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Project Name: A Sustainable and Affordable Menstrual Product Specific to Cameroon

## Background

*Social Hierarchy and Cultural Taboos (Setu and Kyanh)*

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*Menstrual Management Practices (Mohini)*  
Women in Cameroon are forced to keep their menstruation a secret and are therefore not allowed to participate in the community during this time [1]. Due to the taboo surrounding menstruation, girls are not taught about safe practices regarding their periods in schools; for most girls, information about their periods comes from their mother/female guardian or their sister [3]. However, the information that they receive from their female relatives is not very accurate as only 17.4% of girls of Cameroon who said they knew what a menstrual cycle was were able to describe it correctly [3]. This lack of quality information about menstruation results in women and girls using cotton-stuffed rags,

fabrics, newspapers, ash, feathers, soil, and unsanitary tampons/pads as alternatives to sanitary menstrual products [2]. This problem is prevalent in sub-saharan Africa as well. Women in resource-poor parts of sub-saharan Africa or in LI/LMI countries use old clothes for their menstruation [5], just like Cameroon, and also have the problem of not having enough toilets in their area or privacy for girls to deal with their menstrual problems [4]. All of these obstacles that women and girls must overcome every month not only prove dangerous for their health through the contraction of diseases [3], but also create a strong barrier for girls' education as they are usually required to miss multiple days of school during their cycle [1].

*Cost Barriers (Kyanh)*

Western-made menstrual products are too expensive for many girls in Cameroon and Kenya, and can be the cause of missing school [6]. In Tanzania, girls are frustrated with the cost of menstruation products [7].

*“Facilities” Barriers (Kyanh)*

A very common theme is that school facilities are not appropriate and do not facilitate the use of menstrual products. Issues include unisex and/or minimal number of bathrooms or latrines and a lack of clean running water to clean their hands

after girls change their menstrual product. This issue is prevalent in Uganda, Tanzania, Kenya, Zimbabwe, Ethiopia, Ghana, South Sudan, and Cameroon [6,7,8,10]. However, one Malawi study found that lack of proper facilities is not relevant to menstruation-related school absence [9]. One study found that girls in a Cameroon High School named it as one of their greatest struggles during menstruation, and could be a factor leading to them missing school during their periods [6]. Generally it is seen that improving these facilities would allow for better menstrual management.

There are concerns about how to dispose of menstrual products; "Cameroon and Kenya do not have designated disposal systems for menstrual waste," which can lead to damage to sanitation systems [6]. This is also relevant to Uganda [10,11].

#### *Agricultural Products and Exports (Krys & Hana)*

Cameroon's economy heavily revolves around the agricultural industry. The main crops the country produces include coffee, rubber, plantains, palm oil, grains, maize, rice, and much more. Cocoa and coffee are some of the main exports of Cameroon. Primary agricultural and forest products provide a significant percentage of total export earnings, much of which are produced by small-scale farms [14]. As cash crop production is handled by small holders, the agricultural industry is the basis for living for a majority of the population [13].

The country's main export partner for agricultural products is the European Union, but the larger share of agricultural activity is

within subsistence farming. The climatic, geographic, and ecological diversity allows Cameroon to maintain its agricultural economy well as there are a variety of crops that can be grown [14]. Southern Cameroon produces subsistence crops such as plantains, beans, potatoes, yams, cassava, and maize. Northern Cameroon handles crops like groundnuts and millet. The country is generally self-sufficient as food production has grown in line with the population [14]. In regard to the impact of climate change, food production is expected to be maintained or decreased in all regions. It is of great economic and social importance that the government provide adequate support for small-scale farmers in light of such issues [12].

#### *Impacts of Climate Change (Hana)*

Cameroon bridges West and Central Africa, and its climate ranges from tropical to hot and semiarid depending on the terrain [13]. As Cameroon's economy relies mainly on agriculture, it stands that climate change would be a major concern, as inadequate preparation can result in devastating effects on the vast majority of the population who generally practice traditional forms of farming. According to a survey done across 800 farms rain level falls and temperatures rise, net revenue generated by farms also falls, which harms the economy and the lives of people who rely on the agricultural industry to survive [16]. The impacts of climate change can be somewhat mitigated through adaptations such as adjusting the farming cycle or planting new/modified crops [15]. However, the government should also invest in new technology to better

adjust to climate change, should the changing precipitation and temperature levels continue to have adverse effects on the agricultural industry [17].

### *Stigma Around Women's Menstruation (Krys)*

#### *Access to Female Hygiene Resources and Education (Irene)*

Women in Cameroon encounter various hardships concerning their menstrual cycle and accessibility to female hygiene resources. About 75% of women use disposable sanitary towels for their menstrual cycle that end up being burned or discarded in toilets or rivers [18]. There is a clear lack of resources to effectively dispose of sanitary towels because the methods used to throw away these products may harm their communities by clogging their toilets or polluting their rivers. In addition, access to female friendly toilets plays a vital role in the livelihood of Cameroonian women. Toilets in Cameroon usually lack access to soap and water, locks, doors, and methods to dispose of menstrual waste [19]. In addition, menstruation is a taboo topic in the culture which leads to many women choosing to skip work or school in order to avoid the hassle of finding an adequate place to take care of their needs. Menstrual education is a resource that is critical for every young woman to gain understanding of the processes that take place in their own body. In Cameroon, mothers, sisters, and teachers are the first, second, and third sources respectively [20]. In addition, there is a socioeconomic difference between those who live in rural areas and those who live in

urban areas. Young girls who live in urban areas are more likely to get their menstrual information from radio or television whereas those who live in rural areas are more likely to get their information from school [21].

### *Improving Menstrual and Business Practice for Women in Cameroon (Romina)*

#### *Technology Involved in the Production of Crops (Luis)*

When discussing the agricultural business opportunities for women, it is useful to discuss the agricultural technology and knowledge available to facilitate crop growing. An article discussing the field conditions demonstrated that the usage of organic soil matter and higher altitudes of the fields correlates to less pathogen infestation of the crops [22]. Adjusting for these factors can increase the cleanliness of the crops produced. The availability of fungicide sprays in Cameroon are also important to consider when becoming involved in the agricultural business. These sprays can effectively combat infestation to a far greater degree than just sanitation, the act of removing infected and dead leaves [23]. Another study regarding taro leaf blight in Cameroon further supported the usefulness of fungicides and mentioned the use of resistance breeding used by Cameroonian farmers [24]. Technology and techniques such as those mentioned above improve the efficiency of agricultural productivity but in Cameroon there are lots of farmers that are not inclined to adopt these technologies. Some reasons for this include the fact that the new technologies might seem too excessive for smallholder

farmers or might not meet the farmer's needs [25].

#### *Government Support for Education and Healthcare (Irene)*

The Cameroonian government does not provide adequate support to schools and students across the country. As the world is becoming more technologically advanced, access to computers and phones have been essential to conduct daily activities.

However, schools in Cameroon have fallen behind in providing their students with these crucial technological resources. Most teachers have to utilize their own computers and items in order to teach their students efficiently and students are not provided with computers [26]. The limited sources in these classrooms inhibit the education of many students across the country and exhibits the lack of support that teachers receive. Furthermore, it is common for more than 150 students to be all packed in one classroom with one teacher [26]. This is an obstacle that may prevent many students from receiving individual additional assistance from educators and from reaching their full potential.

The healthcare system in Cameroon faces a variety of challenges as well mainly in rural areas and concerning the poorer populations. Many individuals in rural areas struggle to get sufficient care because there is no access to doctors or health clinics in their region compared to urban areas [27]. Urban areas have much greater access to health professionals whereas rural areas have to travel outside their village or town to find a doctor. Even if there is access to doctors and healthcare, there are additional problems

concerning health insurance and out-of-pocket payments. From a study in 2010, the Cameroon government only covered 28% of healthcare costs per individual, and many have to take out loans to cover for the rest of the payment [28]. It places a financial burden on many individuals and families and may cause many to avoid seeking healthcare to avoid paying these high costs.

#### *Allocation of Land (Lynette)*

Land ownership in Cameroon is very patrimonial, following their social customs. Women rarely own any land. In 1974, legislation was passed which created a process for land rights registration as well as a framework for the private ownership of property. It also stated that all unregistered land belonged to the State. However, implementation of this new legislation has been slow due to gaps and restrictions in the law; it is unclear what these specific hindrances are. As a result, only a small fraction of land is registered or titled, and virtually no land is in the name of women. The government has taken advantage of the lack of land registration to acquire and re-allocate the unregistered land. Furthermore, disputes over land are quite common. Conflicts may arise between livestock herders and farming populations, and between farmers wishing to clear forests for cropland and traditional forest populations, and others [29].

*Access of Education for Disabled Students (Pranav)*

Key findings were deemed to be largely irrelevant to the goal of this project.

*Menstrual/General Sexual Education in Modern Day Cameroon (Pranav)*

Students in Cameroon, including both men and women, have very little information regarding menstruation and how to manage it [6]. A potential reason as to why this is the case is that a vast portion of the girls in Cameroon drop-out after Class Six in primary school (before the reproduction unit is taught), and the primary source of education regarding menstruation for many girls is from their friends or mother, who might also lack the necessary education regarding menstruation [6]. As a result, although some students may reach secondary school, even then the “Parents outsource ‘the talk’ and other critical health education to schools, and schools assume youth learn what they need to know from home” [31]. Through these findings, it is evident that there is an underlying issue regarding menstruation education for students of all genders in Cameroon, and whose responsibility it is to properly educate these students. When discussing the knowledge individuals in Cameroon have regarding general puberty, menstruation, or menarche, it was found that only 46% of individuals in urban settings had good knowledge regarding these topics, while 67.2% of individuals in rural areas had good knowledge [21]. This surprising difference in percentages may “be because the primary source of information in the rural area was the school (51.10%) whereas in the urban

participants it was the radio/TV and friends” [21]. This data reveals that school is still the best method to deliver sexual education to students, but there seem to be conceptions regarding sexual education amongst the teachers as well. It was found that “language [in Cameroon] significantly determines the conception of teachers on sex education, as significant differences are observed between teachers of the Anglophone and Francophone sub-system of education. This could be accounted for by the semantic and semiotic meanings of sex education terminologies or concepts in English and in French” [30].

*Limitations in Designing a Sustainable and Affordable Menstrual Product (MinHee)*

There are many limitations to take into account when designing an affordable and sustainable menstrual product in a rural country such as Cameroon. First, many women lack basic sanitation needs such as soap and water that is necessary for reusable menstrual pads to be washed after each use. In the culture of Cameroon, men control the funds and refrain from purchasing menstrual products as well as pain killers. Public restrooms are rare and the quality of toilets also cause difficulty for private and safe menstrual practice; many schools only provide an outhouse for both genders to share, where there is no privacy, and boys tend to utilize them in unsanitary ways. Restrooms throughout the community also don’t include a menstrual waste disposal that contributes to the absence of women at school, community activities, and work [6]. Expanding on the lack of access to water, a study on the Far North of Cameroon, reveals

the majority of its population relies on surface water that is contaminated with fecal matter shown by the detection of *Salmonella* spp. and STEC by qPCR. Only 14% of camp households and 8% of village households have access to tap water; this demonstrates that even if a washable menstrual product were designed, it cannot be used in most rural areas and can cause illness [32]. What cheap, biodegradable material is available in different parts of Cameroon that does not rely on the use of water?

## **State of The Art**

## **New Technology**

*Classes for all age groups concerning menstrual education. (Romina)*

## **Existing Solutions**

*Effectiveness of Other Menstrual Management Interventions (Kyanh)*

Increasing education and facilitating women's education can lead to important social and economic growth for that country/society [6,7,10].

Interventions to increase school attendance in Uganda, via increasing menstruation education and providing menstruation products, both worked, and worked equally well [10]. Even though this study showed that giving girls menstrual cups to rural, Nepalese girls didn't increase attendance; however, they did increase convenience and the menstrual cups were highly adopted [6].

A Mawali study found that “menstruation accounts only for a small proportion of all female absenteeism and does not create a gender gap in absenteeism,” but it’s kind of weird, since it finds that boys and girls attendance rates are similar, but they're not controlling for the fact that boys are not coming to school to go "play" while girls are not [33]. One study was a summary of 8 menstruation management intervention studies. They found that "there is insufficient evidence to establish the effectiveness of menstruation management interventions, although current results are promising" [2]. Note: “Six countries were represented; Iran (3), Saudi Arabia, Zimbabwe, Ghana, Nepal, and Kenya. [...] Five studies included only girls post-menarche.[18,32,45–47]” [2]. One study found that giving rural Nepalese girls menstrual cups didn't improve attendance by a significant amount. These girls cited period cramps as the main reason they did not want to go to school, and cited that they had little issues dealing with menstrual rags at school [6].

*Utilizing schools for menstrual education (Romina)*

*Current Alternatives in Menstrual Production (Mohini)*

Current sanitary pads consist of four components other than the external packaging. The tops work to transfer liquids from the top layer to the secondary layers and are made of non-woven polypropylene/polyethylene fibers. The second layer, the emollient, moisturizes the skin and is made of the same materials as

the first layer. The absorbent core is made of polymeric open-celled foam and contains the liquid. Finally, the backsheet prevents any leakage through a low-density polyethylene film [34]. Thus, traditional manufacturing of sanitary pads produces a lot of waste through the chemicals it uses [34]. These chemicals are also potentially dangerous for the women who wear it as well, leading companies such as *Always* to change the materials they are using to produce pads [36]. Furthermore, one can make menstrual products more sustainable by changing the raw materials used; it is suggested that organic cotton be used for the top sheet, bamboo or banana fiber for the absorbent core, and plastic produced from starch for the barrier sheet [35]. Another option are reusable pads that are already made entirely of cotton or disposable pads that are organic, all-cotton and chlorine free [37].

#### *Women in the Workforce (Hana)*

Most communities in Cameroon reinforce traditional gender norms for women: childbearing, home management, and more. [40]. Food provision is one of the most important tasks expected of women. As such, three-quarters of food crop farmers in rural Cameroon are women [39]. Despite this demographic in the agricultural workforce, women face many disadvantages when it comes to the management of their farms. Traditional gender norms are interwoven with the legal system which prevents women from obtaining adequate resources to run their farm to the fullest potential [39]. They also cannot combat the effects of climate change properly without

these resources, subjecting their farms to greater vulnerability [39]. Furthermore, even though the size of farms women have access to are similar to those of men, they face many more barriers when dealing with the products of their labor. Lack of access to extension services, marketing, and control of proceeds are just a few obstacles women face in the agricultural industry. However, productivity analysis has shown that if women farmers are given equal access to the support men have, they would produce output that is at least as high as men's [38].

Despite these barriers, women have been able to rise above and succeed. Rice cultivation in Ndop, Cameroon has become a profitable business for many women in this community, as they have been able to participate in community roles and their input is felt beyond their homes [40]. Their ability to earn income has shifted their roles from reproductive to productive, and this effect may extend generations as women can pass on their land to their daughters. However, governmental support in the legal system as well as a vast shift in societal views must occur for women to be able to work to their fullest potential. It would be a wise move on the government's part to support this, as it would result in greater production of one of the most important crops in Cameroon [40]. Furthermore, should this change take effect throughout the country, it would likely result in increased economic activity and strength overall.

#### *Establishing a new business and its challenges (MinHee)*

Many young graduates are discouraged from starting businesses in Cameroon as there are many obstacles. In order to start a sole proprietorship, there must be registration at the commercial court registry, registration of tax, and the CNPS office must send an enlistment application for one's employees. Public limited and limited liability companies require a minimum capital to start. These companies must report their activities, investments, and the legality of the company [41]. Furthermore, Cameroon is a signatory of the ODAHA reforms, which is a treaty within Western and Central African nations to create a better investment climate. This reform has failed to stimulate creation of limited liability companies, and the complex documentations, corruption, and fiscal pressure prevent people business owners. Entrepreneurs are faced with government restraints, and women are far less likely to start a business compared to men. They are unaware of their own rights and benefits if they invested; women rely on their husband's approval to invest, and they have a lack of access to land. How will women obtain the land necessary to start an agricultural business? In addition, there is absence of transparency within trade agreements and "free competition in the markets" [3].

#### *Healthcare Research in Cameroon (Luis)*

The strength of healthcare research in Cameroon could be representative of whether new menstrual products can be introduced or discoveries regarding menstrual health can be made. The state of healthcare research and research in general in Cameroon is met with several barriers. A

study in 2020 surveyed Cameroonian physicians and their opinions on why attempting research in Cameroon is at times very difficult. The top reasons included difficulty getting authorization for experiments, lack of financial support from the government, and lackluster education [42]. Other researchers focused on a qualitative study in Cameroon and Ethiopia that brought attention to lack of personal initiative to enter research [43]. A problem that plagues physicians as well as researchers in Cameroon is burnout syndrome. Researchers explained that burnout syndrome occurs frequently in Cameroon because mental health is not focused on much [44]. Therefore, the early retirement of researchers leads to less experienced individuals spearheading healthcare research.

#### *Women in Business (Lynette)*

Kah Walla is one of Cameroon's most successful female entrepreneurs. Despite being a woman and facing the hurdles of the Cameroonian tax system at the time, Kah successfully established her consulting firm. According to Kah, there are six key steps to starting a business in Cameroon: know the country's laws and what people need, create a plan, be proficient in the country's two languages (English and French), connecting with people and creating the right network, have the right mindset, and be innovative and creative [45]. Cameroonian laws now grant women new freedoms, such as travelling without male companions, opening bank accounts and registering businesses on their own without their husbands' consent. According to many

prominent women leaders in Africa, they credit fighting hard to stay in school and receive an education as the largest factor which influenced their leadership [46]. This is because women are often misinformed about their rights, especially when it comes to investments. Many of them do not have easy access to land and their willingness to invest is subject to their husband's approval [3]. Traditional stereotypes about women which relegate them to home management and other roles are difficult to overcome, especially when many young girls do not follow through with their education. Education has the ability to empower women with the knowledge and skills that they need, and would decrease the gender differences in difficulties in creating a business.

*Cameroon's current technological methods and opportunities for improvements (Krys)*

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