



Expanding Access to Menstrual Hygiene Products in India

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Executive Summary

Menstruation is a monthly challenge for billions of girls and women worldwide. On any given day, more than 300 million girls and women are menstruating.ⁱ In many low-income and middle-income countries, access to sanitary products such as pads, tampons, or cups is limited, and girls often resort to using strips of cloth and other proxy materials to try to absorb their menstrual flow.ⁱⁱ In India, qualitative research suggests that women and girls experience shame, fear, decreased mobility, embarrassment, discomfort during menstruation because they lack access to affordable and preferred products, private and safe facilities, and education about menstruation.ⁱⁱⁱ

Menstrual hygiene interventions are complex and involve a number of critical components,^{iv} including access to knowledge, access to products, access to water, sanitation, and hygiene (WASH) services, and improved social norms. This report focuses on access to products in India. It summarizes findings from consumer research conducted with adolescent girls and young women (AGYW) age 13-24 in Uttar Pradesh and Tamil Nadu, provides a brief summary of the structure of the market for commercial products, highlights current patterns of product use^v from India's recent National Family Health Survey, and recommends a set of actions to increase access to the products that are preferred by AGYW.

Our qualitative research conducted with AGYW (AGYW) age 13-24 at urban and rural sites in Uttar Pradesh and rural sites in Tamil Nadu found a clear preference for commercial products. AGYW noted that commercial products provide them with freedom from fear that they will display stains and provided them increased mobility. PSI's quantitative research conducted at sites in rural and urban Uttar Pradesh further explored these consumer preferences and found that AGYW were willing to pay for product features that delivered them the greatest value. These included stickiness, long length, wings, and high absorbency.

Despite the clear preferences for commercial product attributes, our quantitative research in urban and rural Uttar Pradesh found significant challenges. Approximately 40% of AGYW expressed a willingness to pay that was lower than the price of products available in the market. We also found that due to affordability concerns, many girls ration the use of commercial products. Key influencers were also often an enabler or gatekeeper to accessing commercial products. Finally, we found that more than half of rural AGYW experienced challenges disposing of products.


Despite the continued large gaps in access, India has the fastest growing commercial market in the world^{vi}. From 2011-2016 the market reported a 14.8% compound annual growth rate^{vii} and the number of commercial products sold has doubled every five years since 2002. The largest suppliers, Procter and Gamble India (Whisper) and Johnson and Johnson (Stayfree), have scaled their capacity in response to strong demand and have also pursued large scale strategies to promote awareness amongst non-users in their early teen years^{viii}. At the same time, a number of large-scale Indian manufacturers have emerged and captured approximately 20%^{ix} of the market.

Today, there remain a number of challenges that prevent millions of girls from accessing the products that they want and need to effectively manage their menses. Rural markets often aren't perceived as being viable for large-scale manufacturers; the absence of a nodal ministry is leading to a fragmented policy responses; there is little understanding of the true nature and magnitude of the access problem; quality standards are outdated and do not include reusable and bio-degradable products and policy responses are often driven by

competing agendas.

In partnership with other stakeholders, PSI identified a number of opportunities to overcome these constraints and move towards a sustainable market where every AGYW has the means to manage her menstrual hygiene needs according to her own preferences, needs, and informed choice. These opportunities include:

1. Give AGYW access to the products they want and help them with responsible disposal. The choice of sanitary protection is a personal decision based on cultural acceptability and user preferences^x. The preferences of AGYW should form the basis of programming and procurement decisions and AGYW should be involved in the planning discussions and decisions about the materials and/or products to be supported^{xi}. Any MHM programs should include efforts to provide AGYW with adequate facilities and disposal mechanisms that are easily accessible for AGYW both in and out of schools.
2. Leverage partnerships with suppliers that can achieve scale. We recommend that a number of partnership opportunities with large scale manufacturers be explored to lower the costs of serving rural areas and mitigate disposal issues. These public private partnerships could incentivize production in areas with large unmet need, integrate MHM programming with main stream curriculum in schools early, incentivize the use of locally sourced absorbents, and drive innovations in disposal and invest in research on bio-degradability.
3. Improve multi-sectoral coordination by assigning a nodal agency. At least seven ministries are currently involved in MHM programming, with multiple governance bodies and numerous guidelines. Identifying one ministry to lead the agenda and ensure a coordinated response across sectors would lead to a streamlined approach to increasing access.
4. Strengthen routine data collection and analysis to improve the development of data-driven national strategies. Strengthening routine data collection and analysis will improve the development of targeted strategies and allow for a more informed understanding of the issue. Funders should invest in developing more nuanced datasets and support organizations to analyze the data that is collected through household surveys.
5. Invest in minimum quality standards. India's product standard, IS-504 1980 was developed in 1980 and focused on the thick and heavy cotton-based pads that were available at the time. Since those standards were developed, a lot of innovation has taken place that is not reflected in the standards. As a result, the current standards favor products that are often out of date and don't meet the preferences and needs of AGYW.
6. Explore application of a subsidy through targeted demand-side interventions. Most of the public sector investments meant to address increasing access to products have focused on supply side interventions such as supporting self-help groups and the direct provision of products. We propose that national and/or state governments explore demand-side interventions such as vouchers or coupons applied at the category level that could be targeted towards rural girls in lower wealth quintiles. Such a system could catalyze sustainable supply-side investments from retailers, distributors.

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7. Invest in integrating MHM, sexual and reproductive health, and adolescent health programs. Sexual and reproductive health programs should take ownership of driving the menstrual health agenda. We also recommend that donors invest in research to identify and optimize the linkages between menstrual health and funded development priorities such as family planning. Investing in understanding such linkages could be key to unlocking potential for programming synergies, improved education for girls, and increased financing.

Acronym List

AGYW	Adolescent Girls and Young Women
BMGF	Bill & Melinda Gates Foundation
DCE	Discrete Choice Experiments
HCD	Human Centered Design
INR	Indian Rupee
MHM	Menstrual Hygiene Management
MNC	Multinational Corporation
NFHS-4	India's National Family Health Survey 4
NGO	Non-Governmental Organization
PMA2020	Performance Monitoring and Accountability 2020
PSI	Population Services International
SRH	Sexual and Reproductive Health
US\$	United States Dollar
WASH	Water, Sanitation, and Hygiene
WHO	World Health Organization

Project Overview

In 2016, FSG with support from the Bill & Melinda Gates Foundation (BMGF), issued a landscape on menstrual hygiene that identified that effective menstrual hygiene interventions need to address issues of access to knowledge, access to products, access WASH services, and improved social norms^{xii}. In 2017, PSI with support from the Bill & Melinda Gates Foundation (BMGF), launched an effort to dive deeper into the access to products issue. The project aimed to explore the product needs and preferences of AGYW; identify the market barriers preventing them from accessing these products; and make recommendations on ways to improve access. While the focus of this report is on access to products, we found that the issues of access to knowledge, WASH services and improved social norms are inextricably linked to access to products and so some recommendations also touch on these areas.

Methodology and Approach

With funding from BMGF, PSI conducted research to understand consumer preferences, market failures, and opportunities for MHM products in India. The research encompassed five key elements.

- A review of research and market data: Using data from commercial providers, academic literature, secondary data sources, PSI built an understanding of key market trends, pricing, and the depth and breadth of the market. During the course of the project, the government of India released data from the National Family Health Survey-4 which PSI analyzed to better understand the gaps in the use of commercial products at both the national and state levels.
- Qualitative research: Building upon a review of the market data, PSI conducted 41 in-depth interviews and 20 focus group discussions with young women and girls age 13-24 and household influencers as identified by primary respondents. Research was conducted in three locations – rural Tamil Nadu, rural Uttar Pradesh, and urban Uttar Pradesh – which were selected based on usage of commercial products by AGYW age 15-24. Usage was 91%, 40%, and 69%, respectively^{xiii}.
- Discrete choice experiments (DCE) quantitative research: In addition to the qualitative research, PSI conducted a DCE, in which 1,200 young women and girls in rural and urban Uttar Pradesh were surveyed on their current use of MHM products and their preferences for various attributes including price, quality, and purchase location. The broad objectives of the two pieces of research included: building an understanding of barriers to adoption of commercial MHM products among AGYW; identifying key influencers relevant to MHM product choices; and understanding consumer preferences.
- Interviews with key stakeholders: PSI conducted semi-structured interviews with five manufacturers, 27 distributors and wholesalers, 80 retailers, 10 community health workers and teachers, four government stakeholders, and nine menstrual hygiene experts. Interviews were recorded, transcribed, and coded for analysis. Interviews aimed to explore the business models of key players and the challenges faced in serving rural girls. Interviews with retailers and distributors were conducted in Tamil Nadu and Uttar Pradesh to uncover differences between the states.
- Facilitated workshops: PSI held workshops that brought together the research and allowed stakeholders to dig into the key constraints to access and use of products. An internal workshop was attended by a cross-section of departments at PSI both from headquarters and the field. In addition, PSI held an external workshop that included key stakeholders including donors,

manufacturers, and advocates.

Limitations

Qualitative research was conducted in Uttar Pradesh and Tamil Nadu while quantitative research was conducted only in Uttar Pradesh. Because of the limited coverage and sample sizes, findings should not be interpreted as being generalizable to the country as a whole. Additionally, PSI made efforts to engage a broad set of commercial actors including manufacturers, importers, distributors and retailers, however, responses were sometimes limited.

Acknowledgements

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Background

Strong evidence does not yet exist that clearly indicates the use of commercial products improves health outcomes or school attendance. A 2013 review on the health impacts of MHM found that half of the 14 included studies demonstrated an association between poor MHM and reproductive tract infections, but the associations were generally weak.^{xiv} A 2016 systematic review^{xv} aimed at determining if MHM interventions improved education and psychosocial impacts for women and girls found no significant impact of sanitary pad provision on absenteeism. However, qualitative studies with girls consistently indicate that girls feel more comfortable when using better-quality menstrual products because it lessens the stress of worrying about leaks and stains^{xvi}.

Additionally, there has been little agreement in the global community on what constitutes a “hygienic” product. In a review of research studies, the use of disposable sanitary pads is generally considered a good hygiene practice, while reusable cloths were considered bad practice when compared with disposable pads in some studies but considered as good MHM when they were washed hygienically and dried in the sun.^{xvii} Nevertheless, the Indian Ministry of Drinking Water and Sanitation issued national MHM guidelines in December 2015 that defined hygienic products as locally made reusable napkins, commercial reusable sanitary napkins, and commercial disposable sanitary napkins. It defined unhygienic products as natural materials (e.g. mud, cow dung, leaves), newspaper, plastic bags, strips of sari, towel, bed sheets, or other types of cloth, tissue, toilet paper and cotton wool^{xviii}.

This work does not attempt to assess these evidence gaps and definitions, but instead, aims to explore the issue from the perspective of adolescent girls and young women (AGYW) as well as market players.

A framework for understanding menstrual hygiene markets

With increasing interest in menstrual hygiene from a wide array of commercial actors, donors, government agencies, and non-governmental organizations (NGOs), PSI found that there is often not alignment within the growing community on the vision of a healthy market and the objectives of interventions. Some organizations focused on increasing access to specific products, while others prioritized decreasing waste, and still others focused on using menstrual hygiene as a mechanism to increase women’s employment through the organization of small-scale production facilities. These objectives are often at odds with increasing access to the products that girls want and need and few organizations explicitly recognize the tradeoffs associated with these secondary objectives.

We propose that the menstrual hygiene community envision *a world where every AGYW has the means to manage her menstrual hygiene needs according to her own preferences, needs, and informed choice*. The wants and needs of the consumer must be front and center, and actions taken by market actors, policy makers and donors should be concentrated on overcoming system failures that prevent AGYW from meeting her needs.

Adapting lessons learned from Family Planning,^{xix} PSI proposes that a functioning market for menstrual hygiene commodities should contribute to at least four broad outcomes. These include:

1. Choice: The ability of AGYW to choose amongst several product types according to personal

- preference, culture, age, and other factors.
2. **Equity:** The assurance that access to preferred menstrual hygiene products not be constrained by income, social status, geography, or other circumstances.
 3. **Gender equality:** While recognizing that the market is only one part of a much broader solution that also includes access to knowledge, access to WASH services and improved cultural norms; access to products should contribute to promoting equivalent rights and equal opportunities for AGYW so they are not limited by menstruation in their day-to-day life.
 4. **Sustainability:** The ability of the market to grow without relying on external subsidy.

With these outcomes in mind, there is widespread agreement across the global health community that an effectively functioning market is characterized by at least five measurable dimensions: appropriate design, quality assurance, affordability, availability, and high awareness^{xx}. By contrasting this ideal against the current market, the most critical market failures can be isolated, and interventions identified that will increase access.

Table 1: Characteristics of a healthy market for menstrual hygiene products.^{xxi}

Awareness	Extent to which end users, purchasers, and key influencers (e.g., mothers) can make informed choices about product use.
Appropriate Design	Degree to which products are culturally acceptability, easy to use, and easy to dispose.
Quality Assurance	Product is consistently safe and efficacious. End users are confident that the product meets minimum standards and will serve their needs.
Affordability	Prices meet the user’s willingness and ability to pay while also incentivizing suppliers to remain in business ^{xxii} .
Availability	Products are easy to obtain through an array of culturally acceptable outlets.

As shown in Annex 1, the market for menstrual hygiene products in India falls short on many of these dimensions. The rest of this report explores these issues and recommends actions that can help the country move towards a healthier market that meets the needs of all adolescent girls and young women.

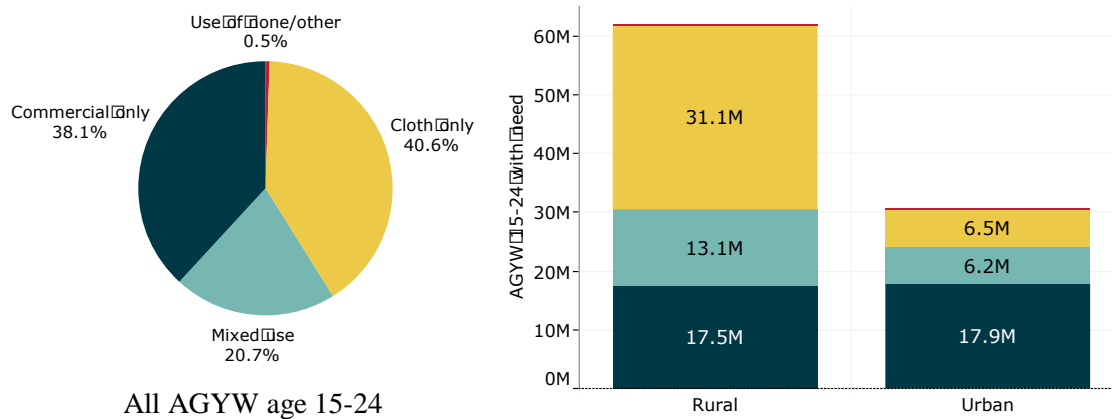
A Snapshot of Product Use

Although data on the use of menstrual hygiene products has historically been very limited, India’s National Family Health Survey 4 (NFHS-4) ^{xxiii} included questions on this topic in 2015 and data were made public in 2018. The data enable researchers to – for the first time – better understand the nature and magnitude of the problem. However, questions were only asked of AGYW age 15-24 and they did not explore the frequency of product use (e.g. using one commercial pad versus twenty), thus limiting the scope of the analysis.

Our analysis of NFHS-IV data showed that there are approximately 93 million AGYW age 15-24 who need sanitary products^{xxiv}. Of these, approximately, 41% (37.7 million) of AGYW 15-24 exclusively use homemade cloth products, 38% (35.4 million) exclusively use commercial products, and 21% (19.2 million) use a mix of commercial and homemade products. Less than 1% (0.5 million) of AGYW 15-24 reported using other or no products.

There is a significant divide in the use of products between rural and urban areas. In urban areas, only 21% of AGYW exclusively use homemade cloth products while more than 50% of AGYW in rural areas do the same. Furthermore, because most AGYW live in rural areas, the vast majority of exclusive cloth users (83% or 31 million) can be found there. Annex 2 contains a detailed breakdown of product use..

Figure 1: Approximately 59% of AGYW age 15-24 use commercial products exclusively or in combination with homemade products. The vast majority of cloth users live in rural areas.

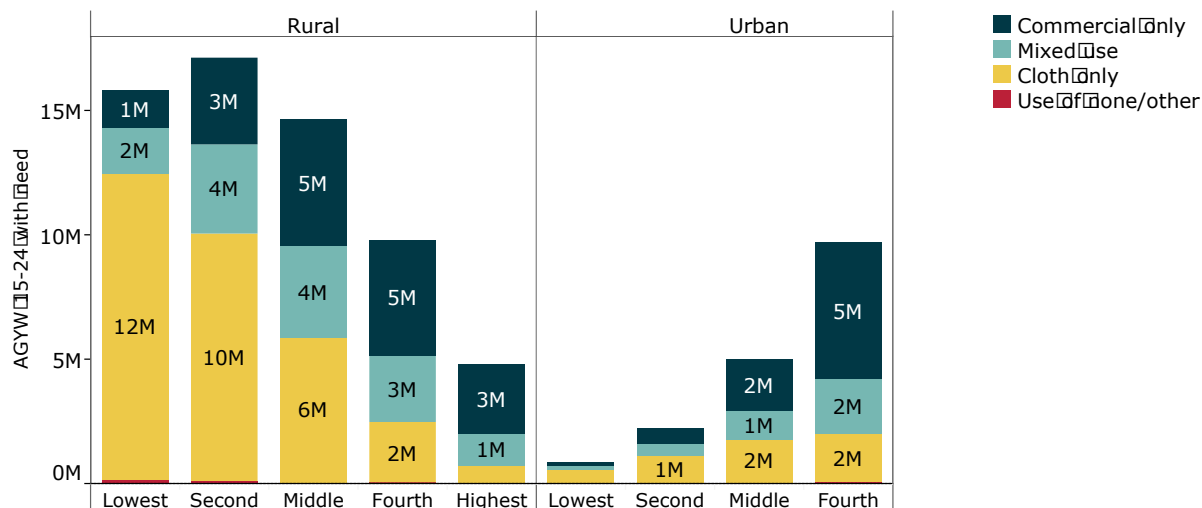


Source: NFHS-4

The use of products appears to be highly correlated with income. We found that as wealth increases so does the use of commercial product use. Approximately, 90% of AGYW in the highest wealth quintile use

commercial products exclusively or in combination with cloth while only 23% of AGYW in the lowest wealth quintile did the same. As a result, the majority of AGYW who exclusively use cloth products (28 million) are in the lowest three wealth quintiles and live in rural areas.

Figure 2: The vast majority of AGYW age 15-24 who use cloth products are in the lowest three wealth quintiles



Source: NFHS-4

There is also significant variability between states. Eight states account for 70% of cloth users (exclusive and in combination with commercial products) Uttar Pradesh (15.6 million), Bihar (6.5 million), West Bengal (5.4 million), Madhya Pradesh (4.9 million), Maharashtra (4.9 million), Rajasthan (4.4 million), Andhra Pradesh (3.1 million), and Karnataka (2.9 million). Unsurprisingly, we found a strong correlation between commercial product usage and per capita income at the state level. Commercial product usage was reported to be significantly higher in states with a higher per capita income. More detail can be found in Annex 3.

These figures appear to be broadly consistent with a large number of academic studies^{xxv} as well as PSI's own field research in Uttar Pradesh which showed that 46% of young women used only commercial products while another 28% used both commercial and homemade products. The estimates show much higher use than a widely quoted 2010 AC Nielsen study that reported that only 12% of Indian women use sanitary napkins^{xxvi}. However, the NFHS-4 figures are limited to AGYW age 15-24 and do not report any information on the frequency of use.

Key Market Insights

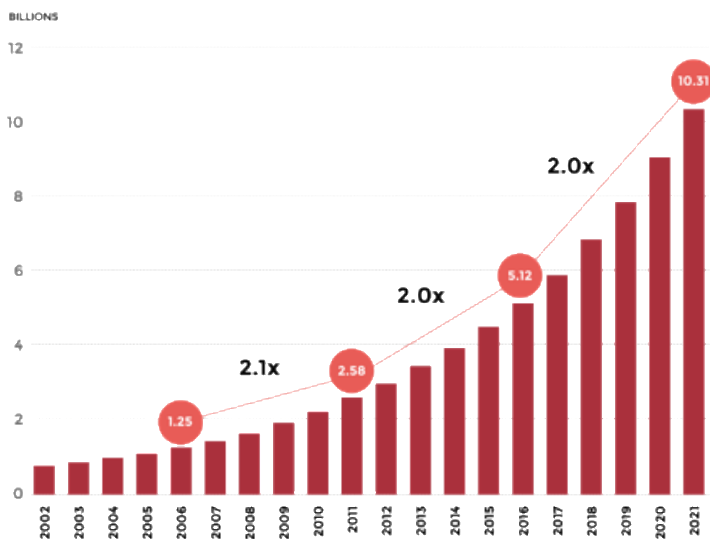
The fastest growing menstrual hygiene market in the world

With 13% annual growth in 2017 volumes, India is one of the fastest growing MHM markets in the world. In 2017, more than 5.8 billion units (i.e., sanitary pads, tampons, and pantyliners) were sold at a value of more than INR28.6 billion (US\$415 million)^{xxvii}. As shown in Figure 1, the sales of sanitary napkins have doubled every five years since 2006.

Growth has been driven by increasing family income, and amplified advertising and promotional activities have raised awareness of consumers leading to increased usage.^{xxviii} However, as urban markets become increasingly saturated, growth is expected to shift to slower rural areas.^{xxix} With a projected compound annual growth rate of 8%, by 2021, the market is projected to grow to more than 10.3 billion units with sales exceeding INR37.8 billion (US\$643 million).^{xxx}

Despite this rapid growth, penetration of commercial menstrual hygiene products remains extremely low when compared to more developed markets. As noted in the previous section, more than 37 million AGYW

Figure 3: Sales of sanitary napkins in India, 2002-2021.

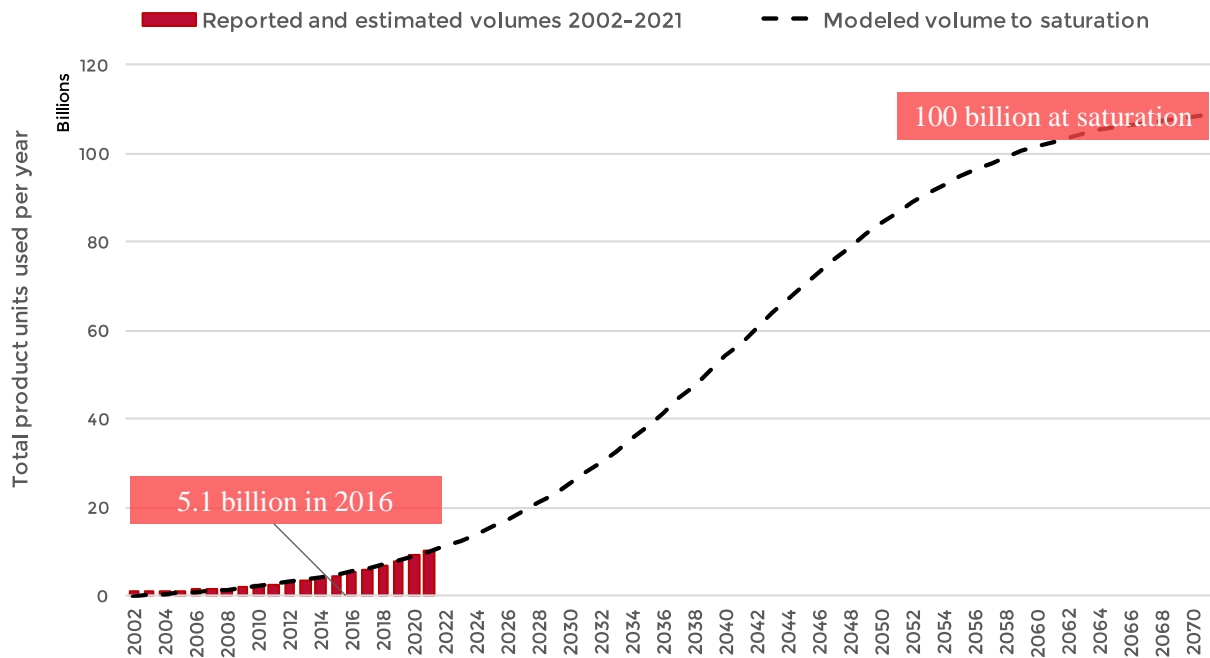


Source: Euromonitor

age 15-24 do not use any commercial products and 19 million use a mix of commercial and homemade products. The per capita consumption of products within the age group 12-54 years is 13 units per year, while women in North America and Western Europe use 244 and 255 units per year.^{xxxi} If Indian women used the same number of units as women in the US and Europe, the market would be 100-120 billion pads per year. It should be noted that with a total population relatively similar to that of India, women in China purchase approximately 119 billion sanitary pads per year.^{xxxii 1}

¹ The large difference in product use between China and India can likely be attributed to significant differences in per capita income (\$8,690 in China vs \$1,820 in India – GNI per capita income Atlas method).

Figure 4: Projected sales of sanitary pads in India, 2002-2070² Areas in red depict the market volumes from the previous figure.



Source: PSI analysis of Euromonitor data, uptake rates and total market size

Disposable sanitary pads dominate the market

Sales of disposable, non-biodegradable pads account for approximately 99% of sales while tampons (0.2%) and pantyliners (0.7%) account for the remaining sales^{xxxiii}. Within the disposable, non-biodegradable pad segment of the market, sales were concentrated amongst sanitary pads without wings (55%), standard pads with wings (10%), and ultra-thin pads with wings (35%)^{xxxiv}. The ultra-thin segment of the market reported the fastest growth (18%) in value terms as consumers switched to the more convenient and comfortable products.

PSI conducted a retail scan of outlets in rural and urban Uttar Pradesh and found that the majority of products available on the market appear to be packs of fewer than ten pads priced between 29 – 90 rupees (US\$ 0.44 - 1.31). Most basic products (e.g. standard pads without wings) cost approximately 3.75 – 4.5 rupees per pad (US\$ 0.05 – 0.07). Retailers reported that products exceeding INR32 (US\$0.47) per pack were often in low demand. A detailed breakdown of pack prices and product features can be found in

² PSI analysis. Euromonitor data from 2002-2021 used to fit a Bass curve to project uptake from 2021 to market saturation. Saturation assumed to be per capita usage on par with the United States and China (approximately 300 units per woman age 15-49). Population data sourced from United Nations, Department of Economic and Social Affairs, Population Division (2017). World Population Prospects: The 2017 Revision.

Annex 1.

Sales are highly concentrated amongst two suppliers

The market is highly concentrated with the top two suppliers, P&G and J&J, accounting for 75% of sales by volume in 2016.^{xxxv} In addition to these companies, other multinational corporations (MNCs), including Unicharm and Kimberly Clarke have entered the Indian market though these additional companies account for less than 5% total market share. In addition to MNCs, Indian manufacturers captured approximately 20% of the market in 2016 – up from 10% in 2011^{xxxvi}. These manufacturers – which include regional ProEase, Vanessa, and Besties – tend to operate in one or two states and often target rural markets.

The largest suppliers, Proctor and Gamble India (Whisper) and Johnson and Johnson (Stayfree), have scaled their capacity in response to strong demand and have also pursued large scale strategies to promote awareness amongst non-users in their early teen years^{xxxvii}. For example, P&G's national Parivartan Program reaches 2.5 million girls per year in more than 15,000 schools providing them with education and product samples^{xxxviii}.

In addition to the large scale commercial manufacturers, there are equipment manufacturers such as Jayashree Industries that enable small-scale women's groups to produce disposable sanitary pads. While this segment of the market has received significant publicity and support via public sector tenders, it is unclear if small-scale, labor intensive manufacturing can be a sustainable business model. These groups rely on distributed women's groups that often lack marketing and distribution skills and quality has been a challenge.

Suppliers face tough challenges serving rural markets

Many of the raw materials used in producing sanitary pads, including the pulp board used as the absorbent core and adhesives, are imported from countries with high labor cost (e.g., US and Scandinavia). As a result, manufacturers have limited ability to reduce the cost of product inputs. Furthermore, high-volume commercial manufacturing plants can produce approximately 400-600 million pads per year, enough to supply approximately 2-8 million women.^{xxxix} These investments cost approximately US\$ 10-15 million^{xl} and need to be recovered in the price of the product. As a result, manufacturers need to achieve high volumes, and this tends to be more challenging in rural areas where population densities are lower, the demand for products is lower, the cost of serving the market is higher, and the necessary WASH infrastructure is less available.

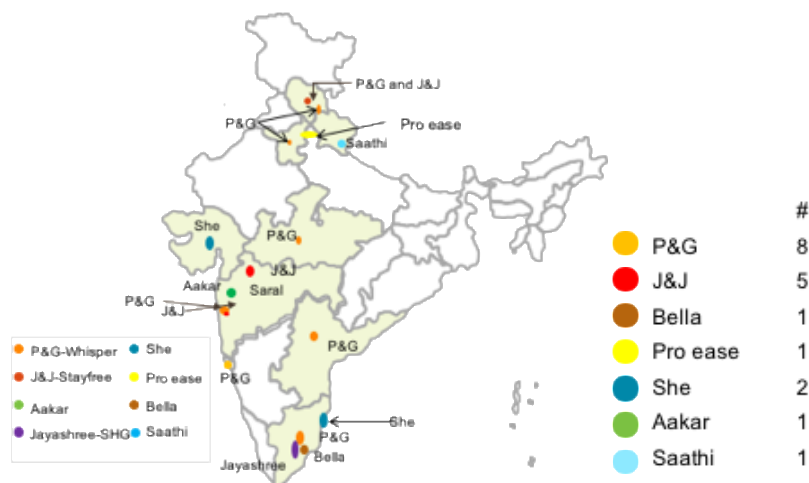
Manufacturers noted that shipping raw materials was generally not particularly costly, however the cost of shipping finished goods was much more expensive due to the product's low density. In particular, the absorbent core of the product is typically shipped in high density boards before it is turned into fluff which is much lower density. As one manufacturer noted "it's actually more efficient to transport the raw materials than to transport the finished product, because you're transporting a lot of air."

A second major driver of costs in rural areas is marketing. Large MNCs spend approximately 5-10% of their sales revenue on marketing and this can be significantly higher in rural areas where access to mass media is lower, fewer girls attend school, and there are a higher percentage of non-users amongst girls and

their influencers. To overcome this, P&G is working with NGOs that reach the village and community level, finding influential women who are willing to spread the message around menstruation.^{xli}

Due to the high capital cost, manufacturers tend to locate production facilities near large urban areas with high use of commercial products, and in states with higher per capita incomes. As shown in Figure 5, many manufacturing plants are located near Mumbai and New Delhi.

Figure 5: High-volume manufacturing sites in Indiaⁱ



ⁱ Source: review of publicly available data. Some data may be inadvertently omitted.

Finally, manufacturers expressed concerns regarding the disposal of sanitary pads in rural areas where WASH infrastructure is limited. Both P&G and J&J noted that they are developing solutions for disposal which vary from sanitizing and recycling to home-based clay-pot incinerators to more advanced installed incinerator measures. As one manufacturer noted “*How do I deal with the disposed product?’ You really have to think about that. I think it's very important, because otherwise, if you're really successful, the women in those villages are going to be knee-deep in used napkins. I mean you don't want that.*”

A supply-driven government response

The government of India has made efforts to increase access to commercial products. It first committed to prioritizing menstrual hygiene noting in the Delhi Declaration of the South Asian Conference on Sanitation (SACOSAN-III) that “The special sanitation needs of women (e.g. menstrual hygiene management) will be integrated in planning, implementation, monitoring and measurement of program outcomes.”^{xlii xliii} Following the declaration, in 2011, the government launched its Menstrual Hygiene Scheme with the supply of Freedays, a program that targeted providing subsidized sanitary pads to 15 million adolescents in 20 states^{xliv}. An evaluation in 2016, noted that irregular supply and minimal subsidies were a major barrier for implementation of the program^{xlv}.

Separately, several state governments, including Tamil Nadu, pursued similar free distribution programs^{xlvi} to varying degrees of success. These programs appear to have had an impact in increasing use of commercial

products by removing barriers to first time use and by influencing the attitudes and behaviors of key influencers though few studies have been done to assess their efficacy.

However, many AGYW who participated in the research noted that subsidized pads distributed by local government are low quality and lack essential product attributes and features. Many of the subsidized pads were reported to be thin, short, lack adequate adhesive, and do not properly spread and absorb fluid. Some AGYW said they took the free pads from school and gave them to their mothers, then purchased Whispers or Stayfree for their own use. Others wrapped the subsidized products in cloth; while others used the subsidized products and were worried about leaks and stains.

Key Consumer Insights

A clear preference for commercial products

In PSI's qualitative and quantitative research, the preference for commercial products amongst young women and girls was clear. AGYW prefer commercial products because they fear homemade products will leak and stain. Girls told us that when using commercial products, they have confidence that the products will stay in place and adequately absorb menstrual blood enabling them to conduct daily activities with far less stress and worry. Time and again, AGYW explained that using commercial pads protected them against embarrassment and potential harassment and enabled them to pursue opportunities that might otherwise not be possible.

PSI found that the use of commercial products was highly correlated with measures of wealth and income. AGYW with the economic means to exclusively use commercial products often did so while those with less means either exclusively used homemade products or a mix of commercial and homemade products, rationing the commercial products for school and other activities outside of the home. Affordability was frequently cited as an issue amongst AGYW using homemade products.

In addition, it appears that girls who start using homemade products will transition to a more mixed-use approach if provided the opportunity. From the qualitative research, it appears that non-maternal influencers such as older sisters, female friends, or sisters-in-law provide girls with information and products and that can facilitate their transition from the exclusive use of cloth products to a mixed use strategy. As a result, the exclusive use of homemade products was highest among young girls but declined significantly with age. It should also be noted that PSI did not find any evidence of girls who started using commercial products and switched to homemade products.

Price is important, but quality delivers the value

We assessed AGYW's preferences and willingness to pay for MHM products using a discrete choice experiment (DCE)³ of 1,200 AGYW age 13-24 in rural and urban Uttar Pradesh – a state with low commercial product use. A description of the respondent sample is included in Annex 1.

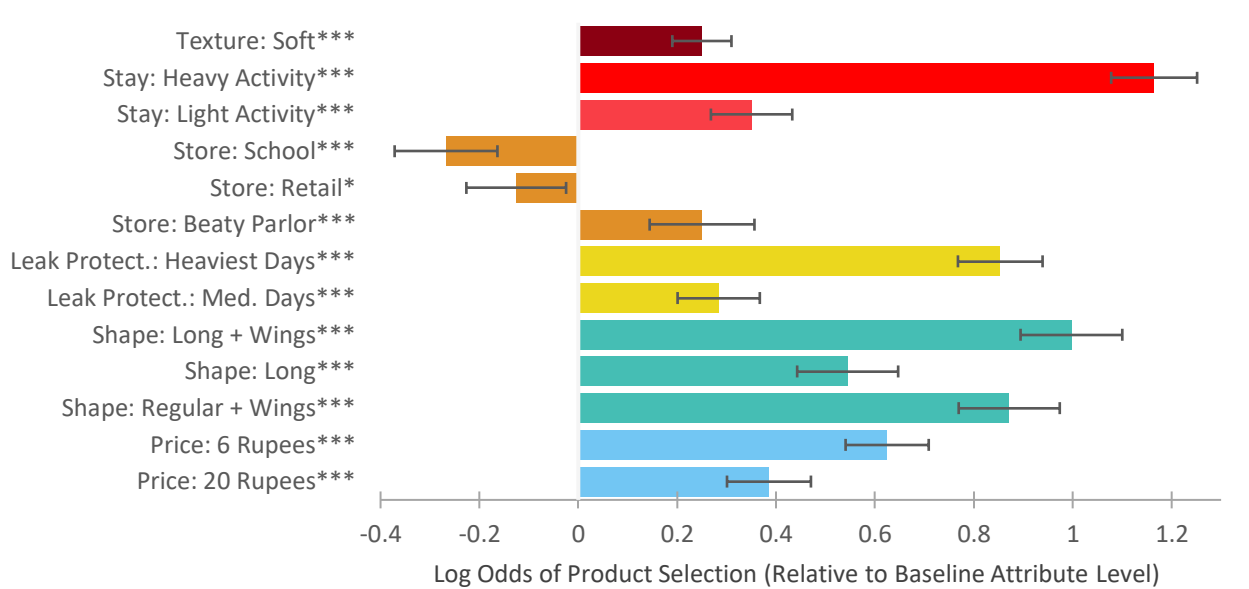
In Her Own Words: Comments from AGYW

- *“When we use pads, we can walk freely and work freely.” Adolescent girl urban Uttar Pradesh*
- *“When I have to go to the road to buy any stuff with my cousins, then I have a problem. When I walk, it [homemade product] moves from its place.” Young woman rural Uttar Pradesh*
- *“I feel free now and I can go outside [after switching from cloth to commercial pads].” Young women urban Uttar Pradesh*
- *[Because of stains]”... my friends hid me at back of the bus stand.” Adolescent girl rural Uttar Pradesh*

Product preferences were largely driven by the presence of wings, protection against leaks, and ability to stay in place (Figure X). Relative to their baseline values (Price: 36 Rupees; Shape: Regular length without wings; Leak Protection: 6 hours on the lightest flow days; Purchase Location: Chemist; Ability to Stay in Place: While seated/not moving; Texture: Rough, nylon feel) all of the attribute levels tested were significant predictors of product preference (Figure 6). While price was also an important predictor of product preference, the strength of these preferences suggests that product quality is vital to meeting the needs and desires of Indian AGYW.

³ DCE's are a type of stated preference method in which respondents are presented with a series of product sets, usually containing two (or more) products that vary according to the levels (or values) of a pre-defined set of product attributes. Attributes might include features such as price, size, color, etc. Respondents are asked to select their preferred option out of each product set. The results of a DCE allow researchers to estimate consumer preferences for product attributes, and (if price is included as an attribute) to estimate the amount a consumer would be willing to pay for a product feature he/she desires.

Figure 6: Adolescent Girl’s and Young Women’s Stated Preferences for MHM Products in rural and urban Uttar Pradesh*



Compared to a product that only stays in place while seated/not moving, respondents had 3.2 (95% CI: 2.9-3.5) times the odds of preferring a product that stayed in place during moderate/heavy activity holding all other product features constant. Relative to a regular length product without wings, AGYW had 2.7 (95% CI: 2.4-3.0) times the odds of choosing products that was long length with wings, and 2.4 (95% CI: 2.2-2.6) times the odds of choosing a regular length product with wings, all other features being equal. We saw negative preferences for products that were obtained at retail stores (aOR: 0.88; 95% CI: 0.80-0.98) or schools (aOR: 0.76; 95% CI: 0.69-0.85) rather than a chemist.

After stratifying on demographic variables such as age (AG vs. YW) and site (urban vs. rural), significant differences in preferences emerged. However, these changes were in the strength of preferences, and we did not observe any qualitatively different preferences (e.g. switching from a positive to a negative preference) between sub-groups. Rural and urban AGYW were significantly different in their degree of preference for a 6 Rupee pack price versus 36 Rupees (urban OR: 1.5, rural OR: 2.3, $p < 0.001$), and protection against leaks on the heaviest days vs. the lightest days (urban OR: 2.6, rural OR: 2.1, $p = 0.0397$).

Respondents in the qualitative study consistently reported that the quality of free pads received in schools was low, citing the lack of wings, thinness, and poor absorbency and adhesiveness as reasons why the pads were undesirable or not used. In fact, a number of AGYW reported giving away free pads to their mothers or selling them in the markets to purchase higher-quality products.

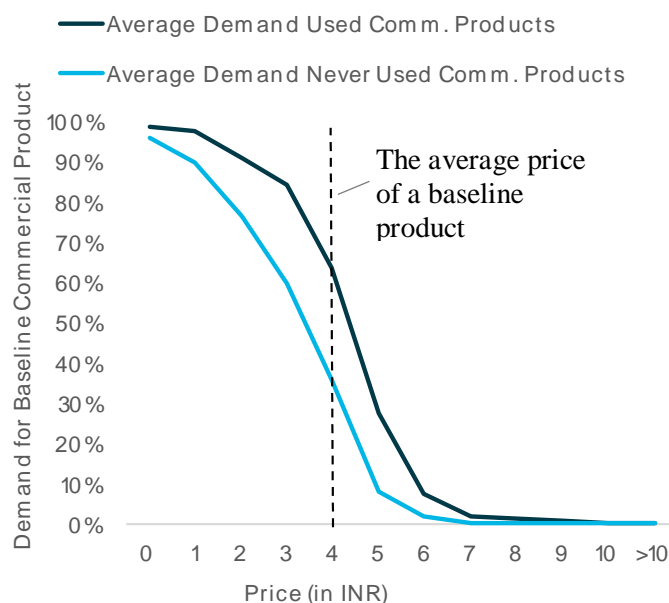
Affordability is a key barrier

Nearly 40% of AGYW in our study – and 53% of rural AGYW – cannot afford the sanitary pads that are available on the market. Willingness to pay for a baseline commercial disposable product was assessed using a contingent valuation approach.^{xlvii} Respondents were willing to pay an average of INR3.67 (95% CI: 3.59-3.75) (US\$0.05, 95% CI: US\$0.05-\$0.06) for a baseline commercial pad, for which the market price was approximately INR4-5. Furthermore, only 10% of AGYW were willing to pay more than INR 6.0 per pad which is the starting price of many products that have the features AGYW prefer (see Annex 4 for detailed pricing information). Willingness to pay did not differ significantly by urban (INR3.75, 95% CI: 3.63-3.88) versus rural site (INR3.59, 95% CI: 3.48-3.70), or by adolescent (INR3.64, 95% CI: 3.51-3.77) versus young woman (INR3.7, 95% CI: 3.59-3.81). In addition, less than 10% of girls were willing to pay a price of more than INR 6 pad, the market price of products with the desired quality attributes laid out in the previous section.

In Her Own Words:

- “When using cheap pads you have to manage all the time; [your] mind is stuck there.” - adolescent girl in Uttar Pradesh
- “[My] school is providing pad without wings – its quality is low.” - adolescent girl in Tamil Nadu
- “Aanganwadi [subsidized] pads are plain; Fluid stays in the center and doesn’t spread properly.” -female teacher

Figure 7: Demand for baseline disposable pads among AGYW users and non-users of commercial disposable products in India.



The dashed line in Figure 7 indicates the average price for a baseline pad in the current market. The location where the dashed line crosses the demand curves for each group shows the proportion of that sub-group that would purchase the baseline product at the current market price. Low demand at current prices, especially among those who have never used commercial products, illustrates the importance of affordability as a barrier to commercial product adoption

Similar to NFHS-4 data, our quantitative survey found a strong relationship between household wealth and

the use of commercial products in Uttar Pradesh. Use of disposable pads was more than six times greater for AGYW in the wealthiest households compared to those in the poorest households. In our sampling, the AGYW who exclusively used homemade products had lower attendance rates in school (40%) than girls who exclusively used commercial products (72%), had fewer durable goods (5.8 versus 7), and had less spending money (INR102 versus INR238).

Many consumers are price sensitive: AGYW appear to balance the issue of affordability with their preference for the convenience and superior protection provided by disposable products by mixing the use of cloth and commercial pads. We found a substantial proportion of AGYW prioritizing use of the more expensive commercial products for periods when they were outside of the household, where structural barriers (including lack of access to private spaces for changing cloths/pads, water, soap, etc.) to menstrual hygiene management were even more pronounced. This mixed use of products was more common among young women, who have more disposable income and may spend more time outside of the household than adolescent girls. While commercial product use was relatively stable across AGYW age, we observed a negative correlation with exclusive cloth use and age, and a positive correlation between mixed use and age, a relationship that remained even when stratifying by urban vs. rural site and by household wealth.

AGYW reported spending just INR29-32 in urban areas and INR21-23 in rural areas on MHM products each month. With products priced at approximately INR30 per pack of six, most AGYW who use commercial pads, use fewer than six per month.

Other potential consumers are limited by household prioritization challenges: It appears that some low-income households prioritize more immediate household needs above menstrual hygiene products. Willingness to pay was significantly lower among those who reported never having bought or used the baseline commercial product previously (INR2.8, 95% CI: 2.59-3.06) compared to those who had (INR3.7, 95% CI: 3.70-3.88). Demand was significantly lower for the baseline product among non-users of commercial products than users at all price points (see Figure 3).

For these families, the purchasing of household staples may trump what many considered to be an aspirational product. As one young woman said, “Money needs to be saved. The amount of money we spend on a packet of pads we can use to get some groceries. We can get flour and grains.” For these groups, the use of homemade products appears to also be linked to the role of influencers, often mothers, who act as gatekeepers for MHM product knowledge and often control household spending decisions, especially for adolescent girls. Mothers who themselves relied on cloth to manage menstruation appeared less likely to prioritize spending on commercial products for their daughters.

Influencers: a gatekeeper or enabler of commercial product use

Once women and girls experience menarche, they turn to key influencers for information on how to manage their menstrual hygiene. These key influencers play a significant role in determining whether girls will use homemade or commercial products and can act as enablers or a gatekeeper to accessing commercial products. In Uttar Pradesh, we found that the primary influencers were typically mothers while aunts, sisters, sisters-in-law, friends, and teachers also played a role.

The previous experience and familiarity of key influencers in using commercial products appears to be a major driver of use. In Tamil Nadu, where key influencers have been provided with information and often free products, influencers appear to be much more willing to steer girls towards commercial products. In addition, the willingness of key influencers to encourage the use of commercial products appears to be strongly linked to household income as noted in the previous section.

Girls who start using homemade products will often switch to commercial products if provided the opportunity. That opportunity may be provided by other influencers besides the mother such as elder sisters, female friends from school, or sisters-in-law who often provide girls with information and products. Our quantitative data suggests that exclusive cloth use is highest among young girls but declines significantly with age as girls shift towards using commercial products.

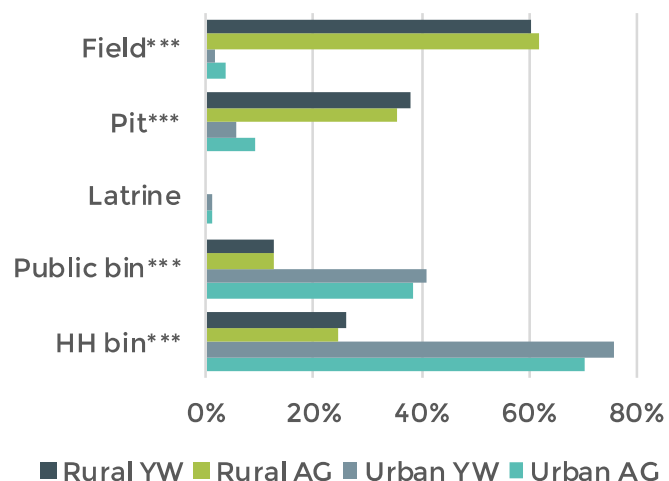
In Her Own Words: Comments from AGYW and key influencers

- “My teachers gave the pad from the school. Once I started using the pads I stopped using the cloth.” – young woman Tamil Nadu
- “My mother used only cloth but after giving birth in hospital they insisted her to keep pad. She was using so from that I learned.” – young woman Tamil Nadu
- “[My] mother used cloth but sister suggested I use pad.” – adolescent girl Uttar Pradesh

AGYW in rural areas lack WASH infrastructure to change and dispose of pads

PSI research found that 55% of AGYW living in rural Uttar Pradesh have difficulty disposing of products. As shown in Figure 8, the most commonly reported disposal locations for rural AGYW included fields (60%) and pits (35%). In addition, approximately 35% of rural girls noted that it was difficult for them to access a toilet or bathroom to change products at home/school.

Figure 8: Where girls reported disposing of products in rural and urban Uttar Pradesh



By the Numbers: quantifying the waste challenge

Today, per capita use of menstrual hygiene products amongst women age 15-49 is very low – about 14 units per woman per year. If this figure increases to match Latin America and the Caribbean countries (250), the US (310), or China (314), what will happen⁴?

On a per capita basis, women will dispose of approximately 0.88 – 2.20kg of menstrual hygiene product waste per year⁵. In 2016, this would have represented only 0.5-1.3% of the waste generated on a per capita basis⁶. If the amount of waste generated on a per capita basis continues to grow at a rate of 4-5% per year^{xlviii}, menstrual hygiene waste will account for only 0.15% - 0.28% of a woman's per capita waste by the time the market begins to approach saturation in 2050. However, given the large population sizes, this would equate to approximately 340,000 – 850,000 metric tons of waste per year by 2050. Although significant, India generated approximately 52,000,000 tons of urban waste in 2015.^{xlix}

Recommendations

1. Give AGYW access to the products they want and help them with responsible disposal

The choice of sanitary protection is a personal decision based on cultural acceptability and user preferences¹. Evidence from Uttar Pradesh indicates that AGYW have strong preferences around stickiness, length of the pad, wings, absorbency, and price. They especially value products that will remain sticky with moderate activity and will protect them from leaks. Additionally, research showed that AGYW prefer to purchase products from women and in environments such as beauty parlors. The preferences of AGYW should form the basis of programming and procurement decisions and AGYW should be involved in the planning discussions and decisions about the materials and/or products to be supported^{li}.

“Price does play a role, but it’s actually very often overestimated. It’s not about price, it is about value. If you have relatively little disposable income and you’re spending a significant amount on a menstrual product, you really, really expect that this product delivers the benefit that you really want.” – Manufacturer

A supportive physical environment that offers privacy, water, and disposal facilities is also necessary to promote menstrual health. PSI found that 55% of girls surveyed living in rural Uttar Pradesh have difficulty disposing of products, and typically use a field or pit. Similarly, approximately 35% of AGYW surveyed have difficulty finding space to change products. All WASH interventions everywhere should consider the

⁴ Per capita usage rates calculated by dividing the size of the female population age 15-49 by the number of units of sanitary protection purchased in 2015. Population size estimates sourced from United Nations, Department of Economic and Social Affairs, Population Division (2017). World Population Prospects: The 2017 Revision. Purchase volumes sourced from EuroMonitor. Sanitary Protection in India. 2017.

⁵ Assumes the average weight of a sanitary pad is between 3.5 – 7 grams

⁶ Assumes that women in India generate an average of 0.45kg of waste per day which is the average amount for the South Asia Region as reported by the World Bank. World Bank. Urban Development Series – Knowledge Papers: Chapter 3 Waste Generation. Washington DC. 2012.

menstrual hygiene needs of AGYW. On the product side, and at minimum, publicly funded distribution campaigns should be paired with efforts to provide AGYW with adequate facilities and disposal mechanisms⁷ that are easily accessible for AGYW both in and out of schools.

2. Leverage partnerships with suppliers that can achieve scale

Large scale manufacturers, both Indian companies and MNCs, generally have the capacity to produce, distribute and market products at a scale that can help 37.6 million AGYW access better products. However, the incentives for manufacturers to target rural areas is limited as the costs required to serve these areas are generally higher. Furthermore, the expansion of disposable sanitary pad markets to rural areas will increase pressure on disposal. The government of India should explore new partnership models to overcome market barriers and incentivize large scale manufacturers to serve rural markets. Possible opportunities may include:

“I’m not saying price is an issue, but cost is an issue. If you want to make this sustainable, you have to do it in a way that in the end, it’s profitable. Otherwise, it’s just a subsidy, it’s charity, and that’s a different animal.”

-Manufacturer

Incentive production in areas with large unmet need: National and/or state governments could offer incentives such as tax breaks to encourage large-scale manufacturers to establish production facilities in states with high unmet need. This would serve two purposes. First, it would decrease the risk of expanding operations for manufacturers and help them ensure an adequate ROI on capital investments. Second, it would help manufacturers decrease their costs by shortening the distances that finished goods are transported. Any such activities should be paired with corresponding investments from both parties to increase the availability of disposal points.

“So it’s a very light product, but it’s a product that takes a lot of space. So by keeping the manufacturing closer to the end consumer, you can reduce the distribution cost on top of warehouse [costs]”

-Manufacturer

Integrate MHM programming with main stream curriculum in schools early: About half of Indian adolescent girls start menarche unaware of its cause and only about a quarter understand the source of bleeding^{lii}. Only 34% of respondents in the DCE survey reported discussing menstruation prior to menarche. Additionally, about 60% of AGYW wanted more information on how to use products; 40-52% wanted more information on how to dispose of products; and 34-50% wanted more information on menstruation more broadly.

Each year P&G’s national Parivartan Program reaches 2.5 million girls per year in more than 15,000 schools providing them with education and product samples^{liii}. Similarly, J&J and the other major manufacturers are dedicating major resources to build awareness of products, yet this can often be resource intensive as firms need to build relationships with schools and often find themselves going back to the same schools

⁷ In Tamil Nadu, an innovative incinerator was developed for the proper disposal of sanitary waste at a cost of approximately Rs 1,200 – 1,500 (US\$ 23-28). Other firms have developed clay mud and cement incinerators.

every year^{liv}. National and/or state governments could partner with manufacturers to integrate menstrual hygiene education into the standard curriculum and develop modules to improve the low capacity of teachers and frontline staff^{lv}.

By aggregating schools and standardizing curriculum, public sector players could lower the costs associated with building awareness of rural AGYW. In doing so, the public sector could also ensure that the curriculum promoted by corporate players is in line with the best evidence, promotes products at the category level where possible, addresses issues such as disposal and includes information on psycho-social changes and reproductive health – two areas often missing in current curriculum^{lvi}.

Incentivize the use of locally sourced absorbents: Many of the raw materials used in producing sanitary pads, including the pulp board used as the absorbent core and adhesives, are imported from countries with high labor cost (e.g., US and Scandinavia). As a result, manufacturers have limited ability to reduce the cost of product inputs. One manufacturer estimated that if local products could be used for absorbents, one could cut costs by approximately 20%^{lvii}. Moreover, the use of locally sourced absorbents could create benefits for local farmers and small enterprises.

Using locally sourced materials, such as banana fibers, is technically challenging and will require significant investments from manufacturers. Locally sourced products often contain a higher amount of water than wood pulp leading to lower yields and challenges achieving high throughput. Donors should consider grants or other investments to reduce the risk associated with investigating and operationalizing the use of locally sourced products. National and/or state governments could incentivize locally sourced products by either requiring this within public sector tenders or by mandating it within national product standards.

“we're working very hard to turn the banana fibers into something useful. And would I say that the quality that we're producing right now with the banana fibers is equal to, let's say, an imported product? Probably not. No. I mean because the processing of the fibers into an absorbent fluff, that's an art form. I mean that's not easy...I wouldn't say that we have this nailed.”
-Manufacturer

Drive innovations in disposal and invest in research on bio-degradability: The vast majority of products sold in India are disposable sanitary pads that contain a significant of plastics that can take several hundred years to decompose. The amount of waste generated is significant and AGYW in rural areas are particularly challenged to find ways to responsibly dispose of these products.

National and state level governments should work with manufacturers to increase the availability of disposal points. Already, manufacturers are exploring options to increase recycling options and the availability of incinerators^{lviii}. In addition, donors and the national government should invest in research to define standards for bio-degradability and understand how bio-degradable materials might be incorporated into the design of mass produced disposable products without compromising on the attributes, like

“There is an awful lot of bad claims out there about environment-friendly, biodegradable [products]. I would say, in general, its all not true...There are products that claim to be...[but are only] biodegradable in a commercial, hot composting facility. And in the developing world, there are none so it's not bio-degradable.”
-Manufacturer

absorbency, that AGYW need⁸.

3. Improve multi-sectoral coordination by assigning a nodal agency

Identification of a leading agency/government body would improve multi-sectoral coordination of the national MHM strategy. At present, no ministry owns the MHM agenda, leading to a fragmented response. As shown in Table 2, at least seven ministries are currently involved in MHM programming, with multiple governance bodies, and numerous guidelines. Identifying one ministry to lead the agenda and ensure a coordinated response across sectors would lead to a streamlined approach to increasing access.

Table 2: Ministries with the Indian government that play a role in menstrual hygiene.

Ministry	Program
Ministry of Health and Family Welfare	Menstrual Hygiene Scheme and the Rashtriya Kishor Swasthya Karyakram
Ministry of Women and Child Development	Rajiv Gandhi Scheme for Empowerment of Adolescent Girls or SABLA
Ministry of Drinking Water and Sanitation	Swachh Bharat Mission (Rural)
Ministry of Housing and Urban Poverty Alleviation	Swachh Bharat Mission (Urban)
Ministry of Human Resource Development	Sarva Shiksha Abhiyan. (Note: The guidelines do not explicitly mention MHM, but support the building of separate toilets for girls and incinerators for both rural and urban schools.)
Ministry of Textiles	
Ministry of Cosmetics and Drugs	Develops guidelines on registration processes

4. Strengthen routine data collection and analysis

Data-driven national strategies are essential to developing evidence-based solutions. Strengthening routine data collection and analysis will improve the development of such strategies and allow for a more informed understanding of the issue, leading to targeted interventions for different populations. Datasets from PMA2020 and NFHS-4 are critical to developing data-driven strategies.

Donors and the Institute for Population Sciences (IIPS) and Ministry of Health and Family Welfare should continue to invest in acquiring data on the use of menstrual hygiene products. We recommend that these organizations consider expanding the populations asked of menstrual hygiene product use to all women age 13-54. Additional questions on baseline knowledge, frequency of use and disposal could also enrich the dataset and enable more targeted efforts. Additionally, donors should invest in providing local advocacy organizations like the Menstrual Hygiene Alliance of India, with the capacity to analyze household datasets

⁸ It should be noted that a social enterprise, Aakar has developed a ‘mini-factory’ that enables women’s groups to produced pads that claim to be fully compostable⁸ and not require hot composting. To date, the company has sold more than 40 units. It is not clear how well the company’s products match consumer needs and whether they could compete against much larger scale producers of non-biodegradable products in the mass market.

and incorporate learnings from them into their strategy.

5. Invest in refreshing minimum quality standards

The Ministry of Textiles and the Ministry of Cosmetics and Drugs should invest in refreshing the minimum quality standards for menstrual hygiene products in India. Refreshing and enforcing these standards will likely lead to better products and higher demand. India's product standard, IS-504 1980 was developed in 1980 and focused on the thick and heavy cotton-based pads that were available at the time. Since those standards were developed, a lot of innovation has taken place that is not reflected in the standards - pads have become thinner, more absorbent, sometimes have features such as wings and disposal bags and new products, such as reusable pads and menstrual cups, have gone to market. As a result, the current standards favor products that are often out of date and don't meet the preferences and needs of AGYW.

6. Explore shifting subsidy from supply to demand-side interventions

Most of the public sector investments meant to address increasing access to products have focused on supply side interventions such as supporting self-help groups and the direct provision of products. While these investments have provided girls with millions of needed pads, they have often failed to catalyze broader market changes and have faced supply and quality challenges. Furthermore, we found that access in tier three rural outlets remains challenging. Retailers in rural markets noted that they only stock what products consumers ask for, and consumers often don't ask for menstrual hygiene products due to low awareness often resulting from the lack of product availability and cultural taboos.

We propose that national and/or state governments explore demand-side interventions such as vouchers or coupons applied at the category level that could be targeted towards rural girls in lower wealth quintiles. The system should be implemented in a manner that provides AGYW the means to choose the product, including all brands of disposable sanitary pads and reusable products, that best meets her needs. Such a system would likely catalyze sustainable supply-side investments from retailers, distributors and manufacturers and would make the market work in the long-term. We would encourage donors and the national and state level governments to invest in research and pilot projects to better understand the costs, impact and level of subsidy that would be required to shift the market.

"it's about creating the demand with the consumers so that they ask the store owners at the lowest level for the product and if that happens frequently enough they'll start to stock that product from wholesalers"
-Manufacturer

7. Include menstrual health within adolescent, sexual and reproductive health, and gender equity programs.

Menstruation is a critical milestone in the reproductive life cycle of an adolescent girl and can function as a key gateway to discuss about her body and sexual and reproductive health. When working on sexuality education with adolescents, talking about family planning can be challenging and might feel distant to those girls who don't see themselves as 'sexually active'. Using MHM and puberty as an entry point can help girls and boys familiarize with fertility and the reproductive system through age-appropriate language and concepts. For girls to seek out family planning methods in their sexually active years, it is essential that, as

early as the time of menarche, they experience an enabling environment that does not stigmatize menstruation but recognizes it as a sign of good health.

Considering this, we recommend that sexual and reproductive health programs take ownership of driving the menstrual health agenda and incorporate it as a key element in its strategy and programming. Moreover, we recommend that donors invest in research to identify and optimize the linkages between menstrual health and funded development priorities such as family planning. Investing in understanding the linkages between MHM, sexual and reproductive health, and adolescent health programs could be key to unlocking potential for programming synergies, improved education for girls, and increased financing.

While this report focuses on adolescent girls and young women, it is important that the community of practice incorporates a life-cycle bleeding approach^{lix}, addressing the needs of girls from their pre-menarche, to post-partum bleeding and all the episodes in between. Both academic^{lx} and practitioners^{lxi} research has showed how relevant changes in menstrual cycle patterns are for uptake and continued use of contraception, an insight that can help strengthen the effectiveness of family planning interventions.

Raising the profile of the menstrual hygiene agenda: an ongoing conversation

In July 2018, the Guttmacher–Lancet Commission on sexual and reproductive health and rights offered a new, comprehensive definition of sexual and reproductive rights^{lxii} that, the Commission argued, was necessary because “policy-makers have long approached sexual and reproductive health and rights as narrow sets of isolated health issues”.^{lxiii} This definition included the ability to “receive accurate information about the reproductive system and the services needed to maintain reproductive health” and to “manage menstruation in a hygienic way, in privacy, and with dignity.”^{lxiv} As pointed out in Phillips-Howard and colleagues’ Correspondence, the definition neglected consideration of menstruation on sexual and reproductive health, psychosocial stress, education and employment.^{lxv} The authors also argued that the Guttmacher–Lancet Commission’s definition failed to address the enabling social and physical environment which are necessary to address menstruation related needs.^{lxvi}

We echo Phillips-Howard and colleagues in holding that “menstrual health is an under-recognized social determinant of broader sexual and reproductive health and rights outcomes. Stigma, lack of knowledge, and negative social norms can leave girls poorly equipped to make decisions about sex, relationships, and family planning at a crucial juncture in their life course, contributing to the cycle of early pregnancy and marriage, and poor educational attainment and population health outcomes.”^{lxvii} This reinforces our recommendation to integrate menstrual health in the realm of sexual and reproductive health programming.

Annex

Annex 1: Characteristics of the Indian market for menstrual hygiene products

Market Characteristic	Data for India	Indicative quotes from AGYW
Awareness	Awareness of commercial products is extremely high, nevertheless, about 60% of girls in rural Uttar Pradesh expressed an interest in learning more about how to use commercial products. Additionally, mothers often act as an enabler or gatekeeper to access of commercial products with their experience with commercial products often driving uptake of adolescent girls. Over time, as girls are exposed to the benefits of commercial product use through samples provided promotional campaigns of from sisters, friends or other female influencers, they often switch from using homemade products to commercial products. Awareness of alternative products such as reusable commercial pads, tampons, and menstrual cups is extremely low.	<p>“Have asked mother many times to use pads but she denies saying she is comfortable with cloth because she has used for so many years.” AGYW Uttar Pradesh</p> <p>“My mother used only cloth but after giving birth in hospital they insisted her to keep pad. She was using so from that I learned.” – AGYW rural Tamil Nadu</p> <p>“Mother used cloth but sister suggested I use pad.” AGYW rural Uttar Pradesh</p>
Appropriate Design	Commercial sanitary pads available on the market generally meet the immediate needs of AGYW. However, more than half of AGYW living in rural areas reported challenges associated with the disposal of products. Products contain a significant amount of plastics that can take 500-800 years to decompose. Many AGYW reported that homemade products do not meet their needs.	<p>“I feel free now and I can go outside [after switching from cloth to commercial pads].” AGYW urban Uttar Pradesh</p>
Quality Assurance	While quality is highly variable, commercial products generally meet the minimum requirements of AGYW while subsidized products often do not.	<p>“[My] school is providing pad without wings – its quality is low.” -AGYW Uttar Pradesh</p> <p>“When using cheap pads you have to manage all the time; [your] mind is stuck there.” - AGYW Uttar Pradesh</p>

<p>Affordability</p>	<p>Nearly 40% of AGYW living in rural Uttar Pradesh reported a lower willingness to pay than price of products most commonly found in retail outlets. AGYW in the middle-income quintiles often ration product use due to affordability problems while households in the lowest income quintile prioritize other needs living girls wholly dependent upon homemade products.</p> <p>The government of India has developed a scheme to distribute free and subsidized pads, but the price that they are willing to pay is extremely low (INR7.50 per pack of 6)* leading to the procurement of low quality products that often do not meet the needs of AGYW.</p>	<p>“Money needs to be saved; The amount of money we spend on a packet of pads we can use to get some groceries...we can get flour and grains” - AGYW rural Uttar Pradesh</p>
<p>Availability</p>	<p>Sanitary pads are widely available in urban and rural environments through a variety of sales points. However, a culture of shame and shyness around menstrual hygiene restricts access. Nearly 50% of adolescent girls and 35% of young women living in rural Uttar Pradesh reported that they would not buy menstrual hygiene products from men. The availability of subsidized products has been a challenge with frequent stockouts. The availability of alternative products such as tampons, reusable pads, and menstrual cups is extremely limited.</p>	<p>“If there is a lady I can purchase, but I feel shy to ask for this in my village. I can purchase it at different place because they don't know me.” - AGYW rural Uttar Pradesh</p>

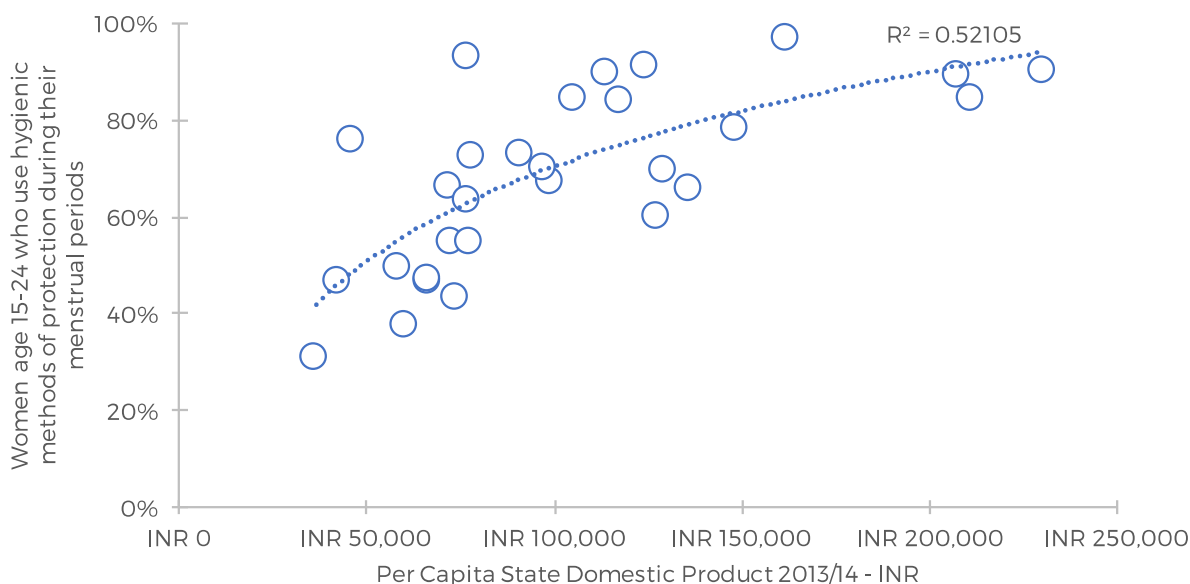
Annex 2: The reported use of products amongst adolescent girls and young women age 15-24^{lxviii}.

Reported product use in NFHS-4	15 - 19		20-24		Total	
	n	%	n	%	n	%
Use of Cloths Only	20,810,000	41%	16,860,000	39%	37,670,000	40%
Use of Local Pads Only	4,280,000	8%	3,530,000	8%	7,810,000	8%
Use of Commercial pads Only	13,220,000	26%	11,560,000	27%	24,770,000	26%
Use of Tampons Only	530,000	1%	490,000	1%	1,020,000	1%
Use of None/Other Only	260,000	0%	490,000	1%	490,000	1%
Use of Cloths and Local Pads	-	6%	-	6%	-	6%
Use of Cloths and Commercial pads	3,040,000	14%	2,450,000	14%	5,490,000	14%
Use of Local Pads and Commercial pads	7,300,000	2%	6,010,000	2%	13,310,000	2%
Use of Cloths and Local and Commercial Pads	900,000	0%	870,000	0%	1,780,000	0%
Summary						
Mixed use	11,240,000	22%	9,330,000	22%	20,580,000	22%
Exclusinve commercial	18,290,000	36%	16,070,000	37%	34,090,000	37%
Exclusive cloth	20,810,000	41%	16,860,000	39%	37,670,000	41%
Use of none/other	260,000	1%	490,000	1%	490,000	1%
Total AGYW 15-24 in need	50,600,000		42,750,000		92,340,000	

Annex 3: Strong links between per capita gross domestic product and the use of commercial MHM products

Industry research and a review of data from India and several other countries showed a very strong link between per capita gross domestic product (GDP) and the use of commercial products. The data from household surveys supported an assertion from industry that menstrual hygiene markets typically excel once per capita GDP exceeds US\$1,000, and near saturation is achieved by the time the per capita GDP surpasses US\$3,000. A review of NFHS-4 showed that this pattern largely remained consistent across Indian states (see Figure 4). Similarly, a review of Performance Monitoring and Accountability 2020 (PMA2020) datasets showed that the pattern remained steady when comparing Kenya (US\$1,455 and 85% use), Uganda (US\$615 and 65% use), Ethiopia (US\$706 and 45% use), and Indonesia (US\$3,520 and 92% use).

Figure 9: Higher income levels equate to higher use of commercial products. The use of commercial products amongst AGYW by Indian state per capita income.^{ix,9,10}



⁹ Per capita state domestic product (current prices) from 2007/08 to 2013/14 accessed on January 3, 2018 from <https://data.gov.in/resources/gsdp-capita-state-domestic-product-current-prices-2007-08-2013-14>.

¹⁰ $R = 0.52$ indicates that about half of the variability in the use of commercial products across states can be explained by per capita state domestic product.

Annex 4: Prices and features of products available on the market in Uttar Pradesh

PRICE PER PACK: [Rs]	10	29	30	30	32	33	34	39	40	42	49	59	80	80	80	90	182
PRICE PER PACK: [US\$]	\$0.15	\$0.42	\$0.44	\$0.44	\$0.47	\$0.48	\$0.49	\$0.57	\$0.58	\$0.61	\$0.71	\$0.86	\$1.16	\$1.16	\$1.16	\$1.31	\$2.65
PADS/ PACK	3	7	7	8	8	8	6	6	7	6	6	7	7	8	7	10	15
PRICE/PAD [Rs]	3.3	4.15	4.3	3.75	4	4.15	5.7	6.5	5.7	7	8.2	8.4	11.4	10	11.4	9	12.1
BRAND	Pro Ease Swachh	Whisper Choice	Pro Ease	Be Secure	Sofy Body Fit	Stay Free Secure	Whisper	Sofy	Stay Free Secure	Whisper	Sofy	Sofy	Stayfree Advanced	Whisper Max Fit	Whisper Ultra Clean	Carefree	Whisper Maxi Nights
NOTES	No Wings						Extra Long	Absorbent gel extra long	Extra Large with Wings	Xtra Large	Xtra Large w Side Walls	Extra Long, Anti Bacterial	Extra Long	Extra Large, No Wings	"Lasts all day"	Belted No Wings	Extra Large, Extra Absorbent, Larger Wings
	Products at this price range offer fewer features [such as wings]..		Respondent preferred price range					Prices increasingly move out of range for respondents.					As prices increase, retailers begin to stock fewer and fewer of these products due to low customer demand.				

Annex 5: Demographic Characteristics of AGYW Recruited for the DCE from Rural and Urban Lucknow

Variable	Total (N=1,200)	Urban Lucknow (N=602)		Rural Lucknow (N=598)	
		Adolescent Girls (N=269)	Young Women (N=333)	Adolescent Girls (N=285)	Young Women (N=313)
Age (Mean, SD)	18.2 (3.1)	15.5 (1.3)	20.6 (1.9)	15.5 (1.3)	20.6 (2.1)
Currently in School	715 (59.6)	226 (84.0)	169 (50.8)	212 (74.4)	108 (34.5)
Education Completed					
None	46 (3.8)	9 (3.4)	16 (4.8)	3 (1.1)	18 (5.8)
9 th standard or less	521 (43.4)	168 (62.5)	74 (22.3)	171 (60.0)	108 (34.5)
Matriculation or above	632 (52.7)	92 (34.2)	242 (72.9)	111 (39.0)	187 (59.7)
Durable Goods (Mean, SD)	6.4 (1.9)	7.0 (1.6)	7.0 (1.6)	5.6 (1.8)	5.9 (2.0)
Married	157 (13.1)	1 (0.4)	70 (21.0)	2 (0.7)	84 (27.0)
Age at First Period (Mean, SD)	13.4 (1.2)	13.1 (1.0)	13.6 (1.4)	13.1 (1.0)	13.8 (1.2)
Paid Work Outside Home	175 (14.6)	35 (13.0)	56 (16.8)	31 (11.0)	53 (16.9)
Monthly income (Mean, SD)	1,435 (5,132)	2,087 (10,092)	2,391 (3,899)	194 (327)	792 (1,415)
Ever Used a Commercial, Disposable MHM Product	1,047 (82.3)	244 (90.7)	309 (92.8)	232 (81.4)	262 (83.7)

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