



ANNUAL CONTRACEPTIVE COMMODITIES FORECASTING, AND COSTING BASED ON CCI TARGETS BY PROVINCES AND REGIONS

2021 – 2025





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AUGUST 2021

Forward

The fourth meeting of Federal Task Force (FTF) on Population was held under the Chair of the Honorable President of Pakistan at Aiwan-e-Sadr on 23rd June 2021. Among other decisions, the FTF approved the National, Provincial and Regional CPR & TFR targets for 2025 and 2030 based on the CCIs recommendations.

To achieve the contraceptive prevalence rate (CPR) targets through ensuring uninterrupted supply of contraceptive commodities, the FTF directed the MoNHSR&C to conduct forecasting & quantification of contraceptive requirements for provincial governments and the private sector (for one year and five years) as per the CCI recommendation #3 Finance (3a). Therefore, to fulfil the decision of the Task Force and keeping in view of the evolving stock outs and related challenges in terms of supply, demand, and utilization of contraceptives in the country, this important study has been completed through a consultative process and well-articulated methodology. The main aim of the report is to provide a much needed basis for timely and sufficient budget allocation and efficient procurement plan. I also believe that the report will offer an important input for other strategic initiatives such as the pooled procurement and local manufacturing.

The findings show that to achieve the CCI recommended targets for CPR, Pakistan would require to procure contraceptive commodities (five methods) worth US\$ 22.08 million in 2021 and should gradually increase to US\$ 28.86 million by 2025.

I believe the provinces and regions will make use of the data to ensure availability of contraceptives equitably especially for reaching underserved and vulnerable segments of the population and for meeting the huge unmet need in the country.

I offer my sincere appreciation and gratitude to the officials from Department of Health and Population Welfare Departments from all provinces and regions for their valuable support and facilitation during the data collection and consultation processes. I would also greatly appreciate UNFPA and FCDO for their generous technical and financial support to conduct this important study.

I would like to extend special thanks to the team who coordinated the entire process - Mr Taj Wali Khan, Director (P), Dr Asif Wazir, Technical Specialist (UNFPA), Dr. Jamil Ahmad, Program Specialist (UNFPA), Dr. Khurram Shahzad (Consultant).

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1 Background

Being the 5th largest country in the world, in 2021, Pakistan has almost 35 million married women of reproductive age group, which makes Pakistan potentially one of the largest consumers of contraceptives. However, the overall demand of contraceptives remains low compared to other regional countries. Only 25% of women use modern contraceptives as per Pakistan’s Demographic & Health Survey 2017-18 (1). While other factors including demand are playing a critical role in this slow growth in contraceptive prevalence rate, the availability of contraceptives remains one of the key elements. Non-availability of contraceptives renders all demand creation and service delivery activities as futile. Interruption in contraceptive availability puts women at risk of pregnancy or forces them to use less effective traditional methods. It also creates a distrust on service delivery points. Failure to obtain contraceptives during a visit, systematically affects the behaviour of community regarding how they approach the facilities in future.

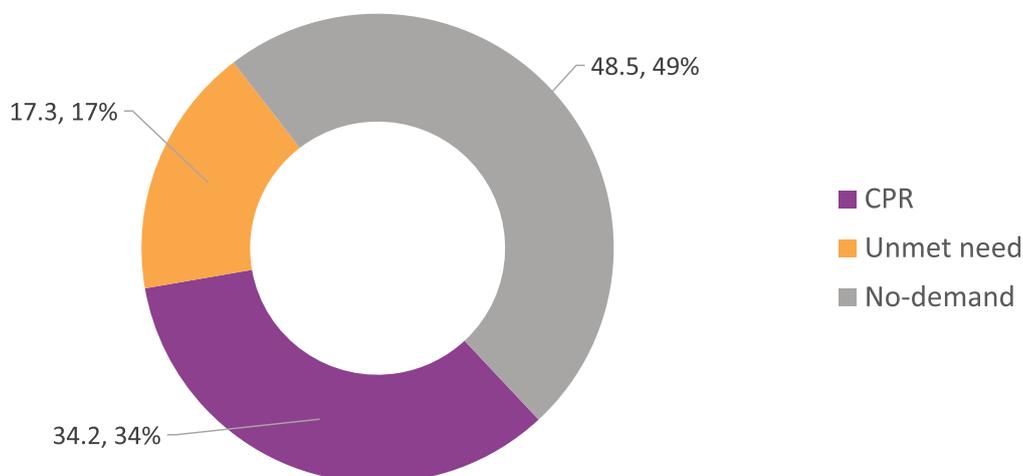
A snapshot of stockout trends from 2016-20 are given in Annex-II (2). Apart from Punjab and Sindh, other provinces and regions have struggled to keep stockouts below 20% for most of the products. The situation has gradually worsened in 2020 due to multiple factors. Increasing

stockouts could potentially lead to interrupted service delivery and increasing unmet need, which is already high.

Commodity security requires concerted efforts from all elements of supply chain to ensure availability to the last mile. However, forecasting is the critical first step which ensures right products are selected and financing is done based on concrete evidence. Thus, medium to long terms forecasts were generated to estimate the financing, storage, and distribution requirements. The forecasting essentially provides key numbers for strategic planning and operational management. The current forecast was required to not only estimate the future requirements by provinces and regional level, but also quantities which may be used for pooled procurement purposed as and when it is operationalized.

Population Program Wing (PPW), M/o NHSR&C with technical support from UNFPA conceptualize to quantify the contraceptive requirements, synchronized with attainment of CCI recommendations and FP2030 goals. The five years forecast will enable government to perform evidence-based allocations to ensure procurements of adequate quantities take place at regular intervals for uninterrupted availability.

Figure 1.
Contraceptive prevalence rate and unmet need in Pakistan,
Source: PDHS 2017-18



2 Objectives

The overall objectives of the activity were to estimate the contraceptive requirements for achieving CCI targets. The estimates also provide numbers for contraceptive pooled procurement, in case an agreement is reached among provinces to go ahead with it. The contraceptive projections are a critical element for the growth of family

planning programs future. The projections also provide a financial gap analysis and serve as an advocacy tool for government and other counterparts to increase funding. The contraceptive requirements provide some insight into the evolving method mix in a country.

3 Overview of Consultative Process and engagement of stakeholders

To ensure ownership of the outcome of this activity, the stakeholders were involved in the process from the very beginning. Consultations were held with Population Program Wing (PPW) for rationale of the activity, its

scope and expected outcomes. The draft estimates were shared with all population and health departments in a meeting held on 24 June 2021. Adjustments were made per feedback from provincial governments.

4 Previous methodologies and practices of contraceptive forecasting of contraceptive commodities

There are several methods exists in the literature for the commodities forecasting. The details of each methods is described as follow:

Estimating consumption using trends in logistic data

In countries, where data from the contraceptive LMIS are of good quality and, a logistics data-based forecast can be prepared by extrapolation of the historical trends after making some correction for missing data. The method is preferred because it requires few assumptions on the part of the forecaster, logistics data-based projections normally provide the best basis for short-term forecasting of future product use.

Estimating consumption on service statistics

Consumption projections based on service statistics are made using the extrapolation techniques. An additional step, multiplying estimated numbers of clients by the estimated quantities of supplies required by each client, is needed to convert the resulting service projections

into consumption estimates. This conversion requires additional assumptions that may reduce the accuracy of the service data-based forecast. The most important limitation of these data for commodity forecasting is that a specific assumption must be made regarding the amounts dispensed at each client visit

Estimating consumption using population data

Both of the preceding forecast methodologies use trends in historical data to predict future patterns of contraceptive consumption. A different forecasting technique—population databased forecasting—uses demographic data from the Demographic and Health Surveys (DHS) and other sources of population and family planning data to estimate future contraceptive demand. To respond the program/policy goals, it is possible to prepare a forecast using population data by setting a goal for the total fertility rate (TFR) or contraceptive prevalence rate (CPR) for the ending year of the forecast and determining how many contraceptive users are required to reach this

goal. Numbers of contraceptive users are then converted into estimates of consumption using the couple-years of protection (CYP) conversion factors, which are simply the estimated quantities of contraceptives required to protect a couple from unwanted pregnancy for one year. The population-based projections are more often used for long-range forecasting, or for validation of short-term forecasts made by other methods. We have adopted the population-based forecast based on the CCI targets for the contraceptive prevalence rate. With this tentative “final” forecast in hand, the forecaster was able to determine whether the (PWD and DoH) distribution system has sufficient capacity to move and store the commodities required.

Intensive contraceptive forecasting exercises have been done in Pakistan, especially in the last decade. USAID

commodity support from 2009-16 were based on annual contraceptive requirements based on multitude of data. Logistics and demographic data are the most used. While demographic data provides an accurate picture of complete scope inclusive of NGOs, commercial sector, and public and private sector users, the logistics data provides a more realistic picture based on short term changes in demand. However, lack of universal reporting of logistics data affected its reliability. Increasing stockouts in the past three to five years also resulted in poor correlation between consumption of contraceptives and actual demand. Thus, there are limitations in comparison of this activity with earlier conducted logistics forecasts which were conducted at a time (2011-15) when commodity availability was more than 95% and reporting rates were also high.

5 Methodology and Data Sources

Contraceptive forecast is done through use of logistics, services, or demographic data. Logistics and services data for most of the provinces/regions is quite fragmented, inconsistently reported also does not cover all service delivery points. Logistics data available through contraceptive LMIS was reviewed. However, coverage rates¹ are low and even those facilities which are entitled to

report in cLMIS, do not regularly do that. Analysis of cLMIS data revealed less than 60% reporting rates for health department and lady health workers program. Therefore, the forecasting team decided to use demographic data (PDHS 2017-18), which provided an additional benefit of aligning with FP2030 CPR targets.

Key steps to derive the annual contraceptive commodities.

The following key steps are considered in the study.

1. We adopted the targets of contraceptive prevalence rate for each province and regions based on the CCI recommendations from Goujon & Wazir (3). The baseline and projected MWRA has been derived using the population projections in the above study.
2. Method mix, and consumption data from the cLMIS and PDHS 2017-18 have been derived. For the projection of the Method-mix, we evaluated the consumption pattern of each method in each province and region. Keeping in view the promotion of LARC methods, we subjectively increased the proportion of each method in the forecast period. We interpolated between beginning- and ending-year values and calculated the numbers of users of each method for each year of the forecast.
3. Converted numbers of contraceptive users to quantities of contraceptives required using couple-years of protection (CYP) factors.

¹ Facilities reporting in cLMIS, out of all facilities providing contraceptives

Setting Contraceptive Prevalence targets and sub-national population projections

The target study uses a wide range of sample surveys conducted since the 1990s to understand the trends in CPR. In addition to the 2017 census as a baseline, around 26 national and provincial/regional representative sample surveys (including PDHS, MICS, PSLMs, and other surveys) were retained for the analysis. We covered seven first-level sub-national (provinces and regions) entities in our analysis including AJK and GB. Generally, there is no discrepancy between the estimates computed and those published in national survey reports. Where available, microdata for the DHS, MICS, and PSLM surveys and some national surveys were used to calculate FP indicators. Where no microdata was available, FP indicators were obtained from survey reports.

The methodology is primarily divided into three steps. In a first step, we estimate the trend in contraceptive prevalence (modern and traditional). Our statistical model

for sub-national estimates and projections builds upon the Bayesian hierarchical model that is used by the United Nations Population Division to assess progress in providing access to family planning. We construct different scenarios of future CPR up to 2030 based upon observed trends. In the next step, we enter these CPR into a proximate determinants of fertility model to derive the assumption about future fertility to 2030 and then conduct population projections according to the fertility assumptions together with other parameters up to 2062. The full details can be found in Goujon & Wazir (3).

The main aim of the forecasting was to estimate the contraceptive requirements for current and future couples. The baseline number of users were obtained from 2017 Census (4). Pakistan's current population is estimated to be 220 million (2% growth rate from 2017-18 census). The proportion of Married Women of Reproductive Age group is estimated to be almost 16% in Pakistan. Following table provides the number of estimated MWRA from year 2020 to 2025

Table 1.

MWRA estimates for provinces and regions using the CCI targets setting population projections

	2021	2022	2023	2024	2025
Punjab	18,296,195	18,634,832	18,989,137	19,355,644	19,730,793
Sindh	8,268,780	8,469,106	8,665,736	8,858,944	9,048,910
KP	5,817,436	5,964,348	6,122,628	6,290,645	6,466,694
Balochistan	2,095,174	2,164,684	2,230,003	2,291,954	2,351,300
AJK	670,508	678,422	686,382	694,483	702,804
GB	219,285	225,262	231,178	237,095	243,066
ICT	375,642	388,330	399,991	410,596	420,121
Pakistan	34,853,228	35,621,300	36,407,496	37,207,783	38,017,819

Women using modern contraceptives were estimated for each year by using the baseline figures from Pakistan's Demographic & Health Survey 2017-18 (1). CPR was projected from 2017-18 based on the CCI targets. While

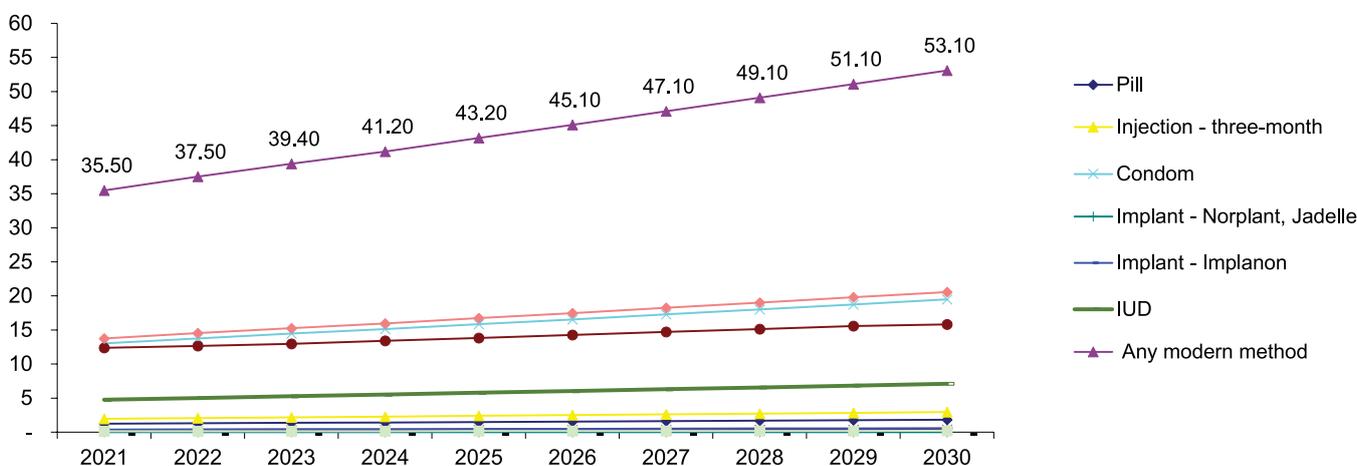
the figures may not predict the actual growth in CPR, they allow us to estimate the contraceptives which are required to support the all-out efforts to achieve the CCI targets.

6 Projection of Method Mix

Figure 2 shows the projected method specific CPR for Punjab. Similar approach was adopted for all provinces. The modern method CPR for Punjab as per CCI targets is to increase up to 53% by 2030. We took the method mix for each province and region from PDHS 2017-18. Overall, the prevalence of Long-Acting Reversible Contraceptive Methods (IUCD & implant) in Pakistan is very low – 8% for IUCD and 2% for implants from among

the modern methods users. Because the essence of CCI recommendations is to increase the LARC methods, therefore based on the consumption data trend in each province, we assumed 50% increase in IUCDs and 25% increase in implants from the baseline. To align the overall proportion the short acting methods are adjusted accordingly. The revised method mix is assumed to be constant over the forecast period.

Figure 2.
Projected CPR and Method Mix for Punjab



The number of users of contraceptives by method were estimated by multiplying MWRA for each year with method wise CPR for that particular year. For long term reversible

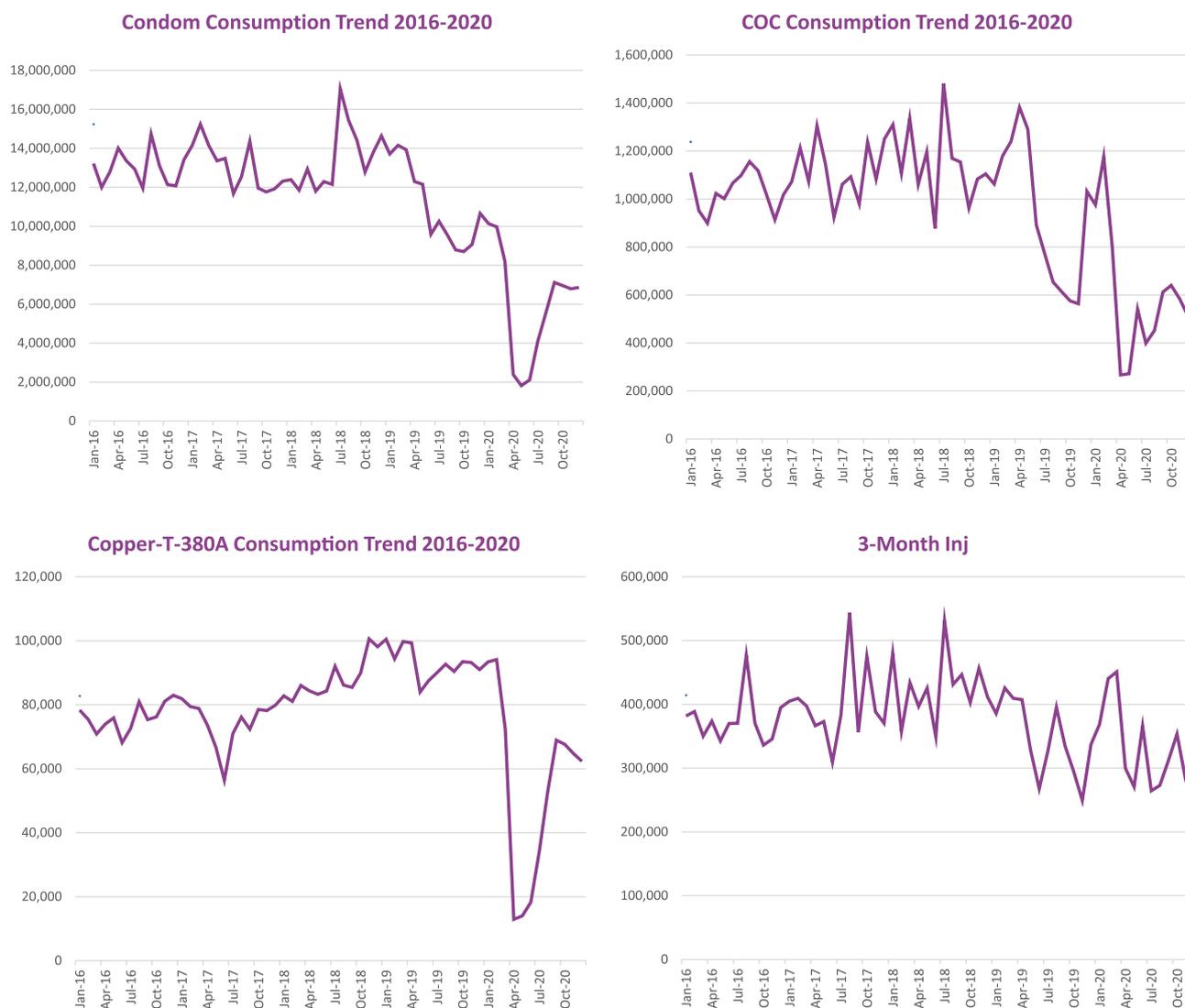
contraceptive methods adjustment of discontinuation rates was done.

7 Analysis of cLMIS consumption data by Methods

Figure 3 shows contraceptive consumption trends for past five years (2016 – 2021). The trend clearly shows a decline in consumption, though some if it might be attributable to a decreased reporting rates. However, there has been a significant contribution of stockouts and less than demand supplies as evident from increasing stockouts (Annex 2). The declining reported consumption is critical because a growth in CPR should reflect an increasing trend for at least the four key methods.

The variability in consumption has increased in year 2018-20. This variability coincides with supplies challenges from provincial levels during this period. Some supply issues were further worsened by the COVID-19 pandemic in year 2020. The consumption of condoms has declined from almost 16 million per month to 8 million per month. Similarly, the reported consumption for COC and DMPA have decreased by almost 40% during this last half a decade.

Figure 3.
Contraceptive consumption trends for past five years



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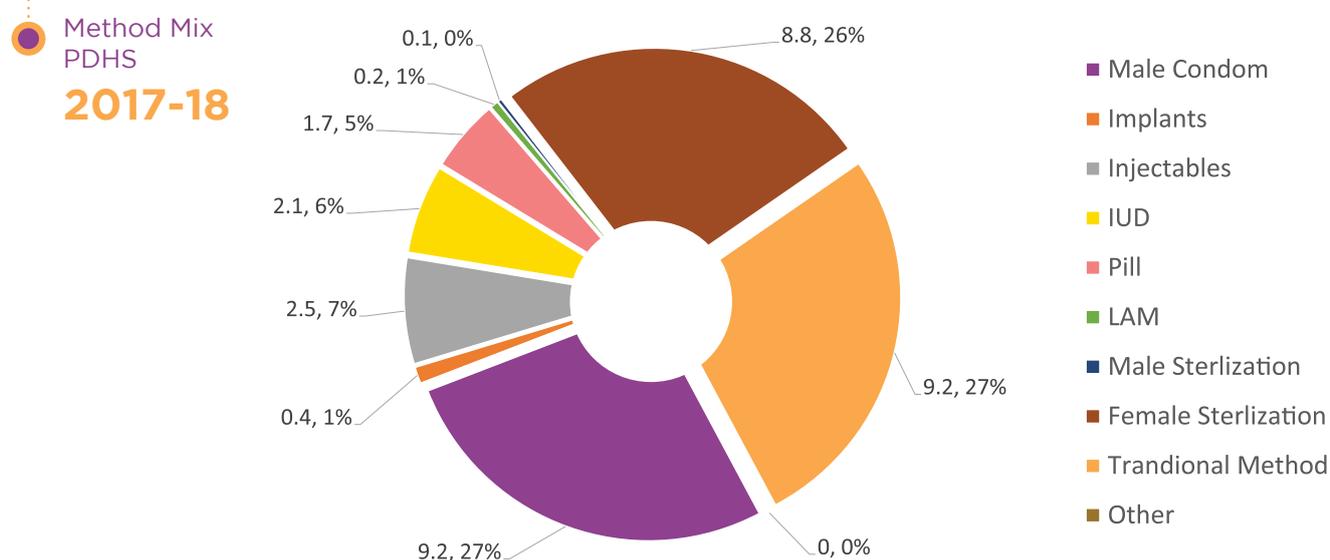
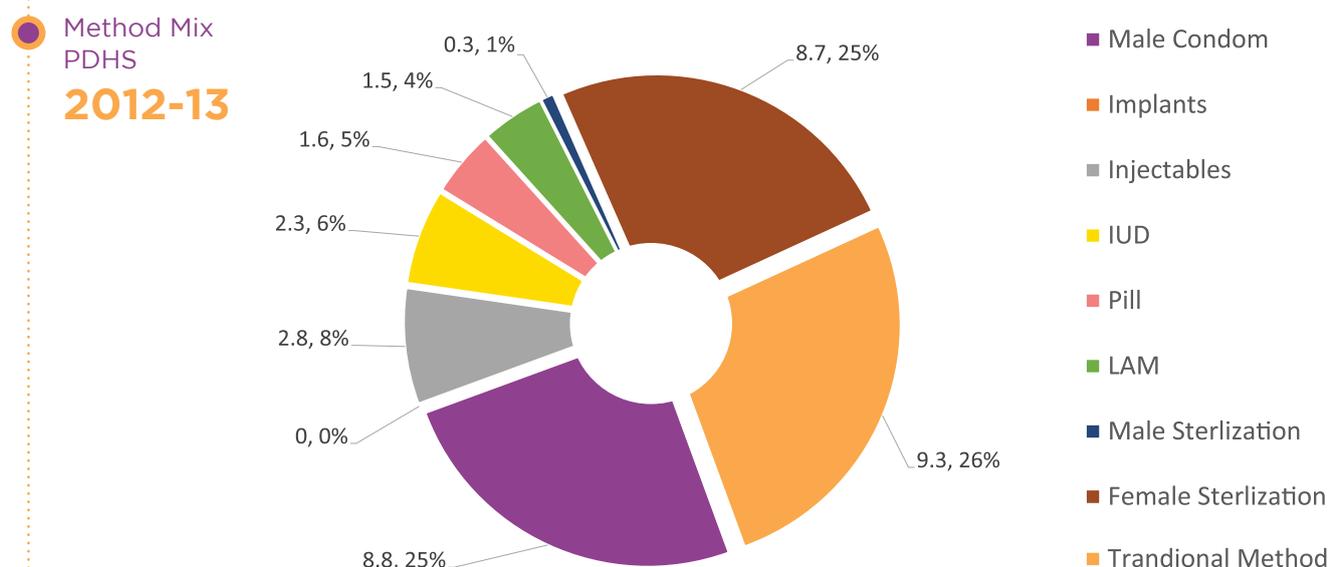
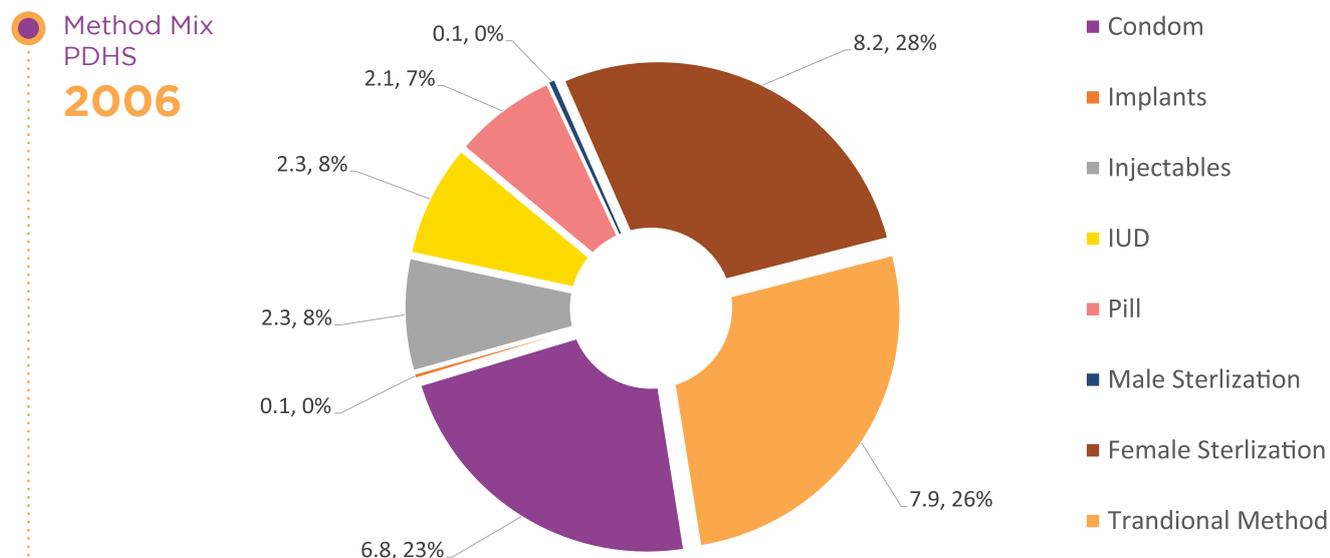
Trend analysis of the method mix from three rounds of PDHS: 2006-2017

Comparison of method mix is important considering the fact that for effective birth spacing, Pakistan needs to be move towards long-acting reversible contraceptives (LARCS). LARCS also provide an added advantage of low cost per CYP generated. A review of method mix from the last three demographic and health surveys (Figure 4) show that Pakistan's method mix has not changed much over the last two decades. Almost one quarter of CPR is contributed by traditional methods, which are comparatively less effective than modern methods. A quarter is contributed by condoms and almost one

quarter is contributed by female sterilization. Female sterilization in Pakistan's perspective is mostly done after family size is complete, thus it does not have a major impact on total fertility.

More than 50% of the CPR was contributed by pills, injectables and IUCDs in a multi-country study conducted in 123 low- and middle-income countries (5). While in Pakistan, the highest figure reported is 22% in terms of contribution by pills, injectables and IUCD; and that too in PDHS 2006. Use of condoms and traditional methods is very high in Pakistan compared to other countries.

Figure 4. Method mix comparison from 2006 to 2018



9 Overview of CCI targets for contraceptive prevalence rate

Table 2 provides year-wise targets for Modern Method Contraceptive Prevalence Rate (mCPR) as agreed in

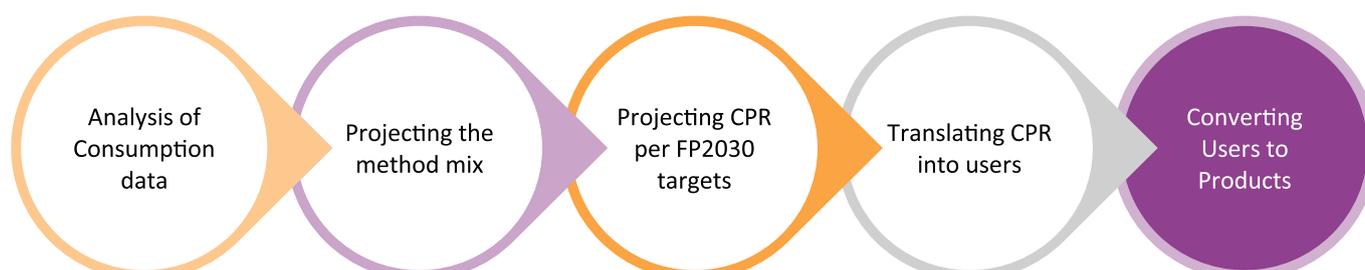
CCI Action Plan. The baseline is kept as per the mCPR reported in PDHS 2017-18

Table 2.
CCI targets for Contraceptive Prevalence Rates

Year	Punjab	Sindh	KP	Balochistan	ICT	AJK	GB
2017	27.8	25.0	21.8	15.8	33.3	19.1	32.3
2018	29.8	26.9	23.7	17.7	35.6	21.1	34.2
2019	31.7	28.8	25.6	19.6	37.7	23.1	36.2
2020	33.6	30.7	27.5	21.5	39.7	25.1	38.2
2021	35.5	32.6	29.4	23.4	41.7	27.1	40.2
2022	37.5	34.5	31.3	25.4	43.8	29.1	42.1
2023	39.4	36.3	33.3	27.3	45.8	31.1	44.1
2024	41.2	38.3	35.1	29.1	47.9	33.1	46.1
2025	43.2	40.2	37.1	31.0	49.9	35.1	48.1
2026	45.1	42.1	39.1	32.9	52.0	37.1	50.1
2027	47.1	44.0	41.0	34.8	54.0	39.1	52.1
2028	49.1	45.8	43.0	36.7	56.0	41.1	54.1
2029	51.1	47.8	44.9	38.6	58.0	43.1	56.1
2030	53.1	49.7	46.9	40.5	60.1	45.1	58.1

The following flow chart describes the process of the current forecasting activity. The target CPR used by province is given in Table 2. Married women of reproductive age group were multiplied with method-wise CPR to estimate the number of users. Adjustments for discontinuation rates were done to come up with

final number of users of each method. User were then converted into the products required through multiplication with CYP factor. Price factors² were applied to estimate the costs for each product and the total requirements each year.



² Estimated prices were used from average costs from the UNFPA supported procurements globally

10 Results

The province and region forecast is given in Annex-III. Estimates for five key contraceptive methods are given. As mentioned earlier, the estimates are likely to fulfil

the demand if the growth in CPR is achieved as per CCI targets. Table 3 provides summary of aggregate national forecast by method for the next five years.

Table 3.

Summary of aggregate national forecast by method

Commodities	2021	2022	2023	2024	2025
Pill cycles	12,799,299	13,922,825	15,068,783	16,242,772	17,496,855
Injection - three-month	5,306,803	5,765,628	6,240,124	6,722,323	7,244,160
Condom	570,870,434	617,869,364	665,681,825	714,128,224	766,783,829
Implants	225,502	168,950	180,413	194,087	207,118
IUD	709,227	478,222	508,591	539,324	579,726

Table 4 below provides cost estimates for provinces and regions for next five years. Punjab being the largest province has the highest requirement of and aggregate

\$57million for next five years. These figures could aid financial planning and ensure adequate stream of funds are available to ensure uninterrupted supplies.

Table 4.

Cost estimates by province/region

Province/ region	2021	2022	2023	2024	2025	Total
ICT	\$308,773	\$334,619	\$360,271	\$386,721	\$412,077	\$1,802,461
GB	\$160,438	\$168,543	\$181,178	\$194,206	\$207,702	\$912,066
AJK	\$339,012	\$367,445	\$397,190	\$427,614	\$458,786	\$1,990,048
Sindh	\$5,493,616	\$5,478,636	\$5,888,358	\$6,354,278	\$6,802,194	\$30,017,083
KP	\$4,379,007	\$4,773,544	\$5,213,385	\$5,645,203	\$6,134,190	\$26,145,330
Balochistan	\$1,262,459	\$1,398,446	\$1,547,832	\$1,695,191	\$1,852,499	\$7,756,426
Punjab	\$10,138,701	\$10,656,862	\$11,406,188	\$12,154,056	\$12,993,371	\$57,349,179

Table 5 below provides cost estimates by contraceptive methods. The likely increase in uptake of newer long-acting reversible contraceptive methods is reflected in

forecast for implants. However, as mentioned in earlier sections, the use of Condoms is likely to remain high in coming years.

Table 5.
Cost estimates by method

Methods	2021	2022	2023	2024	2025
Pill cycles	\$3,033,434	\$3,299,709	\$3,571,301	\$3,849,537	\$4,146,755
Injection - three-month	\$4,271,976	\$4,641,330	\$5,023,300	\$5,411,470	\$5,831,549
Condom	\$12,555,185	\$13,588,835	\$14,640,377	\$15,705,862	\$16,863,919
Implants	\$2,006,516	\$1,503,319	\$1,605,319	\$1,726,984	\$1,842,940
IUD	\$214,896	\$144,901	\$154,103	\$163,415	\$175,657
	\$22,082,007	\$23,178,095	\$24,994,401	\$26,857,268	\$28,860,820

The current forecast is based on a critical assumption of growth in CPR as per CCI targets. Attaining the CCI targets is very important to curb the current high fertility in Pakistan. However, the recent history and evidence shows that attaining CPR growth of beyond event 1.5% per annum is a very ambitious target, within Pakistan's context. Pakistan's CPR had remained stagnant from 2012 to 2018. The commodity situation after 2016 and impact of COVID-19 on logistics and services delivery also do not bode well for CPR improvements. Thus, the forecast accuracy will decline sharply if CCI targets are not met.

To improve forecast accuracy, the forecast must be updated every six months based on the reported consumption data. The importance of reliable and complete consumption data is critical for monitoring demand through logistics data uptake. All stakeholders, whether public or private, should be mandated to report their data into LMIS on a regular basis. The logistics data provides a short-term insight into the uptake of contraceptives and consequently shows the trends in demands and method mix.

ANNEXES

Annex-I: CYP conversion factors

The CYP conversion factors (6) mentioned below are in-line with Pakistan Bureau of Statistics (PBS)

Method	CYP Per Unit
Copper-T 380-A IUD	4.6 CYP per IUD inserted (3.3 for 5 year IUD e.g. LNG-IUS)
3 year implant (e.g. Implanon)	2.5 CYP per implant
4 year implant (e.g. Sino-Implant)	3.2 CYP per implant
5 year implant (e.g. Jadelle)	3.8 CYP per implant
Emergency Contraception	20 doses per CYP
Sterilization (Global)	10
Oral Contraceptives	15 cycles per CYP
Condoms (Male and Female)	120 units per CYP
Depo Provera (DMPA) Injectable	4 doses per CYP

Annex II: Recent Stockout situation



Annex III: Forecast by province/region**Islamabad Capital Territory**

Commodities	2021	2022	2023	2024	2025
Pill cycles	117,143	127,198	137,000	147,080	156,776
Injection - three-month	16,660	18,090	19,484	20,918	22,297
Condom	11,683,015	12,685,837	13,663,441	14,668,798	15,635,793
Implants	981	1,012	1,079	1,153	1,218
IUD	6,351	6,295	6,656	7,093	7,435

Gilgit Baltistan

Commodities	2021	2022	2023	2024	2025
Pill cycles	188,048	202,303	217,480	233,161	249,403
Injection - three-month	95,459	102,696	110,400	118,360	126,605
Condom	1,353,210	1,455,795	1,565,007	1,677,852	1,794,733
Implants	323	240	257	275	293
IUD	21,098	12,468	13,381	14,255	15,167

Azad Jammu & Kashmir

Commodities	2021	2022	2023	2024	2025
Pill cycles	65,643	71,320	77,116	83,043	89,116
Injection - three-month	109,405	118,866	128,526	138,406	148,527
Condom	9,977,746	10,840,580	11,721,561	12,622,599	13,545,684
Implants	1,541	1,597	1,716	1,839	1,965
IUD	7,369	7,362	7,875	8,402	8,945

Sindh

Commodities	2021	2022	2023	2024	2025
Pill cycles	4,019,675	4,357,010	4,690,768	5,059,558	5,424,431
Injection - three-month	1,258,333	1,363,934	1,468,414	1,583,862	1,698,083
Condom	95,074,045	103,052,759	110,946,866	119,669,551	128,299,588
Implants	158,504	119,399	127,462	137,806	146,621
IUD	87,992	63,376	67,189	72,783	76,951

Khyber Pakhtunkhwa

Commodities	2021	2022	2023	2024	2025
Pill cycles	2,950,313	3,220,300	3,516,990	3,808,828	4,138,522
Injection - three-month	1,812,946	1,978,851	2,161,165	2,340,497	2,543,092
Condom	98,514,794	107,530,034	117,436,899	127,181,749	138,190,664
Implants	4,221	4,203	4,594	4,924	5,372
IUD	53,346	49,648	54,290	57,706	63,166

Balochistan

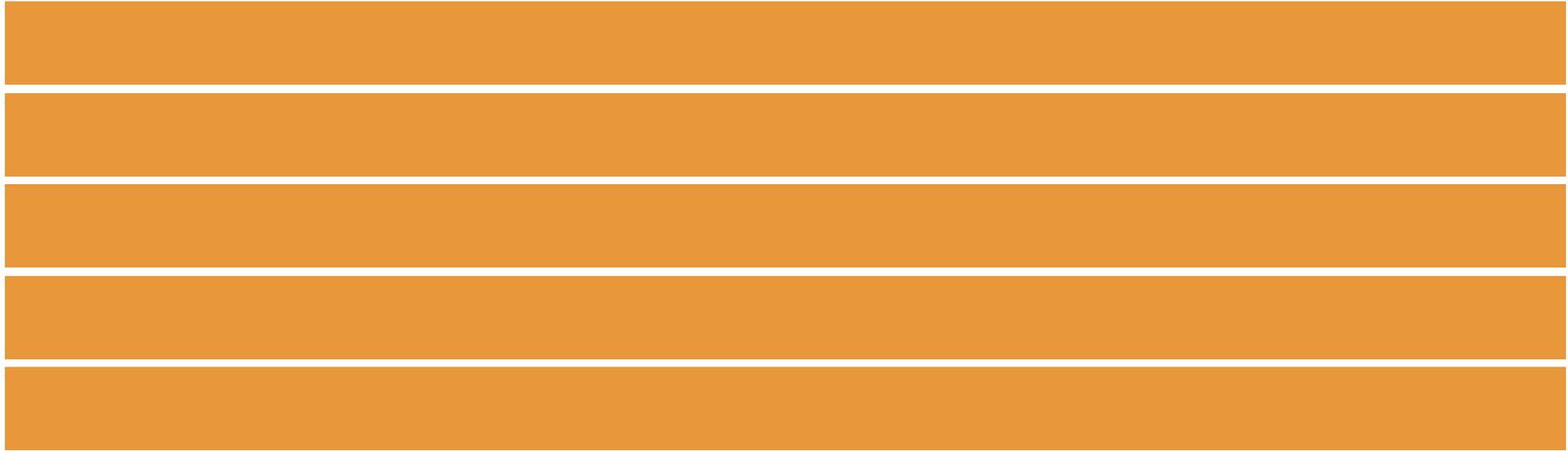
Commodities	2021	2022	2023	2024	2025
Pill cycles	1,578,653	1,770,431	1,960,284	2,147,582	2,347,041
Injection - three-month	358,608	402,172	445,299	487,846	533,155
Condom	25,258,455	28,326,898	31,364,540	34,361,312	37,552,651
Implants	4,196	3,150	3,436	3,717	4,050
IUD	22,411	13,464	14,521	15,552	16,906

Punjab

Commodities	2021	2022	2023	2024	2025
Pill cycles	3,879,825	4,174,263	4,469,145	4,763,518	5,091,565
Injection - three-month	1,655,392	1,781,019	1,906,835	2,032,435	2,172,401
Condom	329,009,169	353,977,462	378,983,511	403,946,363	431,764,717
Implants	55,737	39,350	41,870	44,373	47,600
IUD	510,659	325,609	344,679	363,533	391,156

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**ANNUAL CONTRACEPTIVE
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CCI TARGETS BY PROVINCES
AND REGIONS**

2021 - 2025