

Formative Research on **Rural Water Supply, Sanitation, Hygiene, and Nutrition** in Viet Nam

Targeting Hard-to-Reach Populations in Soc Trang, Gia Lai and Dien Bien



I. INTRODUCTION

The United Nations Children’s Fund (UNICEF) programme of cooperation with Viet Nam for 2022-2026 prioritizes Water, Sanitation, and Hygiene (WASH) and nutrition as core components of the partnership strategy. UNICEF is supporting national and provincial authorities to accelerate safely managed WASH and nutrition for hard-to-reach and vulnerable groups in Dien Bien, Gia Lai, and Soc Trang. UNICEF, partnered with the National Centre for Rural Water Supply and Sanitation (NCERWASS),

Viet Nam Health Environment Management Agency (VIHEMA), and three provinces to conduct formative research to inform the country programme. The research aimed to understand the demand, supply, and enabling environment for affordable and climate-resilient WASH and nutrition products, the services and practices of the main ethnic groups in the project locations, and the barriers driving unhealthy practices among communities.

II. METHODOLOGIES

Figure 1: Research locations



The study applied qualitative and quantitative methodologies. The qualitative methodology followed the Design Process¹ and included in-depth interviews, focus group discussions, rapid interviews, observations, and shadowing. The study also applied quantitative surveys to provide in-depth information to supplement qualitative findings rather than provide a representative sample. Together, the mixed methods provide rich data which tells a story of the current lives, barriers, beliefs, aspirations, and motivations of the target communities: the Khmer, Bahnar, Jrai, Thai and Hmong ethnic minority groups

(EM) in the selected locations of Soc Trang, Gia Lai and Dien Bien.

The qualitative field research was conducted from June to July 2022 in Gia Lai, Soc Trang and Dien Bien provinces which represent the northern mountains, central highlands and Mekong River Delta.

In total 300 interviews and observations were conducted, which included visiting 18 schools – main and satellite schools, kindergarten through primary and secondary. The sampling breakdown was as follows: Communities: 40%, Government: 30%, Development Partners/NGOs: 10%, and Private Sector: 20%.

The quantitative field research was conducted 8-18 July 2022 in Gia Lai, Soc Trang and Dien Bien. A total of 301 households were interviewed for the Water and Sanitation survey, and 299 households were interviewed for the Nutrition survey (some key WASH questions were also included in the nutrition survey).

**All research protocol and tools used in this study were reviewed and approved by the Institutional Review Boards (IRBs) committee at the Hanoi University of Public Health in Viet Nam.*

¹ This is the iDE Innovation Lab's in-house design process, which encompasses 12 design steps, from Foundation and Alignment to Adaptive Design Management.



III. RESULT

Overview

Economic: The results indicated that the median income across the surveyed households was 40,000,000 VND (US\$1,709) in 2021. This figure is much lower compared to the national income per capita at US\$3,756 (World Bank², 2023). Surveyed households in Soc Trang (Khmer) tended to earn more than people living in the other two surveyed provinces. It is important to note that spending on sanitation facilities amounted to a quarter of the 2021 median income, a significant amount. Bahnar, Hmong, and Thai households spent less money on water. Jrai households typically spent up to 100,000 VND on water each month (up to 3% of the median yearly income), and Khmer households spent up to 200,000 VND each month (up to 6% of the median yearly income). Two-thirds of households (65%) carried some amount of debt. The median household debt was 15,000,000 VND (US\$642), and the maximum was 250,000,000 VND (US\$10,682).

Climate context: As an overall observation, all three provinces have been affected by climate change. In Soc Trang, the falling groundwater table level, coastal location, and rising sea levels, has led to seawater intrusion on shallow aquifers causing the groundwater to become salty, and agricultural land in most coastal areas is no longer viable for cultivating traditional crops, such as rice, for which the Soc Trang province is famous. In Gia Lai, persistent drought and reduced rainfall, coupled with sinking groundwater tables result in seasonal water shortages. As there is a strong reliance on boreholes, the community must now dig deeper boreholes to reach sinking aquifers. This creates an increasing cost barrier for water, which further excludes the poor from accessing groundwater.

In Dien Bien, like other locations, surface water sources decline seasonally, resulting in a longer time to source water, and a reduction or rationing of water for the communities. Groundwater exploitation is minimal for this province, primarily due to its remoteness and distance from service providers, and the prohibitive capital expenditure required to install boreholes.

Geographical and topographical context: In Soc Trang, the flatness of the area makes it easy to travel, reduces the investment cost required to install infrastructure such as piped water and roads, and facilitates accessibility of products and services.

In Gia Lai, the elevation makes it slightly more difficult, but not significantly so. Investment costs do become higher for pumping and electricity costs, with gravity feeding being preferred by the community for that exact reason, especially in light of the increasing depth of over-extracted groundwater resources, which is amplified by persistent drought conditions. In Dien Bien, the mountainous nature of their communities corresponds to a much higher level of investment required for infrastructure such as piped water, which means that water supply becomes very expensive, especially when pumping up an incline.

Market context: Gia Lai: Moderate market, some WASH and nutrition products and services are available. Soc Trang: High market maturity, diversity of WASH and nutrition products and services are available. Dien Bien: Nascent market, limited availability of WASH and nutrition products.

² <https://data.worldbank.org/indicator/NY.GDP.PCAP.CD?locations=VN>

WATER



Households encountered in the field did not progress steadily from the bottom of the Joint Monitoring Programme (JMP)³ drinking water ladder to the top. Instead, all households made complex, nuanced decisions, balancing various factors (their needs, their economics and market and environment constraints), in order to make a water ‘stack’ whereby users use multiple water sources to fulfil their total water demand and need, balancing their need for affordability, volume, availability and quality. Water sources varied from province to province. Piped water was widely used in Soc Trang with 60% of the Khmer EM population on average, across the dry and rainy seasons using it as their primary source. Self-supply sources, community-managed piped water (gravity-fed springs) and surface water were most commonly used in Gia Lai. Self-supply sources was most used in Dien Bien with 74% of the Thai EM group on average, across

The monthly spending on the water in a household

increases by **41%**

for every increase in household income.

the dry and rainy seasons using community-managed gravity-fed springs, and 77% of the Hmong EM group on average, across the dry and rainy seasons using this source. Bottled water was used across all communities, apart from the Hmong community, where it was found that there was no supply due to issues with road accessibility and severe constraints on affordability and willingness to pay. Due to the increased cost, the use of bottled water was correlated with a higher income. The wealthiest Khmer EM group used bottled water most, followed by the Jrai EM group, then the Thai.

Figure 2: Domestic water sources used by EM groups in the wet and dry seasons

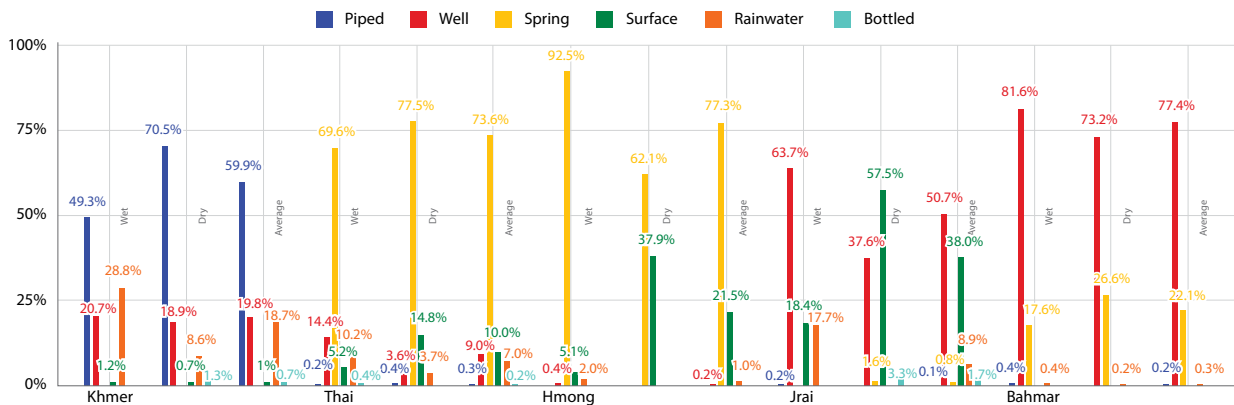
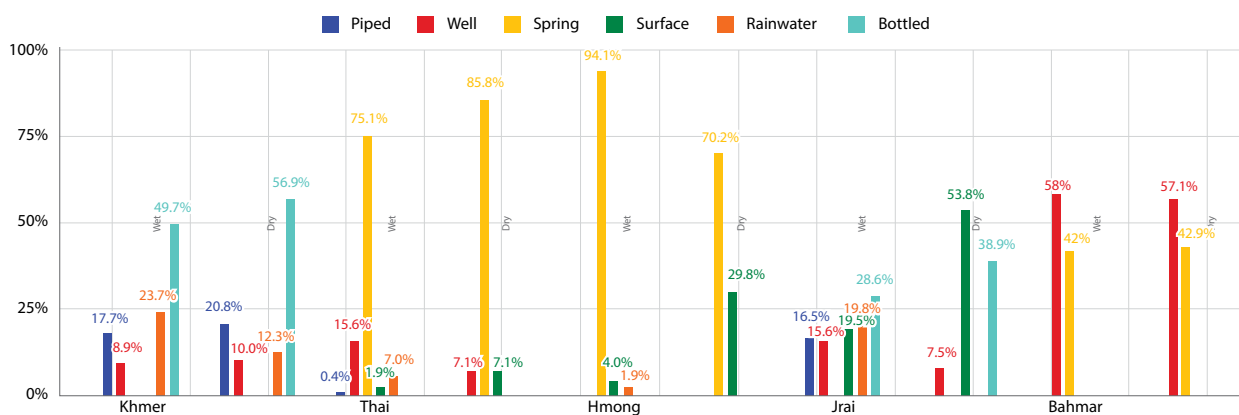


Figure 3: Drinking water sources used by EM groups



3 The JMP is jointly managed by WHO and UNICEF, and collaborates with partners at the country, regional and global levels.

The findings show that as income increases, so does spending on water. The relationship between income and monthly spending was also analysed across all sampled households. The monthly spending on the water in a household increases by 41% for every increase in household income.

The most significant motivators driving people's behaviours were common across all provinces and EM groups. They were from most to least significant: Available sources of water (seasonal availability of that source and availability on the premise). Convenience (in terms of time and effort). Taste and other sensory factors (such as cool temperature, which was especially prized in hot locations). Quality (as a driver was only of concern to communities with respect to narrow focus areas). Turbidity (where clarity was cited as a concern during the rainy season especially). Cost (the monthly cost of water in a household increases by 41% for every increase in household income).

Barriers

Seasonal low drinking water availability. Two in five households reported low drinking water volumes seasonally, and one in five reported no drinking water at certain water sources seasonally. 46% of Hmong, 70% of Khmer, 35% of Thai and 12% of Bahnar indicated their primary water source was disrupted for more than three months per year. For the Jrai, 8% indicated that their primary water source, streams, was unavailable for one to two months per year.

High turbidity in drinking water. One in five households; encountered high turbidity. Poor taste and chemical contamination (from known sources such as asbestos roofing or pesticides) were reported by some households.

20L bottled water systems demonstrated the highest potential to reach drinking water quality, however, improper usage of Personal Protective Equipment (PPE), and improper sanitisation, storage and handling of bottles and refilling equipment resulted in high potential for contamination at the point of distribution.

Surface water sources used for self-supply are not under the mandate of monitoring implemented by the government. Therefore, those sources remain

unknown, a significant concern, as communities using surface water provide minimal or no treatment before drinking from those sources.

Affordability was clearly a barrier for communities. Mainly a barrier for Bahnar, Jrai and Hmong, who spent the least amount of money on water (as low as 0-3% of the median income), and primarily used community-managed piped water, wells or streams, for both their domestic and drinking water. Khmer households spent the most money on water compared to other ethnic groups, in line with the fact that they were most likely to use publicly managed services, which are more expensive, such as piped water or bottled water.

Opportunities

High prioritization and investment in water. Across all EM groups, communities valued water and were willing to invest money to access water sources.

Presence of existing bottled water suppliers. Many communities had bottled water suppliers. Reducing the affordability barrier and improving the water quality of these services could offer a viable pathway to provide safely managed water to these communities.

Presence of community managed piped water suppliers. Community-managed piped water schemes provided remote mountainous communities with affordable, accessible water piped to their homes. Boosting the capacity of these existing systems, protecting source water and including water treatment prior to distribution could be a quick-win pathway for providing remote mountainous communities with safely managed water.



SANITATION



Pit latrines with concrete slabs were most reported across all households, amounting to 45% of total reported toilets across all communities, but particularly among communities in Soc Trang (Khmer) and the Thai EM group in Dien Bien. Having no sanitation facility was the second most reported situation at 28%, particularly for the Jrai EM group in Gia Lai. Hanging toilets were reported by Khmer households but no other ethnic groups. Pit latrines without slabs were reported by approximately one in four Bahnar households. Composting toilets, pit latrines with wooden slabs, toilets connected to sewers and septic systems were rare.

Drivers

Different triggers/drivers could contribute to the uptake of sanitation facilities, including: Convenience, safety and privacy of having a toilet near the house, especially for women, were found to be main triggers for building a toilet. Peer pressure when neighbors confront open defecators for defecating on their land. Access to sufficient volumes of water triggers willingness to adopt sanitation facilities. Having improved products demonstrates wealth and is a social status trigger for households to adopt a latrine.

Barriers

Sanitation Behaviors: Even in households with a latrine, many people still practiced open defecation away from home due to long distances travelled to work in the field. Baby sanitation was ignored, with a lack of attention on the management and disposal of child feces.

Market Distortions: The use of untargeted subsidies, and/or provision of free latrines for sanitation at

the community level can distort the market and perpetuate expectations of latrines being provided free, while also allowing sub-standard latrines which do not meet user needs to proliferate.

Use and Maintenance: Usage is constrained, especially due to inappropriate infrastructure for long-term use in the specific context (e.g., flush toilets consuming excessive water in drought-prone areas in Gia Lai), resulting in abandonment of facilities.

Product: A middle-of-the-range option, that is both aspirational and affordable is lacking. There were no inclusive sanitation options for people with disabilities, or temporary mobility issues, resulting in significant barriers to access for these groups.

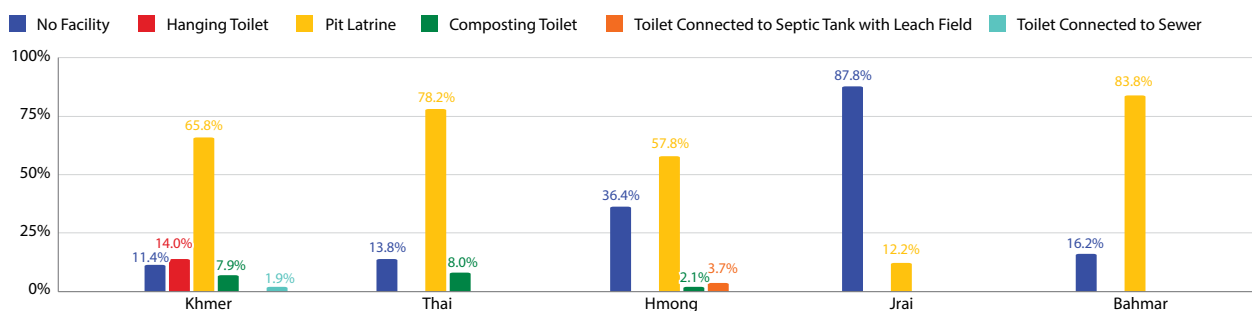
Supply Chain: The sanitation value chain is not well connected from one actor to another due to differing priorities. Supply side actors are prioritizing passive sales, as there is a perception that active sales are only for luxury or high-end products. Currently, there is only emphasis on the capture and containment stage of sanitation, with no focus on fecal sludge management (FSM), including emptying, treatment and reuse.

Opportunities

Existing water saving, or dry latrine technologies could be developed, piloted and tested in these communities, to ensure that water scarcity does not constrain sanitation.

The expansion of Vietnam Bank for Social Policy (VBSP) financing options to approved sanitation products could boost household affordability and ultimately accelerate uptake of sanitation products.

Figure 4: Sanitation facility access by EM groups



HAND HYGIENE



Based on the qualitative field immersion (observation and self-reported by the interviewees), hand hygiene practices and knowledge were non-existent in most communities, with the Khmer EM group showing more knowledge than other EM groups. Germ theory does not appear to be well understood and is as such not a trigger for action. Some are at the preparation stage while very few are at the action and maintenance stage on the behavior change stages framework.

Barriers

Knowledge: Knowledge of critical times to wash hands, and their importance, was not well known. Handwashing was not prioritized due to lack of understanding of the impact of handwashing on health. This led to a perceived lack of need for handwashing materials at household level.

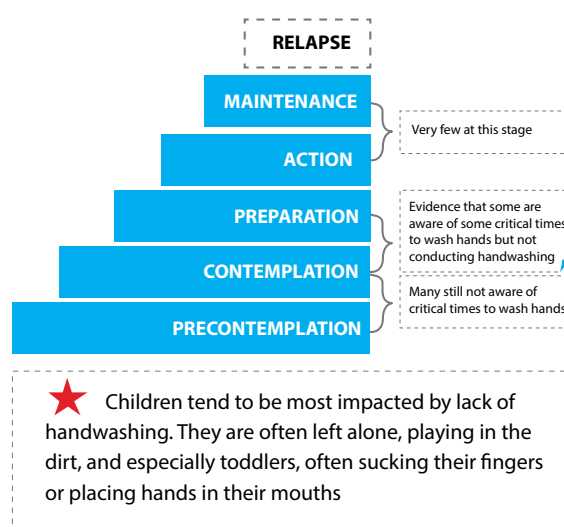
Water Access: All communities had seasonal water shortages during the dry season, and high levels of water turbidity during the rainy season, which greatly impacted their ability to keep their hands and clothes clean.

Facilities: Dedicated handwashing facilities were not available for most EM groups, and there were no facilities close to areas where handwashing is critical, such as bathrooms and food preparation areas (based on the observation of the research team at the point of time reported).

Opportunities

Channels for social and behaviour change communication (SBCC) in relation to handwashing already exist in the community. The women's union 5 No, 3 Clean campaign is focused on the beauty of the community and the house. Small modifications could be made to their existing work, including handwashing and hygiene promotion.

Figure 5: Behavior change stages analysis of EM groups



Communities really valued having children grow up smart, healthy, strong and studying well. This could be a powerful driver for the uptake of hand washing facilities, materials and practices, and could lay a strong foundation for an aspirational SBCC campaign.

Linking hand hygiene initiatives with existing water and sanitation interventions, such as latrine sales and improvements in existing water supply quality, would enable communities to improve their hand hygiene.

Latrine sales agents could include the promotion of affordable, desirable and appropriate handwashing facilities and handwashing products, such as soaps, to provide holistic health promotion in the community.

All communities had local rice wine production, which was consumed at the table during meal times. There is therefore high potential for communities to develop and supply the community with locally produced alcohol-based hand rub.

MENSTRUAL HYGIENE



Proper menstrual hygiene management was very limited across all EM group. Knowledge and skills related to menstrual hygiene management were highest among the Khmer and Thai EM group women, who had stronger social networks and role model mothers who discussed menstruation with their daughters to ensure they understood menstruation before onset of their first period. Despite this, understanding of pain management, nutrition and bodily changes was low, and many women and girls expressed not having heard about menstruation at the onset of their first period.

Barriers

WASH facilities were a constraint for all women, who reported not having water to clean and wash their clothes, but especially for Jrai and Hmong women. They also reported not having private locations to wash, clean and dry their menstrual materials and clothes.



Lack of accurate, contextualized access to information related to menstruation, including pain management, menstrual materials and sexual and reproductive health, especially for the women and girls in Gia Lai and Dien Bien, who got married and had children much younger than the Khmer EM group. The presence of taboos prevented role models, teachers and parents from speaking to girls and boys about menstruation and normalizing it as a natural bodily process.

Menstrual materials were limited in variety, with a proliferation of low-quality, low-absorbency materials which required changing multiple times per day. Women reported needing to change their materials as often as five times per day.

Social support was lacking, with poor women across all EM groups expressing issues with affordability and access to a diverse range of high-quality menstrual materials, resulting in many reporting that they use multiple layers of underwear or pants. Women and girls reported staying home and missing work and school, due to pain, or fear of leakages when away from home, where they had less access to water for washing themselves and their clothes.

Opportunities

Products which enable women to manage their menstrual health and hygiene should be co-created with women and girls, and then embedded into water and sanitation facilities to be rolled out as part of the proposed Market Based Water and Sanitation approaches outlined above. These products could include WASH product features which enable women to store, wash, dry, and safely dispose of their menstrual hygiene materials.

There are existing trusted community role models, mainly teachers and women union representatives, who showed interest in discussing menstrual hygiene management with women and girls and providing them with information. These community agents reported interest in playing active roles in online and offline behaviour change communication campaigns related to menstrual hygiene management.

WASH IN SCHOOLS



Currently, there is investment and willingness to install WASH products in school facilities. However, significant gaps in the use and maintenance cause facilities to be abandoned, after which access to water, latrines and handwashing facilities is reduced in schools. Within schools, there were disparities between teacher and student facilities. Teacher facilities were well-maintained by teachers, and usable. These facilities however were not available to students and were often locked. In contrast, student facilities were in a state of disrepair, with many students reporting that they were resorting to open defecation or going home to use bathroom facilities, did not wash their hands, and did not drink clean water. Disparities also existed between schools; satellite schools had less access to WASH facilities, with toilets often being locked and abandoned, water supply not being available, and a lack of handwashing facilities. This was part of an overall underinvestment in satellite schools compared to main schools.

Barriers

Use and maintenance of student school facilities is left to students, which results in their lack of service, and eventual abandonment.

Figure 6: A typical latrine at a school, abandoned and locked due to lack of availability of water and maintenance



Investment is focused only on installation; without attention or investment in use and maintenance of the facilities, the facilities are later abandoned. Schools tried to allocate budget for maintenance but had limited funds from school fees, and many competing priorities. EM group children provide lower school fees, which are not supplemented by the government.

There were disparities between satellite and main schools in terms of investment into WASH facilities.

Lack of water, due to lack of maintenance of facilities resulted in toilet facilities being abandoned and locked, compounding the prevalence of open defecation.

Lack of understanding of the importance of safe WASH practices, combined with strong disgust at poor quality facilities and sanitation condition led students to practise open defecation, urination and bathing.

Menstrual hygiene management was included in the curriculum in Grade 8, which is later than when most girls indicated they had their first period, as such, this did not help them to understand their period before it first occurred.

Opportunities

The research indicated that there is a willingness of local governments, such as the People's Committee, to invest in installation to support WASH in schools.

Parents showed concern about the conditions of the school facilities, and many interviewed parents, especially in communities such as Soc Trang, could afford to pay small fees to maintain facilities, provide bottled water, and sufficient volumes of domestic water.

Lessons in the Grade 8 biology curriculum could be leveraged and taught earlier to give holistic knowledge on menstrual hygiene.

NUTRITION



EXCLUSIVE BREASTFEEDING

Community practices in relation to exclusive breastfeeding and complementary feeding were highly constrained. Exclusive breastfeeding is recommended in the first six months of a baby's life and as soon as possible right after birth. Most communities provided babies with foods and liquids other than breast milk, including raw water which was untreated, food, or animal milk not formulated for infants. Many women did not breastfeed in the crucial first few days after birth and many women were not breastfeeding for the full duration of the first 24 months.

Women complained that they were not able to produce sufficient breast milk to feed their babies. Women did not understand the need to breastfeed the baby immediately after delivery, or that the more breastfeeding stimulates milk production. This perception that women would not be able to produce sufficient milk, and therefore needed to provide water in the first six months of a baby's life, was echoed by some healthcare workers, including doctors, nurses, midwives, and community health workers at different levels, which strengthened women's beliefs and practices. The high incidence of material diarrheal disease due to consumption of unclean water, seasonal scarcity of water and poor WASH practices and facilities meant that women could also be suffering from thirst and malnutrition, compounding their issues breastfeeding their babies.

For Khmer and Thai women, caregiving was provided by grandmothers, as women were doing migrant work earlier after birth in neighbouring provinces, such as Haiphong and Dinh Binh. As such, once working women's maternity leave ended, babies were left with caregivers who then provided breast milk alternatives. This exacerbated their issues of continuing breastfeeding until 24 months of age.

Barriers

Knowledge, attitudes and practices: Many mothers did not initiate early breastfeeding within the first two days. This was common across all EM groups, from the lowest scoring group, the Thai EM, with only 37% of women reportedly doing so, to the highest scoring group, with 67% of Jrai women reportedly doing so.

There were many misconceptions about babies being uncomfortable due to the heat, and the sweetness of breastmilk, which led women to provide babies with water as early as within two days of being born. Thus, the rate of exclusive breastfeeding was low among all EM groups, with the lowest scores being found for the Bahnar and Thai EM groups, which had reported percentages of 32% and 35% of babies being exclusively breastfed in the first two days after birth. Women, especially from the Khmer and Thai EM group, had lower rates of continued breastfeeding until 23 months of age, at 61% and 28% respectively, due to their work as migrant workers in other provinces, compared to the higher scores for Bahnar and Jrai EM groups, at 96% and 86%, respectively.

Food systems: Mothers, especially in Gia Lai and Dien Bien, but also poor women in Soc Trang, reported not having enough food to eat and losing weight during pregnancy. Maternal malnutrition would also impact breast milk production.

Figure 7: A woman gives water to her grandson



Health and Nutrition Service Systems: Some health care workers, including doctors, nurses, midwives, and community health workers at the district, commune and village levels, strengthened inappropriate beliefs and practices, such as providing babies with water.

Health care workers at the village and commune level did not have access to standardised counselling materials on maternal and infant nutrition, nor did they have adequate resourcing to conduct outreach.

WASH: Mothers and primary caregivers in all target locations and communities did not have adequate access to WASH products and services, such as safe water sources, water treatment devices and hygienic latrines, and did not practise key preventative WASH practices, such as handwashing at critical times, drinking clean water and using hygienic latrines. This exposes them to the risk of diarrheal diseases, which impact their ability to exclusively breastfeed their babies. The provision of water was particularly concerning, considering the lack of safe water in most of the communities.

Social Support: For Khmer and Thai women, after working women's maternity leave ended, babies were left with caregivers, who then provided breast milk alternatives. This prevented them from continuing breastfeeding until 24 months of age.

Opportunities

Knowledge, attitudes and practices: Women are attending prenatal visits and vaccination visits for their infants. These are key touchpoints where they could receive clear, accurate information and medical support related to initiating breastfeeding and the quantity, duration and frequency of breastfeeding.

Health and Nutrition Service Systems: Doctors and health professionals could emphasise that the more a woman breastfeeds, the more milk she produces. Aspirational campaigns could highlight the importance of the colostrum milk first produced by mothers, for a baby's health and wellbeing in the future.

WASH: Targeted demand generation and financing to support pregnant women and households with children under the age of two to adopt water filters, access improved water supply sources, hygienic latrines, handwashing facilities and baby WASH products could boost their safe WASH practices, and safeguard the health of mothers, primary caregivers and babies.

Social Support: Pregnant and breastfeeding women could be targeted with climate smart WASH and nutrition. This would involve targeting women reportedly suffering from heat stress, heat stroke and thirst, especially the Jrai and Bahnar, who live in drought prone areas.

The belief among mothers that their milk production would be insufficient was mirrored by some doctors. Some mothers also reported that some health care workers, including doctors, nurses, midwives, and community health workers at the district, commune and village levels, recommended that they feed their baby something other than breast milk during the first two days after birth, and that their husbands chose to feed their babies something other than breast milk.

COMPLEMENTARY FEEDING

For complementary feeding, the percentage of infants aged 6-23 months receiving a minimum acceptable diet was very low. The Thai and Khmer EM group scored the highest, but even this score was low, at 24% and 21% respectively, indicating that just over one in five children was receiving the minimum acceptable diet in the most advantaged communities. The Jrai, Bahnar and Hmong faced widespread community hunger resulting in a lack of availability, affordability and diversity of good nutritious foods for young children. They reported feeding flesh and egg foods to their infants less, and during qualitative research, many women from the Hmong EM group indicated they knew their children were stunted.

All communities faced three main issues of poor exclusive breastfeeding, inadequate and insufficient complementary feeding and over consumption of sugary and unhealthy foods and drinks which could lead to obesity, diabetes, tooth decay and other conditions. The Hmong EM group showed a high rate of consumption of sweet drinks and unhealthy foods, ranking just behind the wealthier Thai and Khmer EM groups.

The Thai EM group scored highest on minimum acceptable diet and egg or flesh consumption, scoring significantly higher than other EM groups on the second category.

The Hmong EM group scored the second lowest on all indicators, apart from zero vegetable consumption (the proportion of children who consume no vegetables), where they scored the lowest, i.e. the worst. Their low scores on minimum acceptable diet, and egg or flesh consumption reflects their lack of access and affordability to high quality nutrition. Qualitatively, they reported the most rationed meals, of rice, pumpkin leaves, pumpkin leaf soup, and salt. They also reported being frequently hungry and were the most likely to indicate that they thought their children were stunted.

They also scored third highest on sweet beverage consumption and unhealthy food consumption, indicating the relatively high rate of consumption of cheap, empty calories to make up for a diet lacking in high quality, nutritious food in sufficient quantities to keep children full.

The Khmer EM group scored the lowest on complementary feeding, as they had the highest rate of sweet beverage consumption, and second highest rate of unhealthy food consumption, and zero vegetable consumption. These are issues related to increased socioeconomic status and proliferation of processed foods, as well as caregiver practices related to nutrition.

Barriers

Knowledge, attitudes and practices: Lack of food processing skills and equipment to make highly nutritious, convenient and fast complementary feeding meals, means that caregivers opt to provide highly processed ready-to-eat foods which are often unhealthy and lacking in nutrients.

Lack of set meal times for infants, and lack of understanding of the required composition, size and frequency of a complementary meal.

Food systems: Limited access to markets and lack of availability of a diversity of affordable, nutritious foods, especially for impoverished EM groups.

Oversupply and over-provision of highly processed, cheap, sweet (often caffeinated) drinks and unhealthy snacks to young children. In communities where people are experiencing hunger.

Health and Nutrition Service Systems: Inaccurate and vague information provided by Health Care professionals, such as 'provide lots of rice' and 'eat what is available'.

WASH: Mothers and primary caregivers in all target locations lacked adequate access to WASH products and services, such as safe water sources, water treatment devices and hygienic latrines, and did not practise key preventative measures, such as handwashing at critical times, drinking clean water and using hygienic latrines.

Social Support: Lack of targeted programs to monitor and address stunting, especially in Dien Bien, where communities do not come to the health centre.

Support for caregivers whose children suffer from malnutrition or stunting.

Opportunities

Knowledge, attitudes and practices: Health centres were visited by 95% of pregnant women. Private health centres were the most frequently visited (60%) compared to the public (41%). Private health centres at district and province centres were the most frequently visited, followed by public health centres in district and commune centres, and private health centres at commune centres. Khmer mothers were the only ethnic group to visit public province-level health centres. All Thai and Khmer mothers visited a health centre during pregnancy.

Women show willingness and ability to find quality information online and are motivated to seek it, despite challenges in verifying the accuracy of the information and finding it in their local languages.

Women reported using Lazada for online shopping, and access to platforms such as social media for finding information (including Facebook, YouTube, Zalo and Messenger for communication). These could be very strong social communication channels.

Women union representatives, teachers, and health care workers at the commune, district, and provincial levels provide additional touch points which could be leveraged for SBCC campaigns.

Food systems: Especially in Dien Bien, there are strong opportunities for the inclusion of

community-managed agricultural-focused programs to strengthen existing foraging and growing capacities, to boost livelihoods and combat hunger.

Taxing sweet drinks and unhealthy foods could provide government financing for nutrition programs, and also inhibit consumption of unhealthy foods by the most vulnerable groups.

Health and Nutrition Service Systems: Health centres did conduct weighing of children, ranging from two to four times per year. Khmer health care centres were especially diligent with recording

and reporting the rates of stunted children and conducted programs such as cooking classes.

Health centre staff are passionate and should be included in any outreach activities.

Social Support: The previous government-implemented Protein- Energy Malnutrition (PEM) program was often referenced by health centres, CDC staff, and community members. Its support was spoken highly of by the community including iron supplementation for pregnant women, counselling on complementary feeding for infants and young children, food distribution, growth monitoring and promotion, deworming of school-aged children, and promotion of handwashing practices.





IV. DISCUSSION

The interventions by the Government of Viet Nam and key stakeholders so far in the WASH and nutrition sector can be considered as remarkable efforts. The work contributed to building a great foundation for the livelihood and health of the general population in Viet Nam. It is now time to step forward by focusing on hard-to-reach and vulnerable households in the challenging provinces containing Gia Lai, Soc Trang, and Dien Bien.

Solutions to the challenges outlined by the study must address comprehensively three different domain – demand, supply (including suitable products) and enabling environment to be effective.

The current products and services are not consistently desirable, affordable and accessible for the target communities. The income of the target communities was quite low relative to products and services, especially sanitation products (which amounted to 25-100% of the median household annual income, depending on location). Other barriers included a lack of consistent product quality and desirable product attributes. In all locations apart from Soc Trang, communities experienced a lack of access to a diverse

range of products and services. Remote mountainous communities in Dien Bien were most likely to have constrained access to products and services. There is need to design an aspirational and affordable product and service for these hard-to-reach communities.

The current products and services are not consistently desirable, affordable and accessible for the target communities

The practice of providing latrines which are not fit for purpose free of charge to households, or providing untargeted subsidies to boost uptake of WASH products and services, has resulted in market distortions, while also undermining the viability of the business dealings of sanitation entrepreneurs. To build a strong enabling environment for market-based approaches, it is important to create clear guidelines for smart subsidies, which are provided to desirable and technically feasible products. These subsidies should be provided to the households most likely to face affordability barriers and should only be provided in areas where sanitation coverage, and therefore, social norms driving uptake of sanitation, are high. Existing financing packages, such as those provided by the VBSP for piped water supply, should be expanded to cover alternative and feasible water supply technologies with the potential to enable communities to access safely managed water, household water catchment and treatment products, and sanitation products and services. These packages can bridge the affordability gap, without creating market distortions.

It will be a long-term investment and commitment to bring WASH and nutrition solutions to hard-to-reach communities. The challenges that must be addressed at the target communities in the three target provinces (Gia Lai, Soc Trang and Dien Bien) will require effort and participation by all relevant stakeholders from national to the community level, including government, NGOs, private sector and the communities themselves. The alignment between relevant stakeholders at all levels and a mindset to adopt a new way to tackle problems will be key.

Inequality between satellite and main schools in accessing resources must be addressed. It is important to recognize that main schools receive greater resource allocations than satellite schools. This may seem fair given higher students numbers at main schools, however, this practice creates huge disparities between schools. Lower investment in sanitation can lead to abandonment of sanitation facilities in satellite schools or reduced access to essential facilities such as water.





V. CONCLUSION AND RECOMMENDATIONS

Based on the findings and discussions above, the participation of all relevant stakeholders, including government agencies, development agencies/(I) NGOs, private sector and the community themselves, are key to make the proposed interventions/ strategies work. Added to this, well aligned and consistent contributions will ensure the successful implementation of interventions. Two different approaches are recommended by this study: a market-based approach and social behavior change communication. Interventions will need to be holistic and consider the debt levels and low income of the target communities. Solutions should be designed to ease the problem rather than place additional burden on the community.

Water

Creating a province-wide strategy to ensure fit-to-context interventions. A national and province-wide climate resilient water supply mapping and plan should be designed to identify the types of technologies and water sources best suited to supply specific target areas. Government should also ensure increased budget allocation for the water sector

and create a decision guiding tool to optimise cost-effective uses of such financing.

Where existing water suppliers have potential to cover communities, strengthen them and leverage their distribution networks. Relevant stakeholders, including government agencies, must assist existing suppliers to improve water quality, expand coverage to households currently not connected, improve operation and maintenance, reduce operating costs and boost profitability.

Where communities do not currently have water suppliers, explore the viability, feasibility and desirability of introducing new community managed, appropriate water systems. This proposed alternative can bring a better quality and sufficient volume of water for the communities throughout the year.

Advocate for self-supply sources to be included under the water quality monitoring mandate of Ministry of Health where new informal or formal suppliers are not viable and strengthen self-supply systems. This will ensure the community is kept informed about water quality and can avoid the consumption of contaminated water.

Sanitation

Like the recommendations for the water component, the government should consider increasing budgetary allocation for the sanitation sector and create a decision guiding tool to optimize cost-effective uses of such financing. This will help to ensure and accelerate the increase of sanitation coverage in the target provinces with high populations of EM groups.

Public and private sector to coreate aspirational, affordable and context-appropriate toilet products. The product overview should include desired features (concrete and squat ceramic pan, pour flush, toilet and washroom combination), layouts, estimated cost, willingness and ability to pay.

Strengthen FSM containment and treatment options as part of the flagship aspirational toilet product, to move beyond containment. This recommendation should be considered at the start of any intervention focused on latrine adoption. Fecal sludge management is often missing yet is equally important to the capturing and containment steps.

Develop a 'Sanitation Entrepreneur' and 'Aspirational Toilet' brand to boost the image of construction contractors and latrines and strengthen demand generation activities. This combines a market-based solution with a SBCC approach to prompt the uptake and usage of the aspirational flagship toilet product.

Develop financing products and/or services for households looking to purchase a latrine. This can include instalments, mobile money and loan options, and establish measures to prevent market distortions in the sanitation sector being created by untargeted subsidies.

Strengthen and connect existing supply chain actors in the sanitation value chain. This includes masons, hardware stores, community health actors, women's union representatives, and other actors.

Hand Hygiene

Strengthen the availability of clean water for handwashing and embed hand hygiene interventions in water and sanitation interventions. The relationship between handwashing

and water and sanitation is key. Any handwashing intervention should be piggybacked onto other water and sanitation interventions.

Strengthen the availability of handwashing facilities at accessible points. Having handwashing facilities inside or next to toilets is ideal as one of the critical times to wash hands is after defecating. Leveraging existing work by sanitation entrepreneurs to embed handwashing facilities in their products and include them in their sales is a strong recommendation.

Enhance knowledge of handwashing, and link hand washing to aspirational values for communities, including happy, healthy and smart children. Increase knowledge about handwashing through SBCC. This will trigger behavior change with a main driver of "being smart, healthy and having a bright future".

Strengthen local availability of and demand for soap and alcohol-based hand rub and leverage the existing proliferation of high-proof alcohol at tables during meal times. Handwashing products must be available and viewed as a necessity by all community members. Lower prices will increase the willingness of households to take up the solution.

Menstrual Hygiene

Incentivize local materials suppliers to provide high quality, affordable and women-centric menstrual products for women. Incentives can be financial or technical support or tax exemption to encourage the menstrual product providers to offer better alternatives for women.

Develop an online-to-offline SBCC campaign to provide women and girls, and men and boys with information related to menstrual hygiene. The campaign should inform and create spaces for further discussion and break taboos regarding menstrual hygiene.

Provide social support to women and girls related to menstrual hygiene. This can include options like more affordable sanitary pads, purchasing options, such as buying a single disposable pad, to reduce cost barriers for higher quality products, and supply of reusable material options, especially for poor women, to ensure they can access and afford menstrual materials.

Embed menstrual hygiene management information and products in the design and sales of water and sanitation facilities.

WASH in Schools

Develop a WASH-as-a-service concept that puts skilled maintenance and operation crews in charge of maintaining WASH facilities and troubleshooting issues. This approach can be trialed at schools to ease the burden on schools of operation and maintenance of WASH facilities. It can prevent the most common issues plaguing school WASH facilities and ensure that facilities do not fall into disrepair.

Expand existing SBCC materials and campaigns on menstrual hygiene management (MHM) for implementation in schools.

MHM should be introduced into schools earlier (in grade 3) to ensure information is provided to girls before their first period. SBCC campaigns can provide guidance to teachers and parents on handling this sensitive topic.

Nutrition

Develop a first 1000 days campaign with contextualised key information and tools to guide women, their families and health care providers through pregnancy and provide clear guidelines on exclusive breastfeeding.

Create recipe cards detailing locally adapted, affordable, sample meal plans for pregnant women and infants when exclusive breastfeeding and for complementary meals. This should show meal frequencies and times, composition of meals, and age of introduction, i.e., after 6 months. Meals should be designed around the key staples and types of foods for each EM group, with added ingredients which are affordable, available year-round, and palatable to the local community.

Use public health centres and private clinics at the district and provincial levels as channels for information dissemination. These are key touchpoints that can provide information to mothers, grandmothers and husbands about exclusive breastfeeding and complementary feeding.

Work with local vendors, community groups, mothers and caregivers to develop and promote convenient, easy, and fast-to-cook complementary feeding products which are nutritious and affordable.

Build linkages between nutrition and agricultural or livelihood-focused development initiatives and organisations. This can support local communities to develop a diversity of local, affordable and nutritional sources of food. This is particularly important in communities where most people were growing the same crops (rice and cassava) resulting in a lack of diversity of the household diet, and lower market prices for their goods, due to oversupply.

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