be viewed as ambitious in LAPM because it is assumed that the current mix of modern methods will continue into the future and users of traditional methods will shift to modern methods and from short-term modern reversible methods to LAPMs.

Forecasted Users and Acceptors: Scenario III (Achieve TFR = 2.0 by 2016)

To provide consistency, we estimated the required commodities with another programmatic goal (achieve TFR of 2.0 by 2016). Table 15 shows the projected users by contraceptive method mix for different methods. Results indicate an increase in users of pills, injectables, implants, and permanent methods. If the method mix of 2011 continues through 2012-2016, the total method users will be increased to 23.7 million in 2012 and 25.9 million in 2016. Among them, 20.4 million and 23.8 million WRA will be modern method users, respectively. The result also indicates that the number of total cumulative modern method users during the forecasted period will be 110.6 million out of 124.3 million. Among them, 55.3 million use pills, 22.6 million injectables, 11.2 million condoms, 4.8 million IUDs, 4.0 million implants, and 12.7 million permanent methods. The number users are somewhat (2.9 million) higher under the TFR goal than the CPR goal. The reason behind this difference is the relationship between fertility and CPR. The spectrum model gives an estimate of CPR based on the targeted value TFR and by using a regression equation; $TFR = 7.3 \times (1 - 0.88u \times e)$. The intercept 7.3 represents the expected level of natural fertility, u denotes required CPR and e is contraceptive effectiveness (Bongaarts 1983). Due to the empirical relation of TFR with its proximate determinant, the estimated CPR as well as users in higher under TFR goal than CPR goal.

Table 15. Number of Users by Methods 2012-2016, Scenario III

	2012	2013	2014	2015	2016	Total
Pill	10,563,214	10,813,280	11,055,785	11,294,264	11,531,010	55,257,553
Condom	2,137,341	2,188,923	2,239,021	2,288,347	2,337,367	11,190,999
Female sterilization	1,947,355	1,994,352	2,039,996	2,084,939	2,129,601	10,196,243
Injectables	4,288,931	4,407,033	4,522,822	4,637,717	4,752,646	22,609,149
IUD	474,965	705,320	945,364	1,195,026	1,454,362	4,775,037
Male sterilization	479,714	496,156	512,487	528,862	545,386	2,562,605
Implant	541,460	671,270	806,047	945,850	1,090,771	4,055,398
Traditional	3,315,253	3,045,036	2,756,483	2,451,074	2,129,601	13,697,447
Total	23,748,233	24,321,370	24,878,005	25,426,079	25,970,744	124,344,431

Forecasted Contraceptive Commodities Requirements: Scenario III

Table 16 shows the projected requirements of contraceptive commodities for scenario III. Based on CYP attributes, we estimated that 1,678.6 million condoms, 828.9 million cycles of pills, and

90.4 million doses of injectables are required for 2012-2016. By applying the source mix, the required commodities in the public sector are 580.2 million cycles of pills, 671.5 million condoms, and 80.5 million doses of injectables for 2012-2016. The other commodities are implants (one- and two-rod) and IUDs at 1.75 million, 437.8 thousand, and 2.0 million, respectively, for 2012-2016. These results are consistent with other estimates.

Table 16. Total Commodities Required under Scenario III (TFR Goal 2.0)

		2012	2013	2014	2015	2016	Total
Pill	Public	110,913,752	113,539,440	116,085,744	118,589,776	121,075,608	580,204,320
	Private	47,534,464	48,659,760	49,751,032	50,824,188	51,889,544	248,658,988
	Total	158,448,216	162,199,200	165,836,776	169,413,964	172,965,152	828,863,308
Condom	Public	128,240,456	131,335,400	134,341,232	137,300,832	140,242,000	671,459,920
	Private	192,360,688	197,003,104	201,511,840	205,951,264	210,363,008	1,007,189,904
	Total	320,601,144	328,338,504	335,853,072	343,252,096	350,605,008	1,678,649,824
Injectables	Public	15,268,593	15,689,034	16,101,245	16,510,273	16,919,418	80,488,563
	Private	1,887,129	1,939,094	1,990,042	2,040,596	2,091,164	9,948,025
	Total	17,155,722	17,628,128	18,091,287	18,550,869	19,010,582	90,436,588
IUD	Public	327,022	385,633	446,236	508,941	332,544	2,000,376
	Private	6,674	7,870	9,107	10,387	6,787	40,825
	Total	333,696	393,503	455,343	519,328	339,331	2,041,201
Implant (one-rod)	Public	277,194	322,726	369,892	418,738	362,946	1,751,495
	Private	0	0	0	0	0	0
	Total	277,194	322,726	369,892	418,738	362,946	1,751,495
Implant (two-rod)	Public	69,299	80,681	92,473	104,684	90,736	437,874
	Private	0	0	0	0	0	0
	Total	69,299	80,681	92,473	104,684	90,736	437,874

From the scenarios discussed above, we need to select the scenario that provides the most achievable performance levels. Because the prevailing method mix of contraceptives is likely to continue during the period of forecasting, the scenario selected should provide the least deviation from the actual figures for the beginning of the projection period; this scenario may also provide the least deviation in subsequent years. If we assume that impact of socio-economic setting on FP outcomes will remain constant during 2012-2016, we may adopt options from either scenario II or III. These scenarios are based on the program goals with the least deviation. The share of modern reversible methods will continue as it is now, but there will be a shift from traditional methods to modern reversible methods such as pills, condoms, and injectables, and from these methods to LAPMs. There will be a net decline in the share of the method mix of traditional methods.

Comparison of Reported and Forecasted Requirements of Contraceptive Commodities

To provide reliable estimates of required commodities, the forecasted result must be compared with the consumption trend of LMIS data (table 17). The reported number of condoms was 126.76 million in 2011, compared to the projected number of 128.2 million in 2012. Similarly, the number of cycles of pills actually distributed in 2011 was 109.7 million, and the current

projection is 110.9 million cycles of pills for 2012. The actual number of injectables for 2011 was 13.75 million. However, the forecasted figures appear to be 15.2 million doses for 2012. The number of doses for 2011 is slightly higher. If we draw the consumption trend with the previous data, the trend agrees with the forecasted results. The actual number of IUDs and implant acceptors was 0.274 million and 0.258 in 2011, respectively, compared to 0.327 million and 0.346 million acceptors in 2012, respectively. Because the use of IUDs and implants are declining, some changes have been made in the method mix to ensure the slight increase in LAMP is consistent with the program goal. From this discussion, it would seem that scenario III might be achievable.

Table 17. Trends in LMIS Consumption Data 2009-2011

	Condom (millions)	Pill (millions)	Injectables (millions)	IUD	Implant
2009	97.31	104.81	12.44	306,562	31,727
2010	123.93	109.99	12.88	233,750	127,849
2011	126.76	109.69	13.75	274,341	257,993

Estimated Cost of the Commodities

The total cost of commodities is estimated (in Bangladeshi taka, BDT) by taking the current per unit price of each commodity and multiplying it by the forecasted commodity requirement. The total estimated cost for 2012-2106 for oral pills, male condoms, injectables, implants, and IUDs under scenario III is 10,198.3 million BDT equivalent to USD 124.4 million (1 USD = 82 BDT). With the same unit price, the estimated cost under scenario II is BDT 10,090.8 million (equivalent to USD 123.1 million). The finding indicates that under scenario II, the expected cost is 1.3 million less (table 18).

Table 18. Public Sector: Total Commodity Requirements by Method, Quantity, and Value in 2012-2016 for each Scenario

	Per unit cost (BDT)	Commodity (millions)			Total value (BDT, millions)		
		I	II	III	I	II	III
Progestin-only pill	5.9	511.13	566.42	580.20	3015.6	3341.85	3423.21
Injectables ^a	30	70.90	78.59	80.49	2127.1	2357.74	2414.66
Male condom	1.92	591.51	655.52	671.46	1135.7	1258.59	1289.20
Implant – Jadelle (2 rods)	1520	0.38	0.45	0.44	580.2	678.74	665.57
Implant – Implanon (1 rod)	1342	1.53	1.79	1.75	2049.0	2397.86	2351.31
IUD copper T380A	27	1.74	2.06	2.00	47.0	56.00	54.35
Total cost					8954.5	10,090.78	10,198.30
					\$109.2	\$123.06	\$124.37

^aMedroxyprogesterone acetate 150 mg/ml in, 1 ml

Procedural Cost of Non-Scalpel Vasectomy and Tubectomy

The number of permanent methods users during the period will be 12,758,848, whereas number of acceptors of the non-scalpel vasectomy (NSV) and tubectomy methods are estimated at 786,271 (annex A). By applying the average procedural cost (3525 BDT per NSV and 3825 BDT per tubectomy), the total estimated cost is BDT 2,903.740 million or USD 35.4 million.

Drugs and Dietary Supplement Kits

Since April 1998, a single kit (known as combined DDS kits) is being used at all service centers under DGFP for better utilization of drugs in the Maternal Child Reproductive and Adolescent Health Program. It is essential to ensure an adequate and regular supply of drugs for the successful operation of health care facilities (table 19). The composition of the DDS, a satellite kit, and new DDS kits can be found in the annex A.

Table 19. Public Sector Consumption Forecast: Total DDS Kit Requirements by Quantity and Value

	Unit (price)	2011	2012	2013	2014	2015	2016	Total
Quantity	each	74,516	77,177	79,839	82,498	85,154	87,811	412,479
Value	\$125.00	-	\$9,647,079	\$9,979,904	\$10,312,234	\$10,644,288	\$10,976,390	\$51,559,895

The total estimated cost for 2012-2106 for contraceptives (oral pills, male condoms, injectables, implants, and IUDs), permanent methods procedures, and DDS kits on the basis of morbidity forecasting methodology (scenario III) is USD 211.4 million.

Three-Year Supply Plan

Effective forecasting and supply planning support programs by ensuring product availability and by minimizing the need for costly emergency shipments. It also facilitates pooled procurement (consolidating orders to buy in larger volumes), which further reduces prices. A three-year supply plan is effective and useful in developing systems for the efficient and timely procurement of commodities and supplies and the ongoing management of all FP commodities at the national level (annex C).

CHALLENGES, RECOMMENDATIONS, AND CONCLUSION

Challenges

- Successful forecasting and quantification remains a challenge because of inconsistent data (consumption data vs. service data that don't match). Therefore, certain assumptions and decisions have to be made to cater to this deficiency.
- Quantification capacity at the country level and at the program level is limited.
- The current forecast only considered FP commodity requirements. Condom requirements must be adjusted for the STD and HIV/AIDS prevention program.
- DDS kits are distributed at the clinics according to the government supply rule, which does not consider demand, so unmet needs are high. Therefore, forecasting for DDS kits remains a challenge.
- Since the census 2011 data was not available, there was some chance of error in estimating MWRA.
- Obtaining the number of days out of stock of products at the facility level for use in consumption forecasting was not possible.
- Obtaining the complete document of BDHS 2011 was a challenge for the exercise.
- The accuracy of this exercise fully depends on the implementation of successful FP program (as per target set on HPNSDP).

Recommendations

- The FP commodity requirement forecasts should be reviewed and updated bi-annually by the FWG members. This will ensure adequate funding for supplies and supply chain operations, especially by supporting donor coordination efforts that will eventually ensure commodity security. The government, nongovernmental organizations, and the private and social marketing sectors need to coordinate among themselves.
- Timely procurement of commodities is required to fill the pipeline, and information sharing on lead times and status of procurements/shipments is critical to monitor the pipeline and make decisions to ensure commodity security.
- A secured and reliable supply pipeline is required to ensure contraceptive commodity availability for clients. This will only be achieved through close collaboration between the government, other RH stakeholders, and partners who support the provision of commodities for the FP program.

- Delivery of bulky commodities at all levels requires special consideration because of space constraints.
- Improve technical capacity for forecasting and quantification is required at the district level.
- Comparative analysis of usage between contraceptives and interrelation changes among contraceptives are needed. The domino effect of oral pills should be assessed as well.
- A situational analysis on the demand of DDS kits at both service and user levels are strongly recommended.
- The output of this exercise should be used for decision making in procurement and resource mobilization for the next five years.
- Quantification and supply planning can be institutionalized by introducing it as a new module in procurement training run by MOHFW.

Conclusion

The main objective of this assignment was to forecast RH commodity requirements of contraceptives for 2012-2016. The forecast is accomplished based on three simulations. The first scenario assumes that the prevailing acceptor method mix will continue to hold during the projection period, whereas the second and third scenarios assume (with target specific goals) an increase in the method mix for LAPMs. This assignment shows that the last scenarios provide estimates of contraceptive commodities that are very close to the actual figures of the LMIS consumption report. The successful implementation of the quantification will depend on program achievement and availability of resources. However, if programmatic inputs are provided to accommodate the increase in the number of acceptors of FP methods, then the projected requirements can be modified based on trends in service statistics data during subsequent years.

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ANNEX A. OTHER DATA

Table A-1. FWG Meeting on March 18, 2012; Venue: DGFP/IEM Conference Room

SL #	Name	Designation
1	Dr. S. A. Fida Hasan	PM (FSDP), DGFP
2	Amita Dey	DPM (FSDP), DGFP
3	Mohammad Shahidul Islam	Education Team Leader–USAID
4	Dr. Md. Abdur Raquib	AD (QA), CCSDP
5	Md. Abdul Baten	AD (L. Proc), L&S Unit DGFP
6	Md. Humayen Kabir	Asst. PM, DGFP
7	A. K. M. Rokunuzzaman	AD (MP), IEM, DGFP
8	Sharif Md. Shazedul Alam	Assistant Director (L&S), MCH-Service Unit DGFP, Dhaka
9	Dil Ara Banu	Sr. Instructor, NIPORT
10	Dr. Shaif Moh. Ismial Hossain	Associate, Population Council
11	Dr. Margub Aref Jhangir	NFPP/UNFPA
12	Afsana Tahir	Operation Manager, UNFPA
13	Jalal Uddin Ahmed Hossain	Director, DGFP
14	Md. Zahiuddin Babar	Director (MIS), DGFP
15	Md. Rokon Uddin	Asst. Director (Coordinator)
16	Khurshid Islam	FPO (CR), L & S Unit
17	Jalal Uddin Ahmed	FPO, L&S Unit
18	Md. Momtaz Uddin	DD (L&S)
19	Sultana Zakaria Akhter	Asst. Director (L&S,) L&S Unit
20	Md. Saiful Islam	Additional Director, L&S Unit
21	Sankar Lal Barai	Proc. Specialist, GFA Consulting Group
22	Md. Lutfur Rahman	FPO (LR), L&S Unit, DGFP
23	Md. Shahadat Hossain	Procurement Officer, L&S Unit
24	Dr. Rounoq Sultana	DPM (FSDP), DGFP
25	Md. Zame Alam	Program Manager, CCSDP-DGFP
26	Mohammed Ahsanul Alam	Evaluation Specialist NIPORT
27	A. K. M. Zahanur Islam	Deputy Director Admin, NIPORT
28	M.M.Neazuddin	DG-FP
29	Sabina Parveen	Asst. Director (F. Proc.) L&S Unit
30	Md. Shahjahan Ali	PA. L&S DGFP
31	Mohammad Badsha Hossain	DPM. IEM, DGFP
32	Md. Mortaza Ali	DG-FP
33	Abdul	DGFP
34	Andualem Oumer	Consultant, MSH/SIAPS Program
35	Dr. S. Giashuddin	Consultant, MSH/SIAPS Program
36	Dr. Mahbubur Rahman	LA-CCSDP
37	Golam Kibria	Senior Technical Advisor –MSH/SIAPS Program
38	Dr. Zubayer Hussain	Country Director- MSH/SIAPS Program

Table A-2. DDS Kit Usage Rates per Health Care Category and Number of Facilities

S. no	Service center (SDP) name	Updated number	DDS kits/month/SDP
1	MCHIT, Azimpur, Dhaka	1	8
2	Fertility Services and Training Center, Mohammadpur, Dhaka	1	2
3	A) High-performing MCWC at district level	23	4
	B) Other MCWC at district level	74	3
4	MCWC, Agrabad, Chittagong	1	1
5	FWVTI, Rajshahi	1	1
6	A) EOC operating MCWC at Upazila and Union	10	2
	B) Non-EOC operating MCWC at Upazila and Union	28	1
7	MCH Unit at Upazila Health Complex (FP clinic)	485	1
8	A) Improved UHFWC	1,500	1
	B) Other UHFWC	2,225	1
9	Rented or Union Parishad Clinic	200	0.5
10	Rural Dispensary (FWV) family welfare visitor posted	1,362	0.5
11	Family Planning Model Clinic (Medical College Hospital attached)	16	1
12	Mohanagar Satellite Clinic, Basabo, Dhaka	1	1
13	For satellite clinic activities	30,000	0.01
	Total	35,928	28

Table A-3. Base Year Population by Age and Sex (Census 2001)

Age	Male ('000)	Female ('000)	Total ('000)
0-4	8778.3	8108.8	16887.1
5-9	9261.7	8351.9	17613.6
10-14	8839.2	7802.0	16641.2
15-19	6604.9	5953.4	12558.3
20-24	5100.7	6358.5	11459.2
25-29	5138.3	6157.2	11295.5
30-34	4527.5	4656.6	9184.1
35-39	4412.9	3983.7	8396.6
40-44	3596.4	2912.4	6508.8
45-49	2740.4	2089.7	4830.1
50-54	2283.6	1917.3	4200.9
55-59	1374.5	1099.3	2473.8
60-64	1605.0	1364.4	2969.4
65-69	854.6	660.3	1514.9
70-74	971.8	734.2	1705.9
75-79	375.7	270.5	646.1
80+	609.1	520.1	1129.1
Total	67076.0	62941.1	130017.1

Table A-4. Trends in Current Use of FP Methods (Percentage) from BDHS 1993-94 to BDHS 2011 and 72% CPR Target by 2016

Method	BDHS 93-94	BDHS 96-97	BDHS 99	BDHS 04	BDHS 07	BDHS 11	For 2016
Pill	17.4	20.8	23.0	26.2	28.5	27.2	32.1
Injections	4.5	6.2	7.2	9.7	7.0	11.2	13.2
Male condom	3	3.9	4.3	4.2	4.5	5.5	6.5
Periodic abstinence	4.8	5	5.4	6.5	4.9	6.9	8.1
Implant-Norplant	0	0.1	0.5	0.8	0.7	1.1	1.3
IUD	2.2	1.8	1.2	0.6	0.9	0.7	0.8
Female sterilization	8.1	7.6	6.7	5.2	5.0	5.0	5.9
Male sterilization	1.1	1.1	0.5	0.6	0.7	1.2	1.4
Withdrawal	2.5	1.9	4.1	3.6	2.9	1.9	2.2
Others	1.1	0.8	0.9	0.6	0.6	0.4	0.5
Total	44.7	49.2	53.8	58	55.8	61.1	72.0

Table A-5. Source Mix by Methods

Method	Source	BDHS 99	BDHS 04	BDHS 2007	BDHS 2011
Pill	Public	60	59	52	48.0
	Private	40	41	48	52
Condom	Public	22	22	24.2	19.0
	Private	78	78	75.8	81.0
IUD	Public	96	95	96	95.0
	Private	4	5	4	5.0
Inject	Public	96	92	79	75.0
	Private	4	8	21	25.0
FS	Public	95	91	90	78.0
	Private	5	9	10	22.2
MS	Public	97	99	99	93.0
	Private	3	1	1	7.0
Implant	Public	99	98	94	98.0
	Private	1	2	5	2.0

Table A-6. Proportion of Married Women of Reproductive Age Group

	BDHS 93	BDHS 96	BDHS 99	BDHS 04	BDHS 07
15-19	47.8	49.4	48.8	46.6	48.6
20-24	84.3	79.8	78.7	81.7	82.8
25-29	93.8	91.1	89.4	92.1	91.9
30-34	91.0	91.4	90.9	93.2	92.8
35-39	89.9	90.1	87.6	88.1	89.5
40-44	87.6	85.4	82.9	82.7	85.2
45-49	83.7	80.1	83.1	80.9	77.8
Total	81.3	79.8	78.8	79.7	80.4

Table A-7. Abortion/MR Rate by Age Group

Age groups	BDHS 96	BDHS 99	BDHS 04	BDHS 07	Period 2012-2016
15-19	3.40	3.20	4.20	3.60	3.60
20-24	3.30	3.40	4.00	3.90	3.65
25-29	4.10	3.90	5.20	3.60	4.20
30-34	4.20	5.50	6.20	4.60	5.13
35-39	5.20	7.30	6.40	6.30	6.30
40-44	3.40	6.80	8.30	8.00	6.63
45-49	5.30	7.40	8.00	12.60	8.33
Total rate	3.80	4.20	5.00	4.20	4.30

Table A-8. Percentage of Sterility Coefficient

BDHS 93-94	BDHS 96	BDHS 99	BDHS 04	BDHS 07	2012-2016
0.7	1.4	1.6	1.4	2.6	2.6

Table A-9. Public Sector: Total Commodity Requirements by Method, Quantity, and Value

Commodities	Total quantities (2012-2016)	Total values (in BDT) (2012-2016)
Progestin - only pill	580,204,320	3,423,205,488
Injectable - medroxyprogesterone acetate 150 mg/ml in 1 ml	80,488,563	2,414,656,890
Male condom	671,459,920	1,289,203,046
Implant - Jadelle (2 rods)	437,874	665,568,480
Implant - Implanon (1 rod)	1,751,495	2,351,311,978
IUD copper T380A	2,000,376	54,350,216
		10,198,296,098
	Total	USD 124,369,464

Table A-10. Number of New Acceptors During Forecasted Period 2012-2016

	2012	2013	2014	2015	2016	Total
Female sterilization	89,916	89,594	89,890	90,586	80,465	440,451
IUD	333,695	393,503	455,343	519,327	339,331	2,041,199
Male sterilization	67,280	68,910	70,683	72,563	66,384	345,820
Implant	346,493	403,407	462,365	523,422	453,682	2,189,369
NSV and Tubectomy	157,196	158,504	160,573	163,149	146,849	786,271
Total	837,385	955,415	1,078,282	1,205,898	939,862	5,016,842

Table A-11. Public Sector: DDS Kit Requirements by Quantity and Value

Commodity	Unit	Unit price	Total quantity per month	Total value per month	Total value per year
DDS kit	each	\$125.00	5,929	\$741,169	\$8,894,025

Table A-12. Drugs and Dietary Supplement Kit Contents

Sl. No.	Product	Unit pack size	Number of unit in each kit box
1	Ferrous fumarate + folic acid (200 mg + 0.20 mg) tabs	1000 × 2	2000 tabs
2	Vitamin B complex (thiamine HCl 5 mg, riboflavin 2 mg, pyridoxine HCl 2.0 mg, nicotinamide 20 mg)	10 tab/strips, 50 strips/blister	500 tabs
3	Paracetamol 400 mg tabs	1 tab/strips/blister, 50 strips/blister	50 tabs
4	Paracetamol 500 mg tabs	10 tab/strips, 50 strips/blister	500 tabs
5	Antacid 650 mg tabs: dried AlOH gel + MgOH	10 tabs/strip × 25 strips	250 tabs
6	Hyoscine butyl bromide 10 mg tabs	10 tabs/str × 10 strips	100 tabs
7	Mythyl egrotonine maleate 0.12 mg tabs	10 tabs/str × 3 strips	30 tabs
8	Metronidazol 400 tabs	10 tabs/blister × 50 blisters	500 tabs
9	Chlopheniramine maleate 4 mg tabs	10 tabs/blister × 20 blisters	200 tabs
10	Salbutamol 4 mg tabs	10 tabs/blister × 5 blisters	50 tabs
11	Aminophylline 100 mg tabs	10 tabs/blister × 5 blisters	50 tabs
12	Diazepam 5 mg tabs	10 tabs/blister × 5 blisters	50 tabs
13	Co-trimoxazole 120 mg tabs	10 tab/strips, 30 strips/blister	300 tabs
14	Co-trimoxazole 480 mg tabs	10 tab/strips, 30 strips/blister	500 tabs
15	Amoxicillin 250 mg caps	10 tabs/blister × 50 blisters	500 caps
16	Tetracycline 250 mg caps	10 tabs/blister × 20 blisters	200 caps
17	Doxycycline 100 mg caps	10 tabs/blister × 5 blisters	50 caps
18	Amoxicillin 125 mg/5mg, 100 mg, dry syrup	20 bottle/carton	20 bottles
19	Amoxicillin 125 mg/1.25 ml, 10 ml, suspension	10 bottle/carton	10 bottles
20	Co-trimoxazole 60 ml, suspension	20 bottle/carton	20 bottles
21	Paracetamol 120mg/5ml, syrup, 60 ml bottle	15 bottle/carton	15 bottles
22	Chloramphenicol eye ointment 10 mg/gm (5 mg tube)	5 tube/box	5 tubes
23	Neomycin and bacitracin skin ointment 10 mg (neomycin sulfate 5 mg + bacitracin zinc 500 IU/g)	5 tube/box	5 tubes
24	Benzyl benzoate lotion 25%, 450 ml	2 bottle/carton	20 bottles
25	Compound benzoic acid (benzoic acid 6 g + salicylic acid 3 mg)/100 mg ointment, 1.0 kg	1 kg/jar	1 jar
26	Gentian violet 10 ml (2% solution in distilled water)	5 tube/box	5 bottles
27	Dispensing envelop (12 cm × 9 cm), self-locking, plastic	200 pcs	200 pcs

ANNEX B. LIST OF BOOKS AND REPORTS CONSULTED AND CONTRIBUTORS

- DGFP annual reports
- National Strategy on Reproductive Health Commodity Security for Bangladesh DGFP August 2010
- Supply manual, DGFP 2006
- Quantification reports 2001

The following experts and institutions were contacted to obtain more data and information on the FP.

- Md. Kafil Uddin, Line Director, L&S unit, DGFP
- Dr. Sharif Mohammed Hossain, Associate, Pop Council
- Dr. Zane Alam, Program Manager, CCSDP, DGFP
- Dr. Fida Hasan, Program Manager, FSDP, DGFP
- Ms. Khursida, Programmer, MIS, DGFP
- Md. Abdullah, Senior Technical Advisor-Logistics, SIAPS
- Abdullah Imam Khan, Senior Technical Advisor-Procurement, SIAPS

ANNEX C. SHIPMENT SUMMARY BY SUPPLIER

Table C-1. Supply Planning by Products

PipeLine 5.1

Run Date: July 26, 2012

Report Period: January 2012-December 2014

DGFP Bangladesh: NEW-Mor-Demog-basedSP

Status: Planned, ordered, shipped, arrived, received

Supplier: Government of Bangladesh/TBD

Product	Funding	Receipt date	Quantity	Status	ID	Total cost ^a
IUD	IDA	July 31, 2012	500,000	Ordered	153	180,000
	Not selected	Aug 31, 2012	400,000		184	144,000
			Oct 31, 2014	208,393	Planned	201
IUD total						399,021
Male condom	IDA	Jan 3, 2012	4,800,000	Received	139	108,480
		Jan 5, 2012	4,800,000		140	108,480
		Jan 12, 2012	14,400,000		141	325,440
		Jan 29, 2012	8,050,000		142	181,930
		Feb 29, 2012	4,800,000		146	108,480
		Apr 18, 2012	5,202,000		118	117,565
Male condom total						950,375
Oral pills (progestin only) Shukhi	IDA	July 31, 2012	150,000,000	Ordered	109	10,500,000
	Not selected	Oct 31, 2013	51,364,646	Planned	198	3,595,525
		March 31, 2014	50,703,172		199	3,549,222
		Sept 30, 2014	58,042,872		200	4,063,001
Oral hormonal contraceptive total						21,707,748
RH/DDS kit	GOB	Apr 30, 2012	3,000	Received	159	375,000
		May 20, 2012	11,845		158	1,480,625
	IDA	Aug 31, 2012	60,000	Ordered	112	7,500,000
	Not selected	Jan 31, 2013	28,087	Planned	186	3,510,875
		Apr 30, 2013	17,787		187	2,223,375
		Aug 31, 2013	23,716		188	2,964,500
		Nov 30, 2013	17,787		189	2,223,375
		May 31, 2014	35,574		212	4,446,750
RH/injectables	KfW	Mar 27, 2012	3,600,000	Received	111	3,024,000

National Reproductive Health Commodities Quantification Bangladesh 2012-2016

Product	Funding	Receipt date	Quantity	Status	ID	Total cost^a	
	IDA	July 31, 2012	10,000,000	Ordered	110	3,800,000	
	GOB	July 31, 2012	2,000,000	Ordered	163	760,000	
	Not selected		June 30, 2013	6,833,673	Planned	202	2,596,796
			Nov 30, 2013	6,685,924		203	2,540,651
			Apr 30, 2014	6,972,220		204	2,649,444
			Oct 31, 2014	8,050,633		210	3,059,241
					RH total	43,154,631	
Subdermal implant/double rod	IDA	July 30, 2012	130,000	Ordered	157	2,470,000	
	Not selected		July 31, 2013	38,689	Planned	205	735,091
			Dec 31, 2013	42,161		206	801,059
			May 31, 2014	42,768		208	812,592
			Nov 30, 2014	46,236		209	878,484
Subdermal implant/single rod	IDA	July 30, 2012	350,000	Ordered	113	5,873,000	
	GOB	July 30, 2012	321,000		115	5,386,380	
	Not selected	Aug 31, 2014	180,799	Planned	211	3,033,807	
					Subdermal implant total	19,990,413	
					GOB/TBD total	86,202,189	
					Grand total	86,202,189	

^aTotal cost = product cost + freight; in this case, freight = 0, so product cost = total cost

Table C-2. Supply Planning by Products

PipeLine 5.1
 Run Date: 26-Jul-12
 Report Period: Jan 2012 - Dec 2014
 DGFP Bangladesh: NEW- Mor-Demog- basedSP
 Category: all
 Supplier: GOB
 Status: planned

Product	Funding	Receipt date	Quantity	Status	ID	Total cost ^a	
IUD	Not selected	Oct 31, 2014	208,393	Planned	201	75,021	
						IUD total	75,021
Oral pills (progestin only) Shukhi	Not selected	Oct 31, 2013	51,364,646	Planned	198	3,595,525	
		March 31, 2014	50,703,172		199	3,549,222	
		Sept 30, 2014	58,042,872		200	4,063,001	
						Oral hormonal contraceptive total	11,207,748
RH/DDS kit	Not selected	Jan 31, 2013	28,087	Planned	186	3,510,875	
		Apr 30, 2013	17,787		187	2,223,375	
		Aug 31, 2013	23,716		188	2,964,500	
		Nov 30, 2013	17,787		189	2,223,375	
		May 31, 2014	35,574		212	4,446,750	
RH/injectables	Not selected	June 30, 2013	6,833,673	Planned	202	2,596,796	
		Nov 30, 2013	6,685,924		203	2,540,651	
		Apr 30, 2014	6,972,220		204	2,649,444	
		Oct 31, 2014	8,050,633		210	3,059,241	
						RH total	26,215,006
Subdermal implant/double rod	Not selected	July 31, 2013	38,689	Planned	205	735,091	
		Dec 31, 2013	42,161		206	801,059	
		May 31, 2014	42,768		208	812,592	
		Nov 30, 2014	46,236		209	878,484	
Subdermal implant/single rod	Not selected	Aug 31, 2014	180,799	Planned	211	3,033,807	
						Subdermal implant total	6,261,033
						GOB/TBD total	43,758,809
						Grand total	43,758,809

^aTotal cost = product cost + freight; in this case, freight = 0, so product cost = total cost