



Swaziland Ministry of Health

Quantification of Family Planning Commodities for April 2016 to March 2019, Swaziland



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Swaziland Ministry of Health

Quantification of Family Planning Commodities for April 2016 to March 2019, Swaziland

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The goal of the Systems for Improved Access to Pharmaceuticals and Services (SIAPS) Program is to ensure the availability of quality pharmaceutical products and effective pharmaceutical services to achieve desired health outcomes. Toward this end, the SIAPS result areas include improving governance, building capacity for pharmaceutical management and services, addressing information needed for decision-making in the pharmaceutical sector, strengthening financing strategies and mechanisms to improve access to medicines, and increasing quality pharmaceutical services.

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CONTENTS

Acknowledgments.....	v
Acronyms and Abbreviations	vi
Executive Summary	vii
Introduction.....	1
Socioeconomic Background	1
Cultural Background.....	1
Population	1
Family Planning	2
Supply Chain Management System for FP Commodities	3
Scope of the Quantification	4
Objectives	5
Quantification Processes and Methodology.....	6
Quantification Output	8
Demographic/Population/Morbidity Method	8
Contraceptive Prevalence Rate	9
Method Mix	10
Brand Mix	11
Source Mix.....	13
Consumption Method	13
Additional Assumptions for Wastage and Supply Plans	15
Quantification Results.....	16
Supply Plan Results	18
Quantification Analysis	20
Outcomes/Impacts Based on the Demographic Method.....	26
Emergency Orders	30
Challenges.....	31
Data.....	31
Inventory Management	31
Coordination	31
Recommendations.....	33
References.....	34

List of Tables

Table 1. Detailed FP supply plan/procurement requirements by value (in USD) and year for the public sector only	viii
Table 2. Health commodity distribution schedule from CMS to facilities	3
Table 3. Population figures—Total and total women and WRA.....	9
Table 4. Total CPR and CPR by group of methods.....	10
Table 5. Annual increase/decrease in CPR by method.....	10
Table 6. Method mix in CPR points for all methods	11
Table 7. Method mix for modern methods only (in %)	11
Table 8. Brand mix of injectables (in %).....	12
Table 9. Brand mix of oral contraceptives (in %).....	12
Table 10. Method mix in CPR points per product type	12

Table 11. Method-specific discontinuation rate and commodities per user/CYP	13
Table 12. Source mix by method (in %)	13
Table 13. Summary of major assumptions for consumption method of forecasting	14
Table 14. Minimum, maximum, and desired stock levels at CMS and health facilities	15
Table 15. Procurement lead times for CMS.....	15
Table 16. Total number of users—National-demographic method	16
Table 17. Number of new acceptors—National-demographic method	16
Table 18. Total forecast requirements, including wastage by quantity for the country.....	17
Table 19. Total forecast requirements, including wastage and freight and logistics costs, by value (in USD) for the country	17
Table 20. Total forecast requirements by quantity for the public sector only	18
Table 21. Total forecast requirements, including wastage and freight and logistics costs, by value (in USD) for the public sector only	18
Table 22. Supply plan/procurement requirements by quantity for the public sector – Total	19
Table 23. Supply plan/procurement requirements by quantity for the public sector – MOH	19
Table 24. Supply plan/procurement requirements by quantity for the public sector – USAID....	19
Table 25. Supply plan/procurement requirements by value (in USD) for the public sector – Total	19
Table 26. Supply plan/procurement requirements by value (in USD) for the public sector – MOH	20
Table 27. Supply plan/procurement requirements by value (in USD) for the public sector – USAID	20
Table 28. CYP—Modern methods	26
Table 29. Number of unwanted pregnancies averted.....	27
Table 30. Number of abortions averted in the procurement period, by method.....	27
Table 31. Number of unwanted births averted.....	28
Table 32. Number of maternal deaths averted	28
Table 33. Number of infant deaths averted.....	29
Table 34. Number of child deaths averted	29

List of Figures

Figure 1. Comparison of procurement requirements by method and value for the public sector only, April 2016–March 2019.....	ix
Figure 2. Estimated outcomes/impacts of the implementation of FP program in Swaziland, April 2016–March 2019.....	ix
Figure 3. Movement of FP commodities in the supply chain	4
Figure 4. TFR trends in Swaziland	21
Figure 5. Population trends in Swaziland	21
Figure 6. CPR trends in Swaziland, by group of methods.....	22
Figure 7. Contraceptive prevalence rate trends in Swaziland.....	22
Figure 8. Change in FP method mix in Swaziland	23
Figure 9. Comparison of forecast requirements by value in the public sector	23
Figure 10. Comparison of procurement requirements by method and value in the public sector, 2016-2018.....	24
Figure 11. Comparison of procurement requirements by value in the public sector.....	25
Figure 12. Total procurement costs including freight and logistics, by funding agent, April 2016-March 2019.....	25
Figure 13. Comparison of procurement requirements by method and value, public sector, 2016/17-2018/19	26

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ACRONYMS AND ABBREVIATIONS

AIDS	acquired immunodeficiency syndrome
APR	annual pregnancy rate
CMS	Central Medical Stores
CPR	contraceptive prevalence rate
CSO	civil society organization; also Central Statistical Office in references
CYP	couple-years protection
DDP	delivered duty paid
FP	family planning
GDP	gross domestic product
GOS	Government of Swaziland
HIV	human immunodeficiency virus
HMIS	Health Management Information System
IUCD	intrauterine contraceptive device
LA	long-acting
LMIS	Logistics Management Information System
MICS	multiple indicator cluster survey
MOH	Ministry of Health
MSH	Management Sciences for Health
MWRA	married or in-union women of reproductive age
PM	permanent method
PSI	Population Services International
RHCS	reproductive health commodity security
SCHS	Swaziland Community Health Survey
SDHS	Swaziland Demographic and Health Survey
SIAPS	Systems for Improved Access to Pharmaceuticals and Services [Program]
SID	Strategic Information Department
SPS	Strengthening Pharmaceutical Systems [Program]
SRH	sexual and reproductive health
SRHP	Sexual and Reproductive Health Program
STI	sexually transmitted infection
TFR	total fertility rate
UNFPA	United Nations Population Fund
USAID	U.S. Agency for International Development
USD	U.S. dollars
WHO	World Health Organization
WRA	women of reproductive age

EXECUTIVE SUMMARY

Promotion of family planning (FP) and ensuring access to preferred contraceptive methods for women and couples is essential to securing the well-being and autonomy of women, as well as supporting the health and development of communities. These activities provide opportunities to prevent high-risk pregnancies that may contribute to maternal mortality, morbidity, and disability. FP contributes to reduction of infant mortality by preventing closely-spaced and ill-timed pregnancies. It also reduces the risk of unintended pregnancies among women living with the human immunodeficiency virus (HIV), resulting in fewer orphans and HIV-infected babies. Male and female condoms provide dual protection against unintended pregnancies as well as sexually transmitted infections (STIs), including HIV. In addition, FP has the long-term benefits of empowering people, enhancing education, and increasing productivity.

In Swaziland, attempts to increase access to rights-based voluntary FP is a strategy that was used to strengthen and accelerate efforts to address the Millennium Development Goals and universal access to reproductive health in order to improve the population's quality of life. The Ministry of Health (MOH), through the Sexual and Reproductive Health Program, with support from a number of development partners (such as the United Nations Population Fund [UNFPA], Population Services International [PSI], the Family Life Association of Swaziland, and SIAPS), is responsible for implementing the FP program in Swaziland. The total fertility rate has been decreasing consistently, from 6.4 in 2006² to 3.3 in 2014.⁶ The contraceptive prevalence rate (CPR) of the all women of reproductive age (WRA) group for any method has also shown an increase, from 40.1% in 2002²³ to 49.30% in 2010⁵ to 51.30% in 2014.⁶ The contribution of modern methods only was 39.6%,²³ 47.90%,⁵ and 49.98%,⁶ respectively. However, there is still high unmet need for FP (24%),⁴ especially for women living with HIV (63.7%).²⁹ Thus, to reduce the unmet need, it is necessary not only to maintain the achieved CPR but to increase it further. Based on the CPR growth trend, one of the assumptions in the five-year quantification exercise conducted in 2013 was that the annual CPR growth rate would be 2.00.²⁰ The recent trend from multiple indicator cluster survey (MICS) 2010 and MICS 2014 data, however, has shown that such growth has not been achieved and, instead, the annual growth in CPR for any method has been 0.08 and 0.43 for any method and modern methods, respectively.

The Government of Swaziland (GOS), through MOH, is committed to ensuring reproductive health commodity security for all Swazis. This enables the people of Swaziland to choose, obtain, and use quality contraceptives and other reproductive health commodities whenever and wherever they need them. One pillar of FP commodity security is the need for continuous and optimal availability of FP commodities. Appropriate, regular, and evidence-based quantification of the commodities plays a critical role in commodity security because it ensures advanced planning and mobilization of required resources, and provides inputs for effective and efficient procurement and distribution of the commodities. Effective quantification can also reduce costs and wastage of limited resources.

A family planning quantification exercise was conducted with technical assistance from SIAPS and participation of all major stakeholders. The objective was to produce a forecast and supply plan for the period April 2016–March 2019. The results of this quantification exercise will be used to plan, mobilize, and secure financial resources for the quantification period. The quantification exercise results will assist in establishing the quantities of

commodities to be procured in each quarter. Two forecasting methods—demographic/morbidity and consumption—were employed for this exercise, with the demographic/morbidity method as the main method. The demographic/morbidity method was used for all FP commodities except condoms and emergency contraceptive oral pills. Forecast requirements were established for the nation, public sector, and private sector. However, procurement requirements were established for the public sector only. The quantification included requirements for male condoms for the prevention of STIs, including HIV, in addition to FP.

Using the demographic/morbidity method of quantification for all the FP commodities, except for condoms and Postinor-2 (for which the consumption method of quantification was used) in the period April 2016–March 2019 yielded the following major outputs:

- The total CPR of WRA (15–49 years) is expected to rise from 50.06% in 2014 to 51.32% in 2018.
- Use of female condoms, injections, pills, intrauterine contraceptive devices (IUCDs), female sterilization, and implants is expected to increase during the quantification period, whereas use of male condoms is expected to decrease slightly and the use of the male sterilization method of FP is expected to remain null.
- The total commodity procurement requirements for the public sector only, based on the demographic/morbidity method, was estimated to be **USD 2,980,839¹** for the period of April 2016–March 2019. The male condom procurement requirement includes FP and STI prevention. Table 1 shows the details by year and commodity. *Note that the requirements by value do not include values for male and female sterilization.*
- Male and female condoms account for approximately 63% of the procurement requirements, followed by oral pills (including emergency pills), which account for 22%, and injections, which account for approximately 13.6%. The least requirement is taken by IUCDs, at 0.07%. Figure 1 displays these details.

Table 1. Detailed FP supply plan/procurement requirements by value (in USD) and year for the public sector only

Method	2016/17	2017/18	2018/19	Total
Injectable, 3-month (Depo-Provera)	0	32,222	91,741	123,964
Injectable, 2-month (Noristerat)	0	120,926	113,370	234,297
Injectable, 1-month (Norigynon)	13,740	19,882	14,238	47,859
Oral contraceptive, Lo-femenal	127,727	127,886	98,047	353,660
Oral contraceptive, Ovral	58,917	41,941	67,560	168,418
Oral contraceptive, Microval	32,317	48,311	51,864	132,492
Implant, Jadelle	0	19,890	19,805	39,695
IUCD, Copper-T	725	520	838	2,083
Emergency oral contraceptive, Postinor-2	0	0	3,154	3,154
Male condom	374,437	466,616	617,809	1,458,862
Female condom	108,552	184,511	123,291	416,354
Grand Total	716,416	1,062,705	1,201,718	2,980,839

¹ 1 USD = 15 SZL

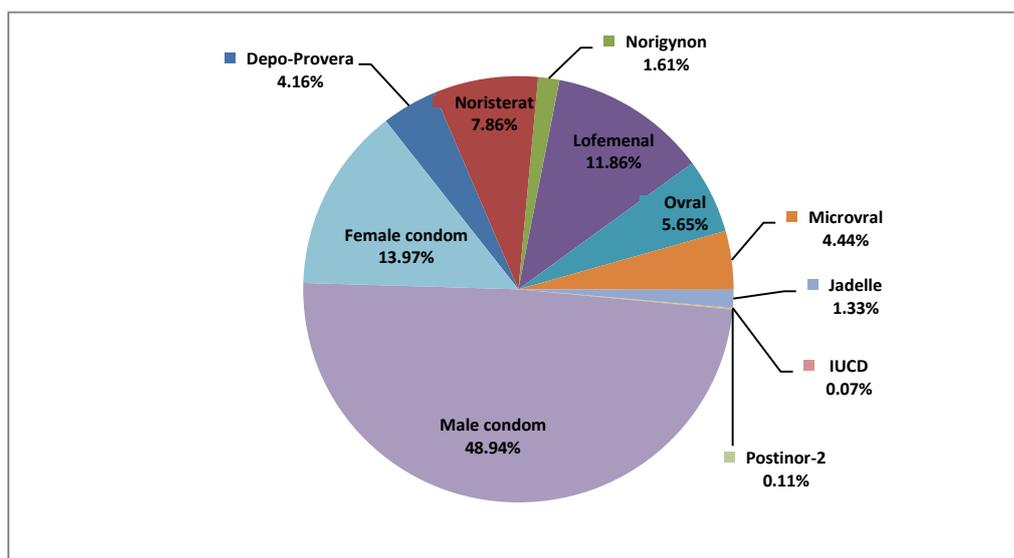


Figure 1. Comparison of procurement requirements by method and value for the public sector only, April 2016–March 2019

Potential outcomes/impacts of achieving the target CPR of **51.32%** for the WRA group by the end of the quantification period with continuous availability of the required commodities as quantified in this exercise are provided in figure 2 below. The estimates provided below are for the three-year period of April 2016–March 2019. The estimated outcomes/impacts are comprised of all FP methods—male condoms, female condoms, injectables, oral pills, implants, IUCDs, female sterilization, male sterilization, other modern methods, and traditional methods—with the exception of couple-years protection (CYP), which does not include contribution from traditional methods and other modern methods.

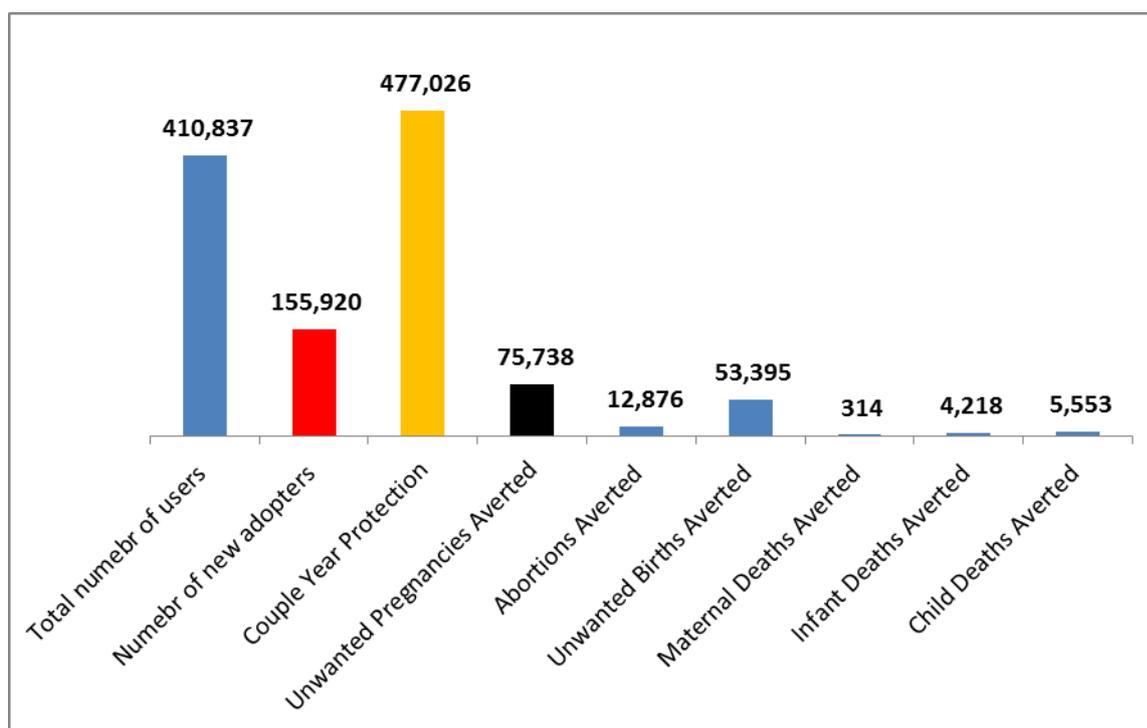


Figure 2. Estimated outcomes/impacts of the implementation of FP program in Swaziland, April 2016–March 2019

INTRODUCTION

Socioeconomic Background

Although classified as a middle-income country in terms of gross domestic product (GDP) per capita, Swaziland has a relatively high rate of poverty, at 63% of the population,¹ and one of the highest prevalence rates of HIV and AIDS in the world (26% among men and women of reproductive age).⁵ Increasing mortality resulting from the HIV pandemic has had a negative impact on the country's life expectancy, which has declined from 60 years in 1997 to just 43 years in 2007.² Life expectancy at birth is projected to improve, increasing modestly from 45.23 years in 2007 to 47.46 years in 2030 for both sexes. Life expectancy at birth for males would rise from 43.31 years in 2007 to 45.41 years in 2030, while female life expectancy at birth would increase from 47.21 years to 49.57 years during the same period.

The country's economic performance has slowed over the years, with real GDP declining from 3.5% in 2007 to 2.4% in 2008.³¹ In terms of economic participation, women have fewer opportunities than men; only 55.2%³¹ of women are economically active compared to 58.5%³¹ of men. Opportunities available to men tend to be greater than those for women; notably, men have better chances of being recruited for employment no matter their educational level. Among men with only a primary school education, 45%³² are unemployed, compared with 48.5%³² of women with the same educational level. This is also true for men and women with a tertiary level education; only 9.1%³² of these men are unemployed, compared with 10.9%³² of women. Women tend to dominate low-paying jobs; the informal sector provides employment to 40.2%³² of women, compared to approximately 25.5%³² of men. Women also feature more prominently in self-employment (27.2%)³² than do men (15.3%).³²

Cultural Background

Swaziland is a one-ethnic group nation with only one common language and culture, and strong traditions. Cultural attitudes and practices influence marriage, family size, division of labor, access to productive resources, and gender roles and responsibilities.

Population

The population projection findings from the *2007 Population and Housing Census Estimate*² indicate that the population of Swaziland is 1,018,000, composed of 481,000 males and 537,000 females, with an average household size of 4.7 persons. In 2007, the Central Statistics Office produced the *Swaziland Population Projections 2007–2030*, which predicted that the population of Swaziland would grow from 1,020,102 in mid-2007 to 1,303,090 by mid-2030. This population projection was based on an annual estimated population growth rate of 1%.¹² However, the *Swaziland Demographic and Housing Survey 2012–Key Findings and Results*, produced by the Central Statistics Office in 2012, showed that, at the time, the population was actually growing at 0.4%.³⁰

Family Planning

FP allows individuals and couples to anticipate and attain their desired number of children by spacing and timing of births through the use of effective contraceptive methods. Promotion of FP and ensuring access to preferred contraceptive methods for women and couples are essential to securing the well-being and autonomy of women, as well as supporting the health and development of communities. These activities provide opportunities to prevent high-risk pregnancies, which may contribute to maternal mortality and morbidity/disability. According to the World Health Organization (WHO), evidence suggests that women who have more than four children are at an increased risk of maternal mortality.³ According to the *Swaziland Demographic and Health Survey (SDHS) 2006–07*, the maternal mortality ratio is estimated at 589 maternal deaths per 100,000 live births, which is high. By reducing rates of unintended pregnancies, the number of women who would need to opt for an unsafe abortion is reduced. FP contributes to reduction in infant mortality by preventing closely spaced and ill-timed pregnancies. Infants of mothers who die during labor also have a greater risk of death and poor health. FP reduces the risk of unintended pregnancies among women living with HIV, resulting in fewer orphans and infected babies. In addition, male and female condoms provide dual protection against unintended pregnancies as well as STIs, including HIV. Overall, FP has the long-term benefits of empowering people, enhancing education, and increasing productivity.

In Swaziland, the FP program is a component of the Sexual and Reproductive Health Program (SRHP). GOS, through SRHP of MOH, has developed a National Sexual and Reproductive Health (SRH) Policy, prioritizing FP as an element of the core SRH package. There is a need to increase access to rights-based voluntary FP as part of strengthening and accelerating efforts to address the Millennium Development Goal's Sustainable Development Goals and move toward universal access to reproductive health to improve quality of life.

In 2006–2007, the country's fertility rate was high, at 3.8⁴ births per woman,; rates were even higher in rural areas compared to urban, with the total wanted fertility rate (2.1%)⁴ lower than the actual rate. According to the *Swaziland MICS*, in 2010, the CPR among currently married women was 65.2% for any method, and 63% for modern methods. There was still a high unmet need for FP (24%), especially for women living with HIV (63.7%). The 2014 *MICS* indicates that for the same group of women, CPR has increased to 66.1% for any method and 65.2% for modern methods. In 2006–2007, when women were asked about the last baby they had, 37% said they had not wanted any more children and 27%⁴ wanted children later. This means that births were unplanned for 64%⁴ of women. CPR among sexually-active unmarried women is 65%,⁴ which is mostly attributed to the use of the condom. The use of FP still varies according to method (the most common methods are injectables, pills, and male condoms) and age (use increases with age).

The GOS, in partnership with UNFPA in the 5th Country Programme (2011–2015), has strengthened reproductive health commodity security (RHCS), resulting in efforts to address the unmet need for FP in the country and ensuring SRH commodities are available to those who need them when they need them. The support by UNFPA has involved procurement of FP commodities on an annual basis in line with the national procurement plan, as well as systems development for supply chain management, demand creation for FP services uptake, and program monitoring and evaluation. The rationale for investing in RHCS is grounded in established linkages between FP and fertility decline, gender equality, and poverty reduction.

By definition, RHCS exists when people are able to reliably choose, obtain, and use the contraceptives, condoms, and other essential reproductive health supplies when they want them.⁶ Ensuring the ability to choose relies on providing clients with the necessary information to make an informed choice on the preferred method of FP. The ability of clients to obtain these products depends on the right product being available in the right condition, in the right quantity, at the right place, at the right time, and at the right cost. The reproductive health commodity supply chain underpins commodity security by ensuring that reproductive health commodities are accessible to those who need them. Strong commodity supply chain components include quantification and procurement, storage and distribution, management information systems, and use in the health sector. An effective supply chain system ensures that high-quality reproductive health commodities are available in sufficient quantities in order to ensure RHCS.

The GOS through MOH is committed to ensuring RHCS for all Swazis to be able to choose, obtain, and use quality contraceptives and other reproductive health commodities whenever and wherever they need them.

Supply Chain Management System for FP Commodities

The redesigned FP supply chain system in Swaziland has been running since October 2012. This means the Logistics Management Information System (LMIS) has been operational for three years. To date, more than 500 health workers in over 150 health facilities and civil society organizations (CSOs) have been trained on the use of LMIS for FP commodities.

All facilities that order essential medicines from Central Medical Stores (CMS) synchronize the placing of orders for FP commodities with orders for essential medicines. The review period for FP commodities in health facilities is monthly, and reports and orders are received at CMS by the end of the first week of every month. The distribution of commodities to facilities is staggered through the month according to a set schedule for the four administrative regions of the country; this distribution schedule is shown in table 2.

Table 2. Health commodity distribution schedule from CMS to facilities

Region	Orders received at CMS	Orders distributed to health facilities
Shiselweni	First week of the month	First week of the month
Lubombo		Second week of the month
Hhohho		Third week of the month
Manzini		Last week of the month

The flow of FP commodities and data is shown in figure 3.

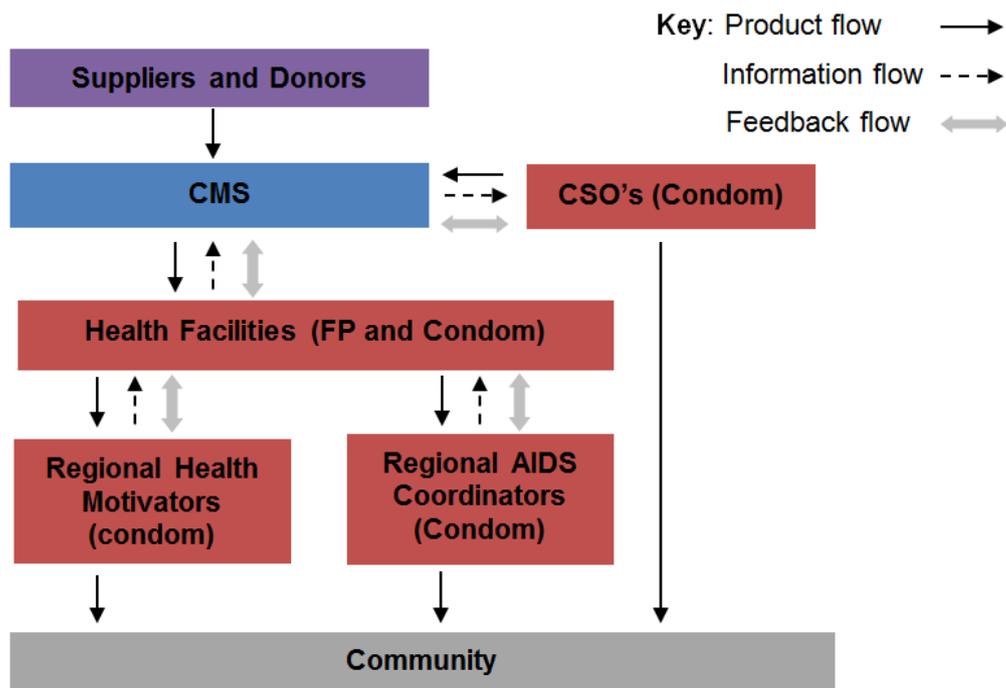


Figure 3. Movement of FP commodities in the supply chain

The supply chain system for FP commodities not only tracks the flow of commodities to health facilities and other distribution channels, but also captures the flow of logistics data from the service delivery points back to the central level. This data is captured, aggregated, and analyzed for supply chain decision-making, such as immediate resupply to facilities, forecasting and supply planning at the central level, budgeting, and FP supply chain performance monitoring. Among the funding sources and donors that use the information for decision-making, the major ones are GOS; USAID; UNFPA; the Global Fund to Fight AIDS, Tuberculosis, and Malaria; PSI, and the AIDS Healthcare Foundation.

The inventory control system for FP commodities in Swaziland is designed so that facilities maintain a maximum of three months of stock during receipt and at any point in time. They are also allowed to maintain a minimum of two months of stock. The maximum and minimum stock levels at the central level are seven months and four months, respectively. The inventory control system and LMIS are supported mainly by inventory control mechanisms—such as the stock card—at the facility level, and by a computer-based inventory and warehouse management system called RxSolution® at CMS and PSI warehouses. RxSolution® is an SQL-based (Structured Query Language-based) software developed by the USAID-funded program Rational Pharmaceutical Management Plus, which was implemented by MSH. Currently, RxSolution® implementation is supported the SIAPS Program.

Scope of the Quantification

The quantification process was done for both the public and private sector, with the supply plan focus on the public sector. FP commodities that were quantified include male and female condoms; three kinds of injections, which included medroxyprogesterone acetate (Depo

Provera), norethisterone enantate (Noristerat), and norethisterone enanthate with estradiol valerate (Norigynon); four kinds of oral contraceptives, which were ethinyl estradiol 300mcg with norgestrel 30mcg (Lo-femenal), ethinyl estradiol 500mcg with norgestrel 50mcg (Ovral), levonorgestrel (Microval), and high-dose levonorgestrel (Postinor-2); IUCDs; and the implant Jadelle. The quantification process covered the period 2016–2019. It is important to note that male and female condoms used in the public sector are being supplied through donation by USAID for the period January 2015–December 2017. The requirements for male condoms include the prevention of STIs, including HIV.

The forecast includes commodity requirements with provisions for wastage, freight, and logistics costs included where applicable. The supply plan/procurement requirements were determined after consideration of factors such as stock on hand, expiries, stock on order not delivered yet, buffer and minimum and maximum stock levels, and order lead times.

The supplies needed to administer injections and insert implants are quantified with the injections and implants as part of complete kits. Additional supplies required for insertion of long-acting (LA) methods and all supplies and medicines needed for the procedures of permanent methods (PMs) are obtained through the essential medicines program, and are therefore not considered in this quantification.

Objectives

The first objective was to determine the forecasted quantities of FP commodities that would be needed for the government financial years 2016/17 to 2018/19. Producing a supply plan for FP commodities that needed to be procured through the public sector, for the same period, was a second objective of the exercise. The results of the quantification will be used to secure the necessary finances to procure these commodities in the period.

QUANTIFICATION PROCESSES AND METHODOLOGY

Preparatory activities were carried out before the beginning of the quantification process. Technical experts from the SIAPS home office were assigned to provide technical assistance for the activity. The technical experts worked with a local task team assigned to the FP quantification. A list of data points, documents, and data sources were shared with the in-country team in order to initiate data collection. A desk review of various documents was also partially undertaken.

The available data and information were reviewed and compiled, after which additional data needs and sources were identified and appropriate partners were contacted to obtain the data and information. The documents, data, and information obtained were organized, analyzed, and prepared for discussion. In addition, discussions were held with various experts from UNFPA, SRHP, and CMS to obtain further data and clarity on some grey areas.

The available data and information were compiled, analyzed, and prepared for discussion at a consultative quantification workshop held October 7, 2015, in Ezulwini.

The objectives of the consultative quantification workshop were to:

- Review and validate the available data, assumptions, and methodologies
- Build additional assumptions
- Agree on input data, assumptions, and methodologies for the quantification
- Draw recommendations for future strengthening of the whole SRHP and supply chain management, focusing specifically on quantification-related activities

Attendants included key informants from almost all FP stakeholders and organizations active in Swaziland. Data and assumptions were then further analyzed and organized for input into the forecasting tool.

Based on feedback provided during the workshop and further discussion with relevant stakeholders, the demographic/morbidity method of forecasting was chosen as the main forecasting method; however, the consumption method was also applied to forecast the same commodities for the same quantification period, for comparison purposes. The demographic/morbidity method was selected as the main method for the following reasons:

- The data for the demographic method is relatively more reliable, as it is drawn mostly from national surveys.
- The program is in a scale-up mode, with general objectives of decreasing fertility and unmet needs and increasing CPR and use of FP methods by the population in need.
- Even though data on health facility-level consumption and stock-out periods were available, there were important gaps, such as the number and relative consumption of non-reporting facilities.

The morbidity/demographic method of quantification was used for all contraceptive products except condoms (both male and female) and Postinor-2, which were quantified using the consumption method. Condoms are used for prevention of STIs, including HIV, in addition to FP, and the demographic method based on the WRA group and CYP result in underestimation of the total requirements. Requirements for emergency pills (Postinor-2) needed to be estimated using the consumption method as well, because this is not a regular method of contraceptive and cannot be estimated using the demographic data and CPR.

A modified version of the Reality $\sqrt{\text{®}}$ tool was employed to forecast based on the demographic/morbidity method, while a simple Excel spreadsheet was used to forecast using the consumption method. Reality $\sqrt{\text{®}}$ is an open source Microsoft Excel-based planning and advocacy tool for strengthening FP programs. The consumption method forecast was based on CMS issues and consumption reports from HMIS. Supply plans were developed using PipeLine ® , an open source Microsoft Access-based software tool that helps program managers gather critical quantification information, ensure that products arrive on time, maintain consistent stock levels at the program or national level, and prevent stock-outs.

The key assumptions and results are included in the corresponding subsections under “Quantification Output” below.

QUANTIFICATION OUTPUT

Key Assumptions

Demographic/Population/Morbidity Method

Data contained in the *Swaziland Population Projections 2007–2030*¹² were used as a basis for calculating the number of WRA and men of reproductive age (15–49 years). However, instead of a 1% annual population growth rate that had been used in the aforementioned document, the 0.7% annual population growth rate was assumed in this quantification. This was based on the findings of the *Swaziland Demographic and Housing Survey* conducted in 2012, which found that the population was growing at 0.4% at the time of the survey. Expert opinion therefore advised that a 0.7% growth rate be used, which is the average of the two figures.

For the quantification using the demographic method of forecasting, it was assumed and agreed during the consultative quantification workshop that all WRA are sexually active and should be included. It was also agreed that not all women in this age group have access to health services in general and FP services in particular. Therefore, based on information from the Central Statistics Office and *Swaziland MICS Key Findings Report Swaziland Final Report, 2015*,⁶ which reported the unmet need to be 15.2%, and complemented with expert opinion, 85% of WRA were assumed to have access to FP services.

The figures related to the male population were applied for estimation of need for male condoms for the prevention of STIs, including HIV, and the assumption of 85% access to services was made to calculate the population to be served. Table 3 shows the total population, total female population, population of the WRA group, and population of the WRA group with access to FP services.

Table 3. Population figures—Total and total women and WRA

	2010	2011	2012	2013	2014	2015	2016	2017	2018
Total population	1,041,674	1,048,966	1,056,309	1,063,703	1,071,149	1,078,647	1,086,198	1,093,801	1,101,458
Female population	548,157	551,696	555,274	558,894	562,554	566,257	570,003	573,790	577,626
% female population	52.62	52.59	52.57	52.54	52.52	52.50	52.48	52.46	52.44
WRA (15-49) %	53.00	53.50	53.90	54.30	54.60	54.80	55.00	55.20	55.30
WRA (15-49) #	290,523	295,157	299,293	303,479	307,155	310,309	313,501	316,732	319,427
WRA (15-49) with access to health services (85%)	246,945	250,884	254,399	257,957	261,082	263,763	266,476	269,222	271,513

Contraceptive Prevalence Rate

The CPR was derived from the *Swaziland Community Health Survey (SCHS) 2002*,²¹ *SDHS 2006–07*,⁴ *MICS 2010*,⁵ and *MICS 2014*.⁶ The CPR trend (increase or decrease) was determined and applied to calculate the total CPR for the quantification period of 2016/17–2018/19. The CPR for *MICS 2014* was available for married or in-union WRA (MWRA) group only, and not for the all WRA group. To calculate the total CPR, including traditional FP methods, for the all WRA group, the same proportion between the CPR for WRA and MWRA from *MICS 2010* was applied and, therefore, a CPR of 50.6 was calculated for 2014 for the all WRA group from a CPR of 65.02 for MWRA. Note that the total CPR of MWRA is higher than that of all WRA.

Use of different data sources provides different increase/decrease rates in the total CPR, including traditional methods.

- Using data from *SCHS 2002*, *SDHS 2006–07*, *MICS 2010*, and *MICS 2014* results in a total CPR growth rate of 0.95 per year for all methods and 1.04 per year for modern methods.
- Using only *SDHS 2006–07*, *MICS 2010*, and *MICS 2014* results in a total CPR growth rate of 1.51 per year for all methods and 1.65 per year for modern methods.
- Using *MICS 2010* and *MICS 2014* results in a total CPR growth rate of 0.08 points per year for all methods and 0.43 per year for modern methods. Based on the historical achievements in Swaziland and similar countries, it was agreed to take the average growth derived from *MICS 2010* and *MICS 2014*, which was 0.43 points total CPR growth per year for the quantification period for modern methods. Considering the CPR of 50.3 points based on *MICS 2014*, and assuming an average of 0.43 points growth per year, the CPR for modern methods by the end of 2018 was calculated to be 65.94. Table 4 provides the details for the total CPR as well as CPR by group of methods.

Table 4. Total CPR and CPR by group of methods

FP method	MICS 2010	MICS 2014	Average annual increase or decrease in CPR	2015	2016	2017	2018
Any method	49.30	50.06*	0.08	50.14	50.47	50.89	51.32
Any modern method	48.00	49.61	0.43	50.04	50.47	50.89	51.32
All LA/PMs	4.30	5.40	0.31	5.71	6.01	6.32	6.62

*CPR for all WRA was not reported calculated through proportion based on MICS 2010

Method Mix

The mix of FP methods was estimated based on the data from *MICS 2010*⁵ and *MICS 2014*,⁶ as well as calculated trends.

*MICS 2014*⁶ data were used as a baseline for the calculation of CPR by method and method mix. A total increase of 0.43 CPR percentage points per year was assumed for modern methods. In general, annual usage rate of male condoms and traditional contraceptive methods were assumed to decrease during the quantification period, and annual usage rates of all the other methods was assumed to increase. Table 5 below shows the annual CPR increase or decrease of each method for the selected scenario.

Table 5. Annual increase/decrease in CPR by method

FP method	<i>MICS 2010</i> ⁵ and <i>MICS 2014</i> ⁶
Male condom	-0.65
Injectable – Three-month (Depot)	0.11
Injectable – Two-month (Noristerat)	0.25
Injectable – One-month (Norigynon)	0.01
Pill – Lo-femenal	0.17
Pill – Ovral	0.12
Pill – Microval	0.04
Female condom	0.05
Implant – Jadelle	0.05
IUCD	0.18
Female sterilization	0.08
Male sterilization	0.00
Other modern methods	0.01
Any traditional or folk methods	-0.35
Any modern method	0.43
All LA/PMs	0.31

Tables 6 and 7 below provide details on the method mix for all methods and for modern methods, respectively.

Table 6. Method mix in CPR points for all methods

Method	2010	2014	2015	2016	2017	2018
Male condoms	21.50	18.91	18.26	17.61	16.96	16.32
Injectables	15.10	16.59	16.96	17.33	17.69	18.06
Oral contraceptives	6.60	7.95	8.29	8.63	8.97	9.31
Female condom	0.40	0.61	0.66	0.71	0.76	0.81
Implant	1.20	1.40	1.45	1.50	1.55	1.60
IUCD	0.50	1.20	1.38	1.55	1.73	1.90
Female sterilization	2.50	2.80	2.88	2.96	3.04	3.12
Male sterilization	0.10	0.00	0.00	0.00	0.00	0.00
Other modern methods	0.10	0.15	0.16	0.18	0.19	0.20
Traditional methods	1.30	0.45	0.10	0.00	0.00	0.00
Any method	49.30	50.06	50.14	50.47	50.89	51.32
Any modern method	48.00	49.61	50.04	50.47	50.89	51.32

Table 7. Method mix for modern methods only (in %)

Method	2010	2014	2015	2016	2017	2018
Male condom	44.8	46.9	47.3	47.6	47.9	48.1
Injectables	31.5	29.3	28.9	28.4	28.0	27.6
Oral pills	13.8	13.3	13.2	13.1	13.1	13.0
Female condom	0.8	1.1	1.1	1.1	1.2	1.2
Implant	2.5	4.0	4.3	4.6	4.8	5.1
IUCD	1.3	0.4	0.2	0.2	0.2	0.2
Female sterilization	5.2	4.9	4.9	4.8	4.7	4.7
Male sterilization	0.2	0.2	0.2	0.2	0.2	0.2
Total	100	100	100	100	100	100

Brand Mix

Trends in consumption data from LMIS (2013–15) were applied to calculate the proportions/brand mix of different formulations of oral pills and injectables. There is inconsistency among data sources (HMIS and LMIS) in terms of the proportions of the formulations for both oral contraceptives and injectables, as the proportion from HMIS is quite different from the one obtained from LMIS. The LMIS was taken as the best source of data for the calculation of brand mix.

The general points of agreement during the quantification consultative workshop and the guidance from SHRP included the following:

- The use of depot medroxyprogesterone acetate (Depo-Provera) injection is increasing gradually; considering that one dose of the product can be used for three consecutive months, it is assumed to be accepted by more and more clients. On the other hand, the use of Noristerat is decreasing and that of Norigynon (once-a-month) injection has slightly decreased.
- The proportion of Depo-Provera was assumed to increase from 39% in 2015 to 60.5% in 2018. On the other hand, the proportion of Noristerat was assumed to decrease from 57.5% in 2015 to 36.2% in 2018.

- The proportions of oral pill formulations are more or less stable according to the LMIS consumption data from 2014 and 2015. Thus, averages of the proportions were taken for the quantification period.

Tables 8 and 9 below provide the details on brand mix of injectables and oral pills applied for the quantification.

Table 8. Brand mix of injectables (in %)

Product	2013	2014	2015	2016	2017	2018
Depo-Provera (once every 3 months)	21.0	39.3	48.5	54.5	60.5	60.5
Noristerat (once every 2 months)	74.4	57.5	48.3	42.2	36.2	36.2
Norigynon (once a month)	4.6	3.2	3.3	3.3	3.3	3.3
Total	100.0	100.0	100.0	100.0	100.0	100.0

Table 9. Brand mix of oral contraceptives (in %)

Product	2013	2014	2015	2016–2018
Lo-femenal	52.04	49.57	50.62	50.74
Ovral	33.35	38.59	35.91	35.95
Microval	14.62	11.84	13.47	13.31
Total	100.00	100.00	100.00	100.00

Table 10 shows the method mix in CPR points for each of the products after application of the above assumptions on brand mix for the quantification period.

Table 10. Method mix in CPR points per product type

Method	2014	2015	2016	2017	2018
Male condom	18.91	18.26	17.61	16.96	16.32
Injectable, 3-month (Depo-Provera)	6.52	8.22	9.44	10.70	10.92
Injectable, 2-month (Noristerat)	9.53	8.19	7.32	6.41	6.54
Injectable, 1-month (Norigynon)	0.53	0.55	0.57	0.58	0.60
Oral contraceptive, Lo-femenal	3.94	4.20	4.38	4.55	4.73
Oral contraceptive, Ovral	3.07	2.98	3.10	3.23	3.35
Oral contraceptive, Microval	0.94	1.12	1.15	1.19	1.24
Female condom	0.61	0.66	0.71	0.76	0.81
Implant, Jadelle	1.40	1.45	1.50	1.55	1.60
IUCD, Copper-T	1.20	1.38	1.55	1.73	1.90
Female sterilization	2.80	2.88	2.96	3.04	3.12
Male sterilization	0.00	0.00	0.00	0.00	0.00
Any traditional method	0.15	0.16	0.18	0.19	0.20
Any method	50.06	50.14	50.47	50.89	51.32
Any modern method	49.61	50.04	50.47	50.89	51.32
All LA/PMs	5.40	5.71	6.01	6.32	6.62

Table 11 shows the method-specific discontinuation rate for each of the products after application of the above assumptions on brand mix for the quantification period.

Table 11. Method-specific discontinuation rate and commodities per user/CYP

Method	Discontinuation rate (%)	CYP
Male condom	47	156 per year
Injectable, 3-month (Depo-Provera)	28	4 per year
Injectable, 2-month (Noristerat)	28	6 per year
Injectable, 1-month (Norigynon)	28	12 per year
Oral contraceptive, Lo-femenal	40	13 per year
Oral contraceptive, Ovral	40	13 per year
Oral contraceptive, Microval	40	13 per year
Female condom	50	156 per year
Implant, Jadelle	60	5 years
IUCD, Copper-T	28	10 years
Female sterilization	10	11 years
Male sterilization	10	12 years

Source Mix

The *Total Market Approach, PSI/UNFPA Joint Studies on the Total Market for Male Condoms in Six African Countries*,¹⁹ which is based on *SDHS 2006–07*⁴ data, was used as the main basis for estimating the source mix of commodities quantified. In addition, recent data on sources of male condoms for Swaziland¹⁹ were used to estimate the source mix of male condoms.

Only retail outlets were considered to be truly private sources of the commodities, whereas public and private clinics, as well as nongovernmental organization outlets, were assumed to obtain commodities from the public sector. In general, the data shows that the public sector is the main source of FP commodities, ranging from 100% of IUCDs and female sterilization to 76% of male condoms. The source mix for female condoms, implants, and male sterilization was not available from documents, but they were assumed to be 100% sourced from the public sector. Table 12 provides the details on the source mix assumptions used for each contraceptive method.

Table 12. Source mix by method (in %)

Source	Oral pills	Injections	Male condom	Female condoms	IUCDs	Implant	Female sterilization	Male sterilization
Public total	92.00	98.00	76.00	100.00	100.00	100.00	100.00	100.00
Retail total	8.00	2.00	24.00	0.00	0.00	0.00	0.00	0.00

Consumption Method

Only three products—male condoms, female condoms, and emergency oral contraceptive (Postinor-2)—were quantified using the consumption method. The demographic method

based on the WRA group and CYP data results is an underestimation of the total requirements for the country. Requirements for emergency pills (Postinor-2) were estimated using the consumption method as well, because it is not a regular method of contraceptive and cannot be estimated using the WRA group and CPR data. The consumption method forecast was based on CMS-issued data.

Despite the fact that the consumption/issue data is incomplete and inconsistent across different sources, the following assumptions and considerations are made for this method:

- The issue data used for this method was only from the public sector and the same assumptions of source mixes as in the demographic method of forecasting were applied to calculate the requirements for the nation.
- For condoms (male and female), it was not possible to base the assumption on the LMIS or HMIS data because the LMIS is not implemented in the community distribution sites, and the reporting rate from outreach sites for the HMIS data was found to be very minimal. Thus, it was agreed to take the total distribution of condoms from CMS level.
- The trend from HMIS consumption data, 2010 to 2014, was applied to calculate annual increases in consumption, with some adjustment based on expert opinion. Then, the estimated annual increases or decreases in consumption were applied to CMS and SRHP distribution figures used to forecast for the years 2016 to 2018.
- Data used for this method were from the public sector only and the same assumptions of source mix as in the demographic method of forecasting were applied to calculate the requirements for the nation.

Table 13 summarizes the major assumptions and their base for the consumption method of forecasting product by product.

Table 13. Summary of major assumptions for consumption method of forecasting

No.	Method	Major assumptions
1	Oral emergency contraceptive, Postinor-2	<ul style="list-style-type: none"> • Trend of consumption increase or decrease estimated based on HMIS consumption data from 2010 to 2014 with adjustments based on expert opinion • 5% average annual increase in consumption assumed based on HMIS data and applied to total distributions from CMS in 2015 to calculate forecasts for 2016 to 2018
2	Male condom	<ul style="list-style-type: none"> • Trend of consumption increase or decrease estimated based on HMIS consumption data from 2010 to 2014, with adjustments based on expert opinion • 20% average annual increase in consumption assumed based on HMIS data and applied to total distributions from CMS in 2015 to calculate forecasts for 2016 to 2018; based on total distribution of condoms from CMS and other partners for the public sector
3	Female condom	<ul style="list-style-type: none"> • Trend of consumption increase or decrease estimated based on HMIS consumption data from 2010 to 2011, with adjustments based on expert opinion • 15% average annual increase in consumption assumed based on HMIS data and applied to total distributions from CMS in 2015 to calculate forecasts for 2016 to 2018

Additional Assumptions for Wastage and Supply Plans

Wastage Rate

Wastage rates were assumed to be 5% for implants, oral contraceptives, injectables, and IUCDs; 12% for female condoms; and 10% for male condoms.

Supply Plan Assumptions

Table 14 shows the minimum, maximum, and desired months' stock at health facility and CMS levels.

Table 14. Minimum, maximum, and desired stock levels at CMS and health facilities

Health system level	Minimum stock (months)	Maximum stock (months)
CMS	4	7
Facilities	2	3
National (CMS and facilities)	6	10
Shipment interval to CMS	3 months	
Desired stock level*	10 months	

**Desired stock level is the optimal national stock level that the program plans to achieve when new procurement quantities are received into the country.*

Table 15 shows the estimated lead times for different phases of quantification and procurement processes needed to ensure that products are available in-country. The lead times are divided into three based on important milestones. The milestones are as follows:

- **Planning:** Finalizing the forecast and supply plan of all commodities to be procured and having the required approvals
- **Ordering:** Placing the orders for commodities with specific quantities and dates of delivery based on the supply plan and allocated budget
- **Shipping:** Sending of the commodities from the source/vendor to the recipient/CMS
- **Receiving:** Getting the commodities to CMS and ready for distribution and use

Table 15. Procurement lead times for CMS

Lead time	CMS	USAID
Planning to ordering	2 months	1 month
Ordering to shipping	2 months	3 months
Shipping to receiving	1 month	1 month

Prices of commodities: The current prices of each of the quantified commodities were assumed to remain constant. The prices were obtained from CMS. The prices from CMS are

delivered duty paid (DDP); prices include freight and logistics costs up to the delivery of the commodities at CMS.

Freight and logistics costs: As indicated, MOH’s product cost includes freight and logistics costs, thus there is no additional requirement for freight and logistics costs. On the other hand, procurements funded by USAID involve 12% additional costs for freight and logistics.

Quantification Results

Demographic/Morbidity Method Results: Number of Users

The number of users of each method was calculated from the CPR method mix and WRA group with access to services. Table 16 provides the estimated number of total users by method for each year. Table 17 shows method-specific discontinuation rates, with the number of new acceptors for each year. Note that the emergency contraceptive pill was not included in these estimates because it is not considered a regular method of FP. The users of male and female condoms provided in the tables do not include those who use condoms for STI prevention, specifically; only FP method users are considered here.

Table 16. Total number of users—National-demographic method

Method	2015	2016	2017	2018
Injectable – Three-month (Depo-Provera)	21,681	25,155	28,807	29,649
Injectable – Two-month (Noristerat)	21,602	19,506	17,257	17,757
Injectable – One-month (Norgynon)	1,451	1,519	1,561	1,629
Pill – Lo-femenal	11,072	11,672	12,257	12,829
Pill – Ovral	7,854	8,269	8,684	9,089
Pill – Microval	2,945	3,061	3,215	3,365
Implant – Norplant, Jadelle	3,825	3,997	4,173	4,344
IUCD	3,627	4,130	4,644	5,159
Male condom	48,164	46,933	45,673	44,302
Female condom	1,730	1,881	2,035	2,188
Female sterilization	7,602	7,893	8,190	8,477
Male sterilization	0	0	0	0
Other modern methods	433	472	512	551
Any traditional or folk methods	275	0	0	0
Any method	132,262	134,490	137,007	139,340
Any modern method	131,986	134,490	137,007	139,340
All LA/PMs	15,053	16,021	17,007	17,980

Table 17. Number of new acceptors—National-demographic method

Method	Method-specific discontinuation rates	2015	2016	2017	2018
Injectable – 3-month (Depo-Provera)	0.28	9,417	9,545	10,695	8,908
Injectable – 2-month (Noristerat)	0.28	3,686	3,953	3,213	5,332
Injectable – 1-month (Norgynon)	0.28	454	474	468	505
Pill – Lo-femenal	0.40	4,898	5,028	5,253	5,475
Pill – Ovral	0.40	3,046	3,557	3,722	3,879
Pill – Microval	0.40	1,470	1,294	1,378	1,436
Implant – Norplant, Jadelle	0.60	2,363	2,467	2,574	2,675

Method	Method-specific discontinuation rates	2015	2016	2017	2018
IUCD	0.28	1,371	1,519	1,670	1,815
Male condom	0.47	22,000	21,406	20,798	20,096
Female condom	0.50	939	1,016	1,094	1,171
Female sterilization	0.10	1,018	1,052	1,086	1,106
Other modern methods	0.10	78	82	87	90
Any traditional or folk methods	0.50	-	-	-	-
Any method	-	50,739	51,394	52,039	52,488
Any modern method	-	50,739	51,394	52,039	52,488
All LA/PMs	-	4,751	5,038	5,330	5,596

Forecast Results

Based on the forecast assumptions above and using the modified version of Reality^v (for morbidity method) and simple Excel (for consumption method), the following quantities and costs of each of the forecasted commodities were calculated. The forecast requirements include the requirements for the clients, wastages, and freight and logistics costs (for DDP shipments) only; the calculations do not include stock on hand, stock on order, or freight and logistics costs (for non-DDP shipments). Tables 18 and 19 show the total forecast requirements by quantity and value for the nation, and tables 20 and 21 show the same for the public sector only.

Table 18. Total forecast requirements, including wastage by quantity for the country

Method	Unit	Number of units for			Total
		2016	2017	2018	
Injectable, 3-month (Depo-Provera)	Each	105,652	120,989	124,527	351,168
Injectable, 2-month (Noristerat)	Each	122,888	108,720	111,869	343,477
Injectable, 1-month (Norigynon)	Each	19,138	19,675	20,526	59,339
Oral contraceptive, Lo-femenal	Cycle	147,065	154,433	161,649	463,147
Oral contraceptive, Ovral	Cycle	104,192	109,412	114,525	328,129
Oral contraceptive, Microval	Cycle	38,572	40,504	42,397	121,473
Implant, Jadelle	Each	2,591	2,703	2,809	8,103
IUCD, Copper-T	Each	1,595	1,754	1,906	5,255
Emergency oral contraceptive, Postinor-2*	2 tabs	3,945	4,142	4,349	12,436
Male condom*	Each	18,902,234	22,682,680	27,221,849	68,806,763
Female condom*	Each	215,136	247,407	284,518	747,061

*Forecast based on consumption method

Note that commodities for male and female sterilization are not included in the forecast.

Table 19. Total forecast requirements, including wastage and freight and logistics costs, by value (in USD) for the country

Method	Unit	Unit price	2016	2017	2018	Total
Injectable, 3-month (Depo-Provera)	Each	1.00	105,652	120,989	124,527	351,168
Injectable, 2-month (Noristerat)	Each	1.30	159,754	141,336	145,430	446,520
Injectable, 1-month (Norigynon)	Each	0.85	16,267	16,724	17,447	50,438
Oral contraceptive, Lo-femenal	Cycle	0.69	101,475	106,559	111,538	319,571
Oral contraceptive, Ovral	Cycle	0.60	62,515	65,647	68,715	196,877
Oral contraceptive, Microval	Cycle	4.85	187,074	196,444	205,625	589,144
Implant, Jadelle	Each	8.50	22,024	22,976	23,877	68,876
IUCD, Copper-T	Each	0.37	590	649	705	1,944

Method	Unit	Unit price	2016	2017	2018	Total
Emergency oral contraceptive, Postinor-2*	2 tabs	1.59	6,272	6,586	6,915	19,773
Male condom*	Each	0.03	567,067	680,480	816,655	2,064,203
Female condom*	Each	0.57	122,628	141,022	162,175	425,825
Total			1,351,318	1,499,412	1,683,609	4,534,340

**Forecast based on consumption method*

Note that male and female sterilization are not included in the forecast

Table 20. Total forecast requirements by quantity for the public sector only

Method	Unit	Number of units for			Total
		2016	2017	2018	
Injectable, 3-month (Depo-Provera)	Each	103,539	118,569	122,036	344,145
Injectable, 1-month (Norigynon)	Each	18,755	19,282	20,115	58,152
Oral contraceptive, Lo-femenal	Cycle	135,300	142,078	148,717	426,095
Oral contraceptive, Ovral	Cycle	95,857	100,659	105,363	301,879
Oral contraceptive, Microval	Cycle	35,486	37,264	39,005	111,755
Implant, Jadelle	Each	2,591	2,703	2,809	8,103
IUCD, Copper-T	Each	1,595	1,754	1,906	5,255
Emergency oral contraceptive, Postinor-2*	2 tabs	3,629	3,811	4,001	11,441
Male condom*	Each	14,365,698	17,238,837	20,688,605	52,293,140
Female condom*	Each	215,136	247,407	284,518	747,061

**Forecast based on consumption method*

Note that male and female sterilization are not included in the forecast

Table 21. Total forecast requirements, including wastage and freight and logistics costs, by value (in USD) for the public sector only

Method	Unit	Unit price	2016	2017	2018	Total
Injectable, 3-month (Depo-Provera)	Each	1.00	103,539	118,569	122,036	344,145
Injectable, 2-month (Noristerat)	Each	1.30	156,559	138,509	142,521	437,590
Injectable, 1-month (Norigynon)	Each	0.85	15,942	16,389	17,098	49,429
Oral contraceptive, Lo-femenal	Cycle	0.69	93,357	98,034	102,615	294,006
Oral contraceptive, Ovral	Cycle	0.60	57,514	60,395	63,218	181,127
Oral contraceptive, Microval	Cycle	4.85	172,108	180,729	189,175	542,013
Implant, Jadelle	Each	8.50	22,024	22,976	23,877	68,876
IUCD, Copper-T	Each	0.37	590	649	705	1,944
Emergency oral contraceptive, Postinor-2*	2 tabs	1.59	5,770	6,059	6,362	18,191
Male condom*	Each	0.03	430,971	517,165	620,658	1,568,794
Female condom*	Each	0.57	122,628	141,022	162,175	425,825
Grand Total			1,181,002	1,300,497	1,450,440	3,931,939

**Forecast based on consumption method*

Note that male and female sterilization are not included in the forecast

Supply Plan Results

Based on the forecast and supply plan assumptions above, and using PipeLine as a supply planning tool, the following procurement requirements were calculated in quantities and costs. The supply plan/procurement requirements include the requirements for the clients, wastages, freight and logistics costs, stock on hand, and stock on order. Tables 22 to 27 show

the details of public sector commodity procurement requirements by quantity and value. The male and female condom procurement requirements include FP and STI/HIV prevention requirements. In summary, the total public sector commodity procurement requirement by value, for the quantification period of April 2016–March 2019 was estimated to be **USD 2,980,839**.

Table 22. Supply plan/procurement requirements by quantity for the public sector – Total

Method	Unit	2016/17	2017/18	2018/19	Total
Injectable, 3-month (Depo-Provera)	Each	-	50,347	143,346	193,693
Injectable, 2-month (Noristerat)	Each	-	125,965	118,094	244,059
Injectable, 1-month (Norigynon)	Each	16,165	23,390	16,750	56,305
Oral contraceptive, Lo-femenal	Cycle	161,680	161,881	124,110	447,671
Oral contraceptive, Ovral	Cycle	109,106	77,669	125,111	311,886
Oral contraceptive, Microval	Cycle	28,348	42,378	45,495	116,221
Implant, Jadelle	Each	-	2,340	2,330	4,670
IUCD, Copper-T	Each	1,960	1,405	2,265	5,630
Emergency oral contraceptive, Postinor-2	2 tabs	-	-	3,668	3,668
Male condom	Each	11,143,953	13,887,390	20,593,628	45,624,971
Female condom	Each	186,388	328,850	237,098	752,336

Table 23. Supply plan/procurement requirements by quantity for the public sector – MOH

Method	Unit	2016/17	2017/18	2018/19	Total
Injectable, 3-month (Depo-Provera)	Each	0	50,347	143,346	193,693
Injectable, 2-month (Noristerat)	Each	0	125,965	118,094	244,059
Injectable, 1-month (Norigynon)	Each	16,165	23,390	16,750	56,305
Oral contraceptive, Lo-femenal	Cycle	161,680	161,881	124,110	447,671
Oral contraceptive, Ovral	Cycle	109,106	77,669	125,111	311,886
Oral contraceptive, Microval	Cycle	28,348	42,378	45,495	116,221
Implant, Jadelle	Each	0	2,340	2,330	4,670
IUCD, Copper-T	Each	1,960	1,405	2,265	5,630
Emergency oral contraceptive, Postinor-2	2 tabs	0	0	3,668	3,668
Male condom	Each	0	0	20,593,628	20,593,628
Female condom	Each	0	112,360	237,098	349,458

Table 24. Supply plan/procurement requirements by quantity for the public sector – USAID

Method	Unit	2016/17	2017/18	2018/19	Total
Male condom	Each	11,143,953	13,887,390	0	25,031,343
Female condom	Each	186,388	216,490	0	402,878

Table 25. Supply plan/procurement requirements by value (in USD) for the public sector – Total

Method	2016/17	2017/18	2018/19	Total
Injectable, 3-month (Depo-Provera)	0	32,222	91,741	123,964
Injectable, 2-month (Noristerat)	0	120,926	113,370	234,297
Injectable, 1-month (Norigynon)	13,740	19,882	14,238	47,859
Oral contraceptive, Lo-femenal	127,727	127,886	98,047	353,660
Oral contraceptive, Ovral	58,917	41,941	67,560	168,418
Oral contraceptive, Microval	32,317	48,311	51,864	132,492

Method	2016/17	2017/18	2018/19	Total
Implant, Jadelle	0	19,890	19,805	39,695
IUCD, Copper-T	725	520	838	2,083
Emergency oral contraceptive, Postinor-2	0	0	3,154	3,154
Male condom	374,437	466,616	617,809	1,458,862
Female condom	108,552	184,511	123,291	416,354
Grand Total	716,416	1,062,705	1,201,718	2,980,839

Table 26. Supply plan/procurement requirements by value (in USD) for the public sector – MOH

Method	2016/17	2017/18	2018/19	Total
Depo-Provera (150mg/ml, vial)	0	32,222	91,741	123,964
Female condoms	0	58,427	123,291	181,718
IUCD, Copper-T	725	520	838	2,083
Jadelle (75mg pellet with complete set)	0	19,890	19,805	39,695
Lo-femenal (28 tabs/1 cycle)	127,727	127,886	98,047	353,660
Male condoms	0	0	617,809	617,809
Microval (28/1 cycle)	32,317	48,311	51,864	132,492
Norigynon ([50mg + 5mg]/ml, vial)	13,740	19,882	14,238	47,859
Noristerat (200mg/ml, vial)	0	120,926	113,370	234,297
Ovral (28 tabs/1 cycle)	58,917	41,941	67,560	168,418
Postinor-2 (2 tabs)	0	0	3,154	3,154
Grand Total	233,427	470,005	1,201,718	1,905,149

Table 27. Supply plan/procurement requirements by value (in USD) for the public sector – USAID

Method	2016/17	2017/18	2018/19	Total
Male condom	374,437	466,616	0	841,053
Female condom	108,552	126,084	0	234,636
Grand Total	482,989	592,700	0	1,075,689

Quantification Analysis

Fertility Rate and Population

The total fertility rate (TFR) has decreased significantly and is consistently decreasing in Swaziland. It is estimated that TFR will decrease from 3.9 in 2007⁴ to 3.3 in 2018 and 3.1 in 2022. Actual data from *MICS 2010* and *MICS 2014* show an even greater reduction in TFR compared to projections in 2007. This is in line with the decrease observed in previous years; TFR was 6.4 in 1986 and 4.5 in 1997. The population of Swaziland is expected to grow slightly, from 1.02 million in 2007 to 1.16 million in 2018, according to population projections for 2007–2030. This projection assumes an annual population growth rate of 1%. However, *SDHS 2012* states that the annual population growth is 0.4%. Experts decided to use the average of the two (0.7%) to calculate the total population figures for the quantification exercise. WRA figures 4 and 5 provide details on TFR and the population.

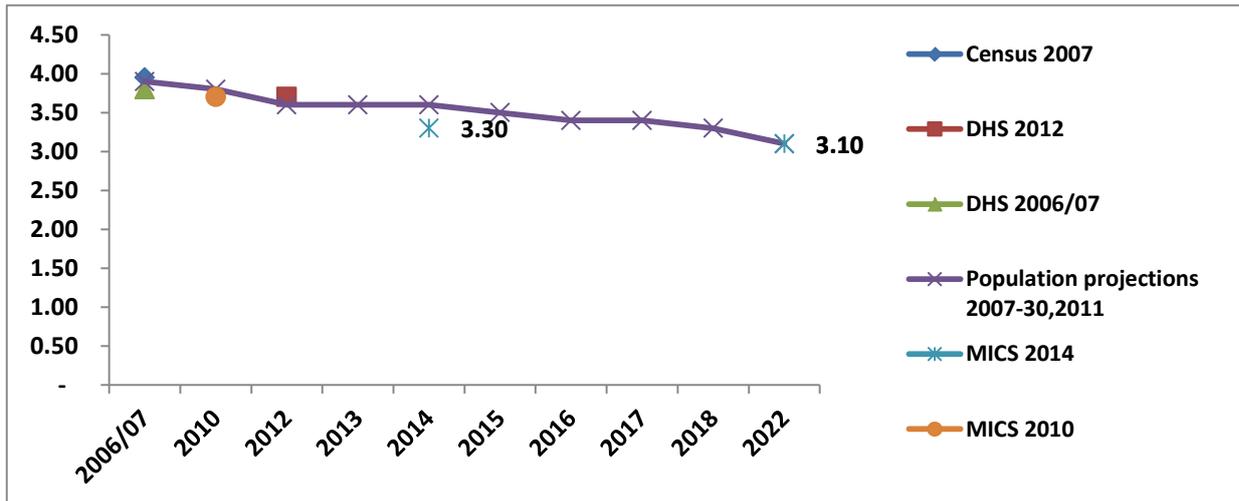


Figure 4. TFR trends in Swaziland

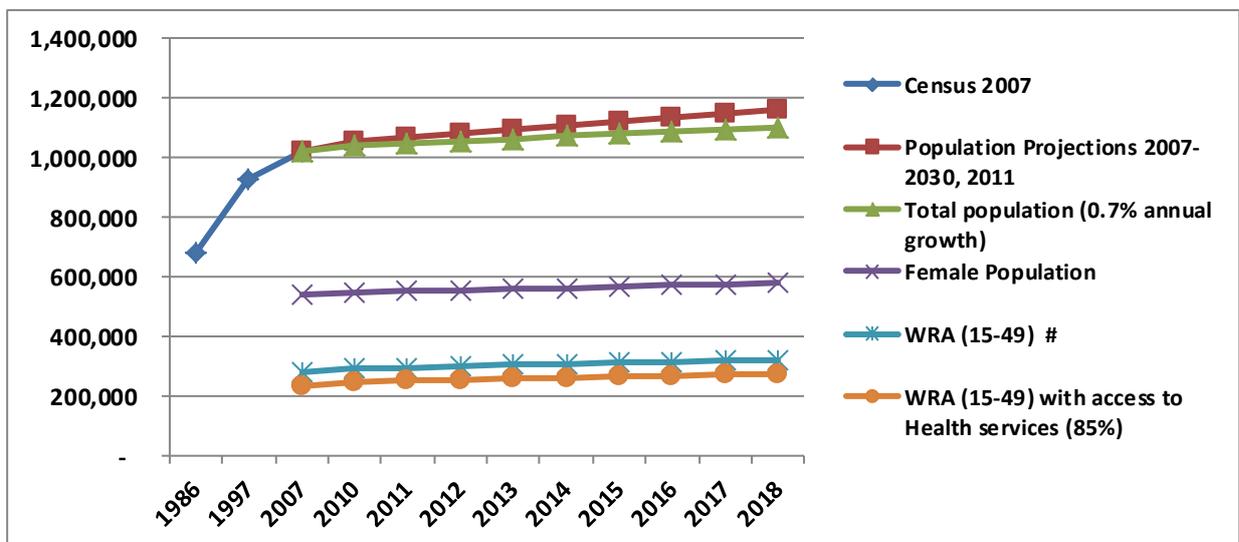


Figure 5. Population trends in Swaziland

CPR Trends

In general, the total CPR has been increasing in Swaziland. The any method CPR for the all WRA group increased from 40.1 in 2002 to 49.3 in 2010 and 50.06 in 2014. However, there was a dip to 38.0 in the total CPR for any method in 2007. CPR of modern methods has shown significant growth as well, from 39.6 in 2002 to 48.0 in 2010 and 49.61 in 2014.

Based on the data from *MICS 2010*⁵ and *MICS 2014*, an average annual increase in modern method CPR of 0.43 percentage points was calculated and applied over the forecast period. Accordingly, modern method CPR is estimated to increase from 49.61 in 2014 to 51.32 in 2018—a total of 1.71 percentage points, averaging an increase of 0.43 points per year. This is a significant adjustment compared to the ambitious assumption of a 2.05 percentage point growth, based on new evidence from the country. Continual monitoring and evaluation of

data on CPR and use of commodities with corresponding adjustment of the CPR targets is recommended.

The use of LA/PM FP methods is estimated to increase at an annual rate of approximately 0.31 percentage points, based on historical trends from *MICS 2010* and *MICS 2014*. The use of traditional methods is estimated to decrease significantly, by a factor of 0.35 CPR per year, every year. Figure 6 provides details on modern FP method CPR by year for the all WRA group.

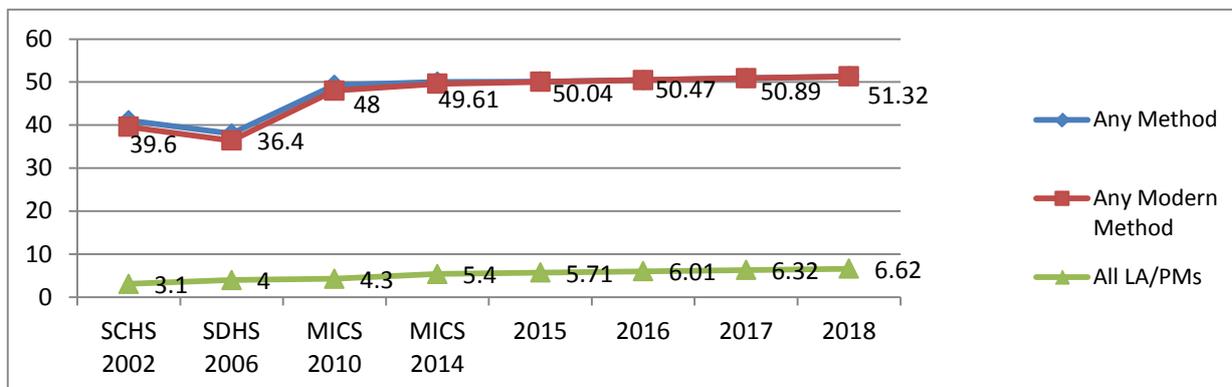


Figure 6. CPR trends in Swaziland, by group of methods

Method Mix of the Modern FP Methods

Data from *MICS 2010*⁵ and *MICS 2014* show that male condoms are the most used FP method, followed by injectables and oral contraceptives. Male sterilization is the least used of all modern FP methods. The proportions of use of all modern methods, except male condoms and male sterilization, are projected to increase annually. The proportion of use of male condoms and male sterilization are decreasing. The trends from *MICS 2010* and *MICS 2014* was applied to calculate the CPR of each method for the quantification period. Note that injectable FP methods will surpass condoms as the number one FP method by 2017, according to trends and projections. Figures 7 and 8 show the details on the method mix trends for modern FP methods.

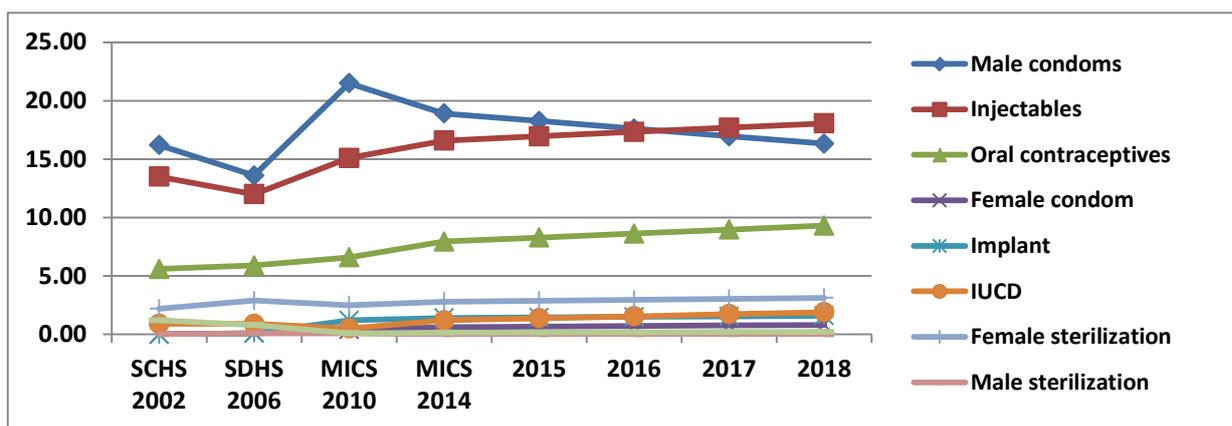


Figure 7. Contraceptive prevalence rate trends in Swaziland

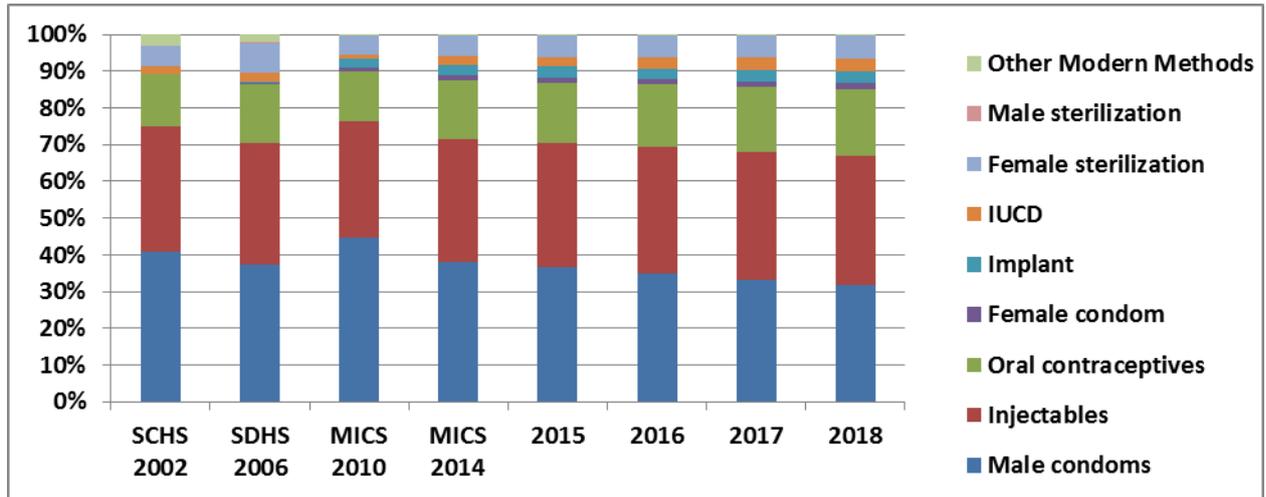


Figure 8. Change in FP method mix in Swaziland

Forecast Results

Combinations of the morbidity and consumption methods of quantification were applied to forecast the FP commodities considered in this exercise. Male condoms, female condoms, and emergency oral pills were estimated using the consumption method; the morbidity method was used for all other commodities. Note that the forecast requirements were estimated by calendar year.

- Comparison of total forecast consumption requirements, including wastage by year, show that the requirement increases steadily from USD 1.08 million in 2015 to USD 1.45 million in 2018. The annual growth is USD 123,642 on average. Figure 9 shows the detail of the total forecast requirement by year for the years 2015 to 2018.

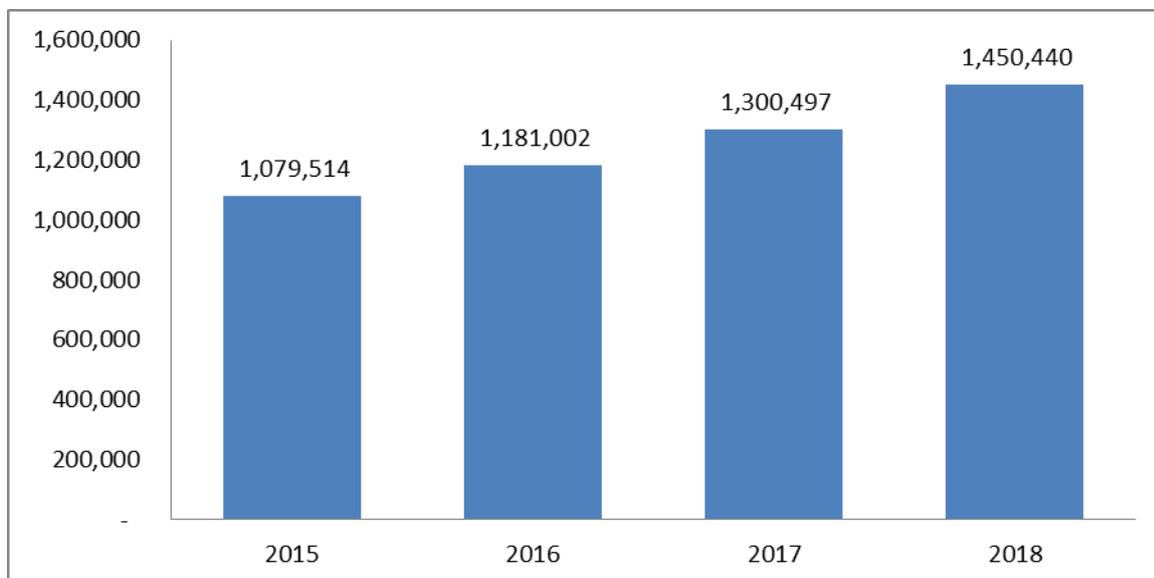


Figure 9. Comparison of forecast requirements by value in the public sector

- Comparison of forecasted consumption requirements by value (including wastage) for the period of 2016 to 2018 shows that male and female condoms take up approximately 50% of the total public sector requirements, followed by Microval oral pill (14%) and Noristerat (11%). The least amount of the requirements is taken by IUCDs (0.05%). Note that these comparisons do not include female and male sterilization commodities. Figure 10 provides a full comparison of forecast requirements by value for each FP commodity in the public sector. Note that the requirements for male and female condoms include those for STI and HIV prevention, in addition to FP.

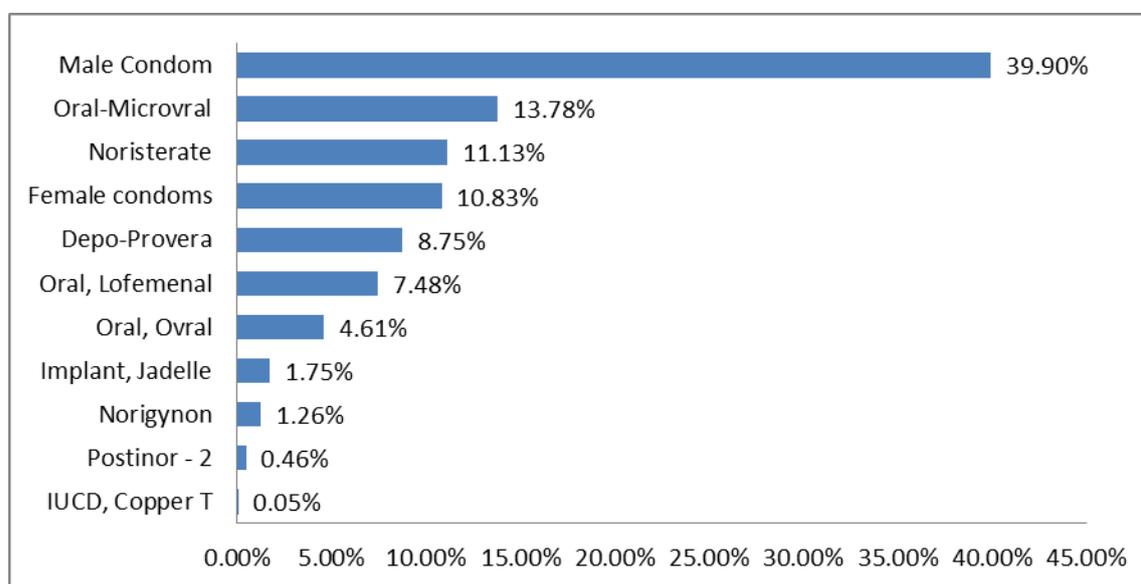


Figure 10. Comparison of procurement requirements by method and value in the public sector, 2016-2018

Supply Plan Results

- A total of approximately USD 2.98 million worth of FP commodities are required to be procured and delivered to Swaziland to fulfill the demand and maintain optimal level of stock in the system during the period of April 2016–March 2019.
- Comparison of total procurement requirements (after consideration of stock on hand and stock in the pipeline) by year shows that the requirement increases steadily from USD 716,416 in 2016/17 to USD 1.2 million in 2018. The procurement requirement for 2016/17 is significantly lower than that of the subsequent years, mainly because large orders of some commodities, in some cases beyond the desired stock level, have already been delivered in 2015 or were ordered to be delivered before April 2016. Such commodities include Depo-Provera, Jadelle, Noristerat, and emergency oral pills.
- Figure 11 shows the details of the total forecast requirement by year for the years 2016/17 to 2018/19.

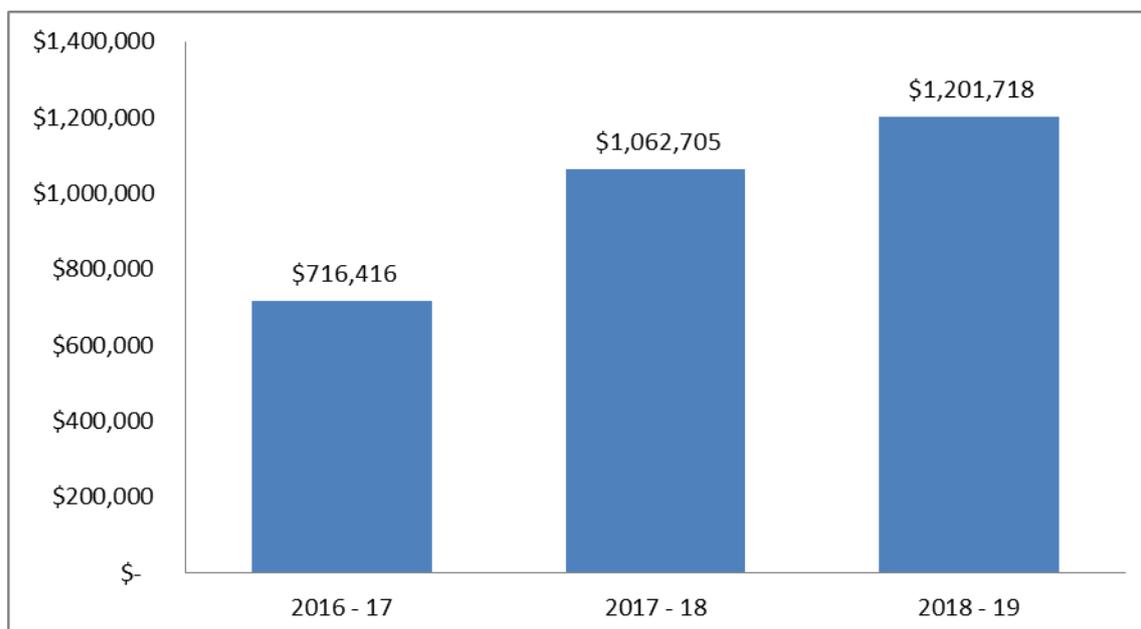


Figure 11. Comparison of procurement requirements by value in the public sector

- Of the total procurement requirement by value, 64% will be covered by MOH and the remaining 36% will be covered by USAID. Note that only male and female condoms are funded by USAID until the end of December 2017. Figure 12 provides the details on the funding from MOH and USAID for the quantification period.

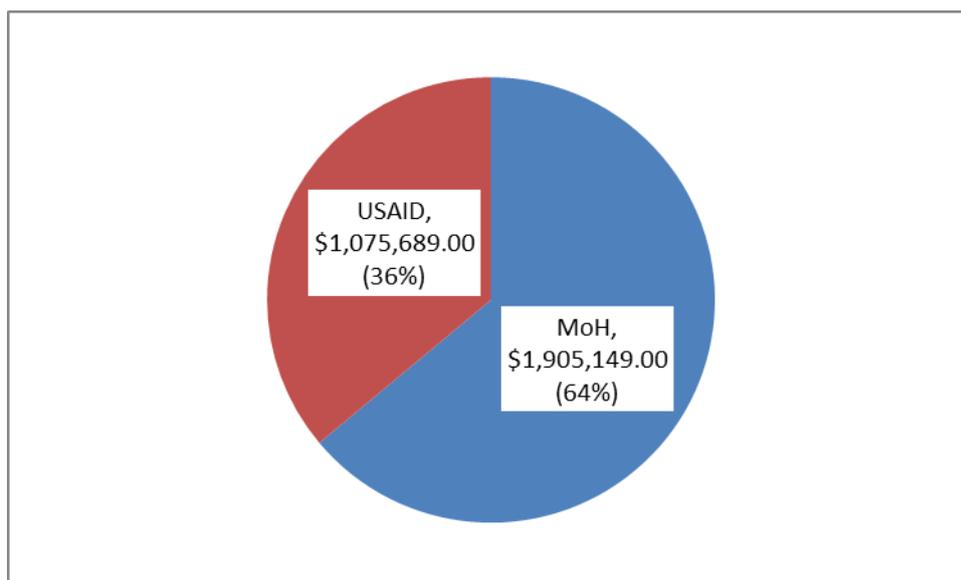


Figure 12. Total procurement costs including freight and logistics, by funding agent, April 2016-March 2019

- Analysis of procurement requirements by group of commodities shows that condoms account for most of the total procurement requirements, at 62.91%; followed by oral contraceptives (including emergency oral contraceptives), which account for 22.07% of the total requirements; and injections, at 13.62%. The least requirement is taken by IUCD (0.07%). Figure 13 provides the details by method for the public sector.

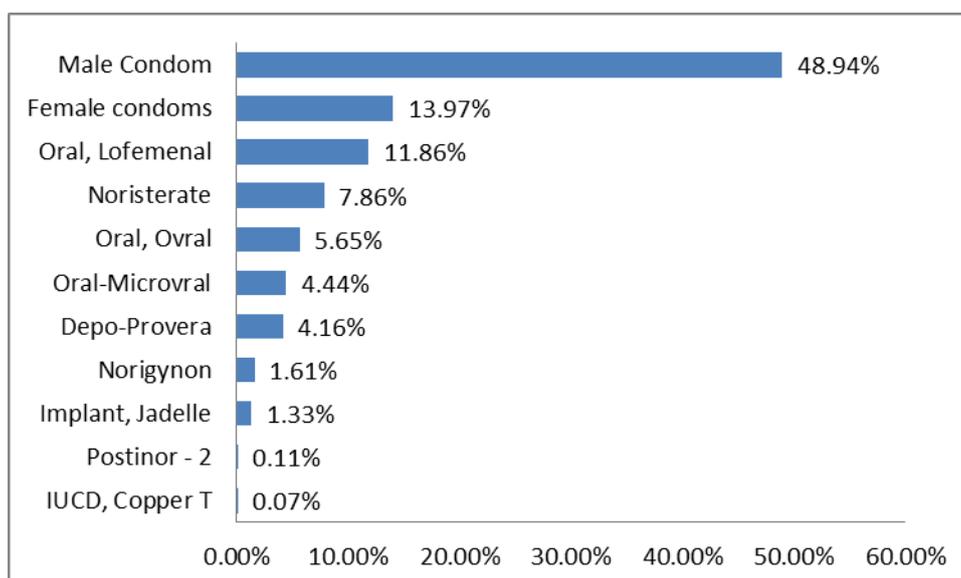


Figure 13. Comparison of procurement requirements by method and value, public sector, 2016/17-2018/19

Outcomes/Impacts Based on the Demographic Method

If procured, imported, and properly used by clients as planned in this exercise, the amount of commodities quantified, and thus the cost incurred to acquire and distribute them to clients, will result in various positive outcomes. The following outcomes were calculated for the quantification period:

Couple-Years Protection

- CYP is estimated protection provided by FP services during a one-year period. It is calculated by multiplying the CYP factors by total number of users (for products used in multiple numbers per year) or by dividing the total number of users by CYP factors (for products/methods used for multiple years). In total, **477,026** couples were estimated to be protected from unwanted pregnancy during the three-year period of 2016–2018. Only modern methods, including female and male sterilization, were considered in the calculation of CYP. Male condoms provide the highest amount of CYP, followed by Noristerat. The least amount of CYP is provided by male sterilization, followed by Norigynon. Table 28 shows CYP factors by method and forecasted CYP from unwanted pregnancies. Note that this calculation does not include the potential CYP that can result when people use condoms for STI prevention purposes and emergency oral pills as a back-up method.

Table 28. CYP—Modern methods

Method	CYP	2016	2017	2018	Total
Injectable, 3-month (Depo-Provera)	4	25,155	28,807	29,649	83,611
Injectable, 2-month (Noristerat)	6	19,506	17,257	17,757	54,520
Injectable, 1-month (Norigynon)	12	1,519	1,561	1,629	4,709
Oral contraceptive, Lo-femenal	13	10,774	11,314	11,842	33,930
Oral contraceptive, Ovral	13	7,633	8,016	8,390	24,039
Oral contraceptive, Microval	13	2,826	2,967	3,106	8,899
Implant, Jadelle	5	12,337	12,870	13,375	38,582
IUCD, Copper-T	10	15,191	16,702	18,150	50,043

Quantification Output

Method	CYP	2016	2017	2018	Total
Male condom	156	46,933	45,673	44,302	136,908
Female condom	156	1,881	2,035	2,188	6,104
Female sterilization	11	11,568	11,947	12,165	35,679
Grand total		155,323	159,149	162,554	477,026

Unwanted Pregnancies Averted

- A total of **75,431** unwanted pregnancies can be averted using the modern methods of FP mentioned below during the three-year period of 2016–2018. This is calculated based on an annual pregnancy rate (APR) of 200 in 1,000 WRA group, based on data from the program, and method-specific annual failure rate²³ of each method according to the following equation. Table 29 shows the details per year and by type of method/product.

$$\text{No. of unwanted pregnancies averted} = (\text{no. of users} \times \text{APR}) - (\text{no. of users} \times \text{APR} \times \text{failure rate})$$

Table 29. Number of unwanted pregnancies averted

Method	Failure rate w/ normal use (%)	2016	2017	2018	Total
Injectable, 3-month (Depo-Provera)		4,880	5,589	5,752	16,221
Injectable, 2-month (Noristerat)	3.00	3,784	3,348	3,445	10,577
Injectable, 1-month (Norigynon)		295	303	316	914
Oral contraceptive, Lo-femenal		2,148	2,255	2,361	6,763
Oral contraceptive, Ovral	8.00	1,522	1,598	1,672	4,792
Oral contraceptive, Microval		563	591	619	1,774
Implant, Jadelle	0.10	799	834	868	2,500
IUCD, Copper-T	0.80	819	921	1,023	2,764
Male condom	15.00	7,979	7,764	7,531	23,274
Female condom	21.00	297	322	346	964
Female sterilization	0.50	1,571	1,630	1,687	4,888
Male sterilization	0.20	-	-	-	-
Grand total		24,656	25,155	25,620	75,431

Abortions Averted

- A total of **12,823** abortions can be averted during the quantification period with the use of the modern FP methods listed below. This is calculated by multiplying the number of unwanted pregnancies averted by the abortion ratio according to the following equation. The abortion ratio was assumed to be 17 per 100 pregnancies in the southern part of Africa.²⁴ Table 30 shows the details per year and by type of method/product.

$$\text{No. of abortions averted} = \text{no. of unwanted pregnancies averted} \times (\text{abortion ratio}/100)$$

Table 30. Number of abortions averted in the procurement period, by method

Method	2016	2017	2018	Total
Injectable, 3-month (Depo-Provera)	830	950	978	2,758
Injectable, 2-month (Noristerat)	643	569	586	1,798
Injectable, 1-month (Norigynon)	50	51	54	155
Oral contraceptive, Lo-femenal	365	383	401	1,150
Oral contraceptive, Ovral	259	272	284	815
Oral contraceptive, Microval	96	101	105	302
Implant, Jadelle	136	142	148	425

Method	2016	2017	2018	Total
IUCD, Copper-T	139	157	174	470
Male condom	1,356	1,320	1,280	3,957
Female condom	51	55	59	164
Female sterilization	267	277	287	831
Male sterilization	-	-	-	0
Grand total	4,192	4,276	4,355	12,823

Unwanted Births Averted

- A total of **53,179** unwanted births can be averted during the quantification period with the use of the modern FP methods listed below. This is calculated based on an assumed spontaneous abortion/still birth rate of 12.5 per 100²⁵ pregnancies according to the following equation. Table 31 shows the details per year and by type of method/product.

$$\text{No. of unwanted births} = \text{no. of unwanted pregnancies} - \text{no. of abortions averted} \\ - (\text{no. of unwanted pregnancies} \times \text{spontaneous abortion rate}/100)$$

Table 31. Number of unwanted births averted

Method	2016	2017	2018	Total
Injectable, 3-month (Depo-Provera)	3,440	3,940	4,055	11,436
Injectable, 2-month (Noristerat)	2,668	2,360	2,429	7,457
Injectable, 1-month (Norigynon)	208	214	223	644
Oral contraceptive, Lo-femenal	1,514	1,590	1,664	4,768
Oral contraceptive, Ovral	1,073	1,126	1,179	3,378
Oral contraceptive, Microval	397	417	436	1,251
Implant, Jadelle	563	588	612	1,763
IUCD, Copper-T	578	650	722	1,949
Male condom	5,625	5,474	5,310	16,408
Female condom	210	227	244	680
Female sterilization	1,107	1,149	1,189	3,446
Male sterilization	-	-	-	0
Grand total	17,383	17,734	18,062	53,179

Maternal Deaths Averted

- A total of **313** maternal deaths can be averted during the quantification period with the use of the modern FP methods listed below. This is calculated based on a maternal mortality ratio of 589 per 100,000 births⁴ according to the following equation. Table 32 shows the details per year and by type of method/product.

$$\text{No. of maternal deaths averted} = \text{no. of unwanted births averted} \times \text{maternal mortality} \\ \text{ratio}/100,000$$

Table 32. Number of maternal deaths averted

Method	2016	2017	2018	Total
Injectable, 3-month (Depo-Provera)	20	23	24	67
Injectable, 2-month (Noristerat)	16	14	14	44
Injectable, 1-month (Norigynon)	1	1	1	4
Oral contraceptive, Lo-femenal	9	9	10	28
Oral contraceptive, Ovral	6	7	7	20

Method	2016	2017	2018	Total
Oral contraceptive, Microval	2	2	3	7
Implant, Jadelle	3	3	4	10
IUCD, Copper-T	3	4	4	11
Male condom	33	32	31	97
Female condom	1	1	1	4
Female sterilization	7	7	7	20
Male sterilization	-	-	-	-
Grand total	102	104	106	313

Infant Deaths Averted

- A total of **4,201** infant deaths can be averted during the quantification period with the use of the modern FP methods listed below. This is calculated based on an infant mortality rate of 79 per 1,000 births⁵ according to the following equation. Table 33 shows the details per year and by type of method/product.

$$\text{No. of infant deaths averted} = \text{no. of unwanted births averted} \times \text{infant mortality rate}/1,000$$

Table 33. Number of infant deaths averted

Method	2016	2017	2018	Total
Injectable, 3-month (Depo-Provera)	272	311	320	903
Injectable, 2-month (Noristerat)	211	186	192	589
Injectable, 1-month (Norigynon)	16	17	18	51
Oral contraceptive, Lo-femenal	120	126	131	377
Oral contraceptive, Ovral	85	89	93	267
Oral contraceptive, Microval	31	33	34	99
Male condom	44	46	48	139
Female condom	46	51	57	154
Implant, Jadelle	444	432	419	1,296
IUCD, Copper-T	17	18	19	54
Female sterilization	87	91	94	272
Male sterilization	-	-	-	0
Grand total	1,373	1,401	1,427	4,201

Child Deaths Averted

- A total of **5,531** child deaths can be averted during the quantification period with the use of the modern FP methods listed below. This is calculated based on a child mortality rate of 104 per 1,000 births⁵ according to the following equation. Table 34 shows the details per year and by type of method/product.

$$\text{No. of child deaths averted} = \text{no. of unwanted births averted} \times \text{child mortality rate}/1,000$$

Table 34. Number of child deaths averted

Method	2016	2017	2018	Total
Injectable, 3-month (Depo-Provera)	358	410	422	1,189
Injectable, 2-month (Noristerat)	277	245	253	775
Injectable, 1-month (Norigynon)	22	22	23	67
Oral contraceptive, Lo-femenal	157	165	173	496
Oral contraceptive, Ovral	112	117	123	351

Quantification of Family Planning Commodities for April 2016 to March 2019, Swaziland

Method	2016	2017	2018	Total
Oral contraceptive, Microval	41	43	45	130
Implant, Jadelle	59	61	64	183
IUCD, Copper-T	60	68	75	203
Male condom	585	569	552	1,706
Female condom	22	24	25	71
Female sterilization	115	119	124	358
Male sterilization	-	-	-	0
Grand total	1,808	1,844	1,878	5,531

Emergency Orders

To avoid stock out of Microval, after stock levels were found to be approximately two months of stock by the end of October 2015, an emergency order was placed for expedited delivery starting in December 2015. Accordingly, 29,170 packs (USD 33,254) of the product were ordered as an emergency procurement.

CHALLENGES

Despite making strides in the supply chain of FP commodities, some challenges related to various aspects of supply chain functions continue to linger; a majority of the challenges that have been highlighted in previous quantification exercises still remain. These include:

Data

- 1) There is inconsistent and inaccurate reporting through the FP LMIS by some health facilities. The inconsistent reporting further negatively impacts the reporting rate of the FP LMIS system; even though this continues to increase, the rise is inconsistent.
- 2) Late submission of LMIS reports to CMS continues to be a challenge.
- 3) There is a lack of a system for consistent supportive supervision, mentorship, and follow-up at the facility level caused by a lack of capacity/knowledge of supply chain issues at the regional health administration level and insufficient human resources at the central level.
- 4) There are gaps in the data used to inform quantification of FP commodities. This challenge runs across all data sets (i.e., service, logistics, and population data). These gaps include information on facilities that are not reporting for both LMIS and service data (number and weighting), data on days out of stock at the facility level, wastage rate, CPR for all WRA in *MICS 2014*, and discontinuation rates for FP methods.
- 5) There are inconsistencies in key demographic data found from various sources in the country, such as TFR, population data, method mix, consumption, and service data.
- 6) There is a lack of proper monitoring and evaluation of interventions to inform future plans and new strategies.
- 7) The FP program is unable to provide clear targets and plans so as to assist with quantification.

Inventory Management

- 1) Poor inventory management practices at the facility level are still a problem, and this contributes to inaccurate reporting.
- 2) There is a lack of a robust system for tracking commodities across all in-country supply chain systems and lack of analysis of available supply chain data in a continual and regular manner.

Coordination

- 1) Poor coordination between partners involved in free issue condom supply impacts the national condom stock levels and, consequently, the quantification. Even though the

quantification process has become more coordinated, there are still some partners who do not use the results of the quantification to inform their procurement of free issue male condoms.

- 2) The system is lacking a mechanism for informing CMS that a particular site has been approved as a service delivery point for FP services. This gap results in some service delivery points falling in and out of the system.
- 3) There is a high discontinuation rate of Jadelle (60% per year) because of adverse effects.

RECOMMENDATIONS

To address some of the challenges that were identified during the quantification exercise, the following recommendations can be made:

- 1) Strengthen partners' coordination, especially in condom supply, distribution, and quantification
- 2) Improve and strengthen quantification data collection and reporting mechanisms
- 3) Establish a quantification committee that will collect, review, and validate data continually and regularly
- 4) Strengthen data collection systems from facility to national levels to improve data quality
- 5) Continue to strengthen continuous supportive supervision, mentorship, and follow-up system at the facility level so that accurate and complete reports and orders will be submitted in a timely manner to CMS
- 6) Establish clear targets and strategies to meet targets within the FP program in the country
- 7) Design and implement a performance monitoring system to monitor and evaluate implementation of FP initiatives, including the supply chain
- 8) Establish an accreditation and communication system between SRHP facilities and partners regarding FP service delivery points
- 9) Establish mapping of all service delivery points currently providing FP services; this will enable CMS to know which and how many service delivery point reports and orders should be expected, to facilitate distribution of FP commodities
- 10) Capture the data points not available from SDHS and MICS now and in the future (e.g., discontinuation rate of different contraceptive methods, CPR for all WRA group)
- 11) Place emergency orders after updating the supply plan with the latest available information
- 12) Look for an alternative implant with fewer adverse effects than Jadelle to reduce the high discontinuation rate associated with this method

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