WASH Situation Analysis in Tea Estates of Assam

A study to better understand and strengthen access to critical water supply, sanitation, and hygiene for tea garden communities.

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ACKNOWLEDGEMENTS

We would like to take this opportunity to express our gratitude to the people and organizations that have contributed to the preparation of the WASH Situation Analysis in the Tea Estates of Assam.

The completion of this study wouldn't have been possible without the generous support and encouragement of Dr. Madhulika Jonathan, Chief, UNICEF office for Assam and the North East States. We would like to extend our heartfelt gratitude to Tithal Parmar, WASH Specialist with the UNICEF office for Assam and the North East States, for providing overall supervision and guidance. Additional thanks go to the WASH section, UNICEF India, for their valuable insights.

We are indebted to the teams from Assam Branch India Tea Association (ABITA) and Bharatiya Chaa Parishad (BCP) for their support throughout the study. A special note of appreciation goes to the Director of Tea Tribes Welfare Assam, for their support in liaising and coordinating with the Garden Management in the target districts.

We would like to thank Tea Garden Managers, Welfare Officers, and the communities for allowing us to visit the tea gardens, which helped us in understanding the situation, and for their faith in this exercise. We are also grateful to the PHED officials and WASH consultants for their invaluable contribution to making this study useful and relevant.

Finally, we would like to acknowledge the much-needed expertise that has been brought in by RedR India as a key partner of the project.

UNICEF office for Assam and North East State
January 2022

ACRONYMS

ABITA	Assam Branch of Indian Tea Association
AWC	Anganwadi Centres
BCP	Bharat Chah Parishad
DRR	Disaster Risk Reduction
ETA	Ethical Tea Partnership
FSM	Faecal Sludge Management
FSTP	Faecal Sludge Treatment Plant
GP	Gram Panchayat
HH	Households
HP	Hand Pump
ICO	India Country Office
IRP	Iron Removal Plants
JJM	Jal Jeevan Mission
LPCD	Litres per capita per day
MAM	Moderate Acute Malnutrition
MEL	Monitoring Evaluation and Learning
MGNREGA	Mahatma Gandhi National Rural Employment Guarantee Act
MHM	Menstrual Hygiene Management
PHED	Public health Engineering Department
PLA	Plantation Labour Act 1951
PW	Permanent Workers
RW	Ring Well
RTI	Respiratory Tract Infections
SAM	Severe Acute Malnutrition
SBM (G)	Swachh Bharat Mission (Grameen)
TE	Tea Estates
TISS	Tata Institute of Social Sciences
TW	Tube Well
TTWD	Tea Tribes Welfare Department
WASH	Water Sanitation Hygiene
WQM & S	Water Quality Monitoring and Surveillance

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EXECUTIVE SUMMARY

UNICEF Assam Field Office (AFO) supports 203 Tea Estates in eight districts of Assam viz; Sonitpur, Bishwanath, Udalguri, Dibrugarh, Tinsukia, Charaideo, Sivasagar and Golaghat under the Ethical Tea Partnership (ETA) programme. Water, sanitation and hygiene are significant issues faced by the Tea Tribes community, with many of the tea estates lacking adequate services and facilities. A Water-Sanitation-Hygiene Situation Analysis was conducted by RedR India in collaboration with UNICEF Assam Field Office, TTWD, ABITA and BCP in select Tea Estates in these 8 districts.

KEY OBJECTIVES

Key Objective of the WASH Situation Analysis was to assess functionality of WASH facilities in Schools, AWCs/ Crèche' and Health care facilities in Tea Estates of Assam. Additionally, the exercise aimed at understanding the gender aspects of WASH facilities, collecting information on stakeholders' involvement, capacity and available services related to WASH, assessing Faecal Sludge Management status and associated challenges and risk factors in Tea Estate areas and mapping high-priority services and developing problem statement related to WASH in Tea Estates including disaster resilient WASH services and infrastructures.

APPROACH

Sampling Criteria comprised increased exposure to hydro-meteorological and geophysical hazards; accessibility; size of Tea Estate; ownership and affiliations to different associations. Sample size of 60 Tea Estates was worked out of the total 203. National Level Team from RedR India, assisted by other Officials from UNICEF and TTWD covered 18 Tea estates for a qualitative assessment while the enumerators from ABITA and BCP covered 60 Tea Estates for quantitative data collection.

METHODOLOGY

First phase of qualitative assessment was conducted during 20th - 28th October, 2021 wherein the team visited 6 TEs from Sonitpur cluster while the second phase was undertaken during 22nd- 30th November, 2021 wherein the RedR India team, along with officials from UNICEF and TTWD, visited 12 TEs from Dibrugarh cluster. The Team collected their primary qualitative data (from these 18 TEs) through Key Informant Interviews with TE Managers, Welfare Officers, Doctors and Teachers. Focussed Group Discussions were organised with the Adolescent girls, ASHA and Anganwadi Workers. A detailed Structured Questionnaire was prepared for the Household Survey which was carried out in 1960 households from 60 TEs during 22nd November to 10th December, 2021 by Enumerators from ABITA and BCP.

Out of these about 1769 survey reports were in proper format and could be analysed.

FINDINGS

Water Supply, Sanitation and Hygiene at the Household Levels

- **Water Supply**

Coverage of water supply within the labour lines was seen to be reasonably well, given the adherence to the PLA norms which asked for at least one water point per four Permanent Worker HHs. About 76% of the HHs depend upon Tube well / Hand pumps while 15% have been catered through by the Piped Water Supply from the Tea Estates. While there was no complaint as such about the availability from the labour lines, the team noticed stark inequity in supplies to different sectors within TEs. The executive staff members received 5 times more water per day than the labour lines while the Managers' bungalows were endowed with 25-35 times more water than the labour lines.

About 44% of the respondents gave a rating of 3 for the taste of water and 4 (on a scale of 5) for clarity; 83% of the respondents didn't find any odour in the drinking water. While the harmful contaminants like Fluoride and Nitrates were nominal, Iron (Fe) contamination exceeded the IS and WHO permissible limits of 0.3mg/l by a whooping margin of 50% (0.46 mg/l) to 900 % (2.7mg/l) as seen in different TEs. Microbial contamination does not seem to have been assessed rigorously.

About 63% hand pumps were seen to be having appropriate platforms and aprons. However, 33% HHs were located in such areas where their water points and toilets got flooded or were subject to stagnant water during monsoon.

Good Practice: The HH survey indicated that 85% of HHs consumed boiled water, against 5% of people consuming raw water.

- **Sanitation – Excreta Disposal**

About 90% of the respondents indicated that they had the toilet facilities. Out of the 10% without toilet facilities, around 54% resorted to open defecation. Nearly 44% of the toilets have been constructed by the company, followed by 25% constructed under SBM (G). Majority of (44%) companies provided toilets were connected to single pit and about 7.4% had kuccha structures; some with direct drop pits, thus making half of the toilets in the TEs 'non-sanitary or unimproved'.

About 73% of the respondents shared that they did not have access to running water in the toilets. Inappropriate maintenance of the facilities has left the existing structures in unclean and insanitary condition. Not only the toilets in far flung labour lines but even those closer to the Tea Factory were seen without proper connection to the leach pits or with septic tanks full of sludge and in need of emptying. The septic tanks in only 52% HHs were connected to soak pits.

Nearly 33% of the respondents indicated risk of flooding or stagnant water during monsoon. Respondents from TEs visited in the districts of Dibrugarh and Golaghat were seen to be particularly vulnerable to the risk of flooding.

Manual labour (Sweepers) were employed for 'unloading' of the septic tanks that get full in all the TEs visited, unbeknownst to the fact that manual scavenging is legally banned. Furthermore, the unloaded sludge is dumped right next to the cleaned up septic tank, supposedly in a ditch, creating a risk of contaminating groundwater and eventually, health of the TE Workers population.

It was seen that toilet construction under SBM-G led to increase in coverage of the improved sanitation facilities in the TEs, particularly bringing many of the un-serviced temporary worker households under the sanitation umbrella. However, despite achievement of the targets some glaring lacunae were observed which hinder the functionality of the system and continuity of service.

- **Sanitation – Solid Waste Management**

The HH Survey indicated that only 45% HHs practiced segregation of solid waste at source. Most of the respondent households did not have proper means of waste disposal and had to burn, bury or dispose of the waste in backyard or community trash bins, which in many cases would lay unattended for days.

Good Practices: A few TEs indicated that they organised a competition for cleanliness and conducted a cleanliness drive over a certain week, every year. They also acknowledged and awarded worker households which had clean premises.

- **Sanitation –Drainage (Liquid Waste) Management**

Only 5% of the TEs visited had access to any kind of closed drainage system for grey water. While 94% of the households were connected to open drains about 1% responded that they didn't have access to any kind of waste water drainage, as a result of which the waste water would get stagnated in their surroundings.
Good Practice: In some TEs the grey water from the tea factories was let into specially made filtration chambers for reducing the BOD and COD.

- **Hygiene**

Perception of disease risks was quite high, with 90% of the HHs indicating awareness related to water and excreta related diseases. The household survey confirmed that 89% of HHs used water and soap for handwashing. Majority ofthe respondents practiced handwashing at all the 6 critical times. Despite increase in awareness regarding the communicable diseases, children's faecal matter was seen to be disposed in an unhygienic manner. Water handling at HH level was seen to be deficient.

Good Practice: 94% of female respondents have appropriate material for menstrual hygiene management. 79% also undertake appropriate disposal of used material. Regular dialogue on MHM with the girls seems to have helped in building informed awareness regarding the subject considered to be a taboo.

Water Supply, Sanitation and Hygiene in Garden Areas

Without any provision of tube wells or hand pumps within the plantation areas, the workers tend to carry their own water bottles to field work. The management resorts to providing tractor towed small water tanks for the benefit of workers, twice during the day. However, not all of these tanks are seen to be in a good shape and neither do they have appropriate covers nor functional taps. Despite a clear guideline in the PLA regarding the provision of latrines and urinals in the garden, none of the TEs have made the facilities available for the workers. These lacunae have increased UTI and cases of bladder / kidney stones amongst women workers, as agreed to by some TEs. Adolescent girls and women workers also find it difficult to manage menstrual hygiene due to lack of facility and privacy within the plantation areas.

Good Practice: A couple of TEs indicated provision of mobile toilet vans for women, within the plantation areas, implemented a few years ago but discontinued since. In one TE it was observed that the tanks had proper cover and were supplemented with a long handle ladle mug for drawing water, to avoid secondary contamination.

WASH in Institutions

- **Primary Schools**

The TE schools adhered partly to the norms specified by the National School Sanitation Manual- with a ratio of 78 students to a toilet. Thirty six out of the 66 schools seem to have gender- desegregated sanitation facilities. Water points however seem to be inadequate given the ratio of 63 students per water point, as against the specified 20. Water supply provisions in schools are not up to the safety standards though seemingly adequate. The adequacy of water or sanitation facilities also has a factor of the COVID-19 led staggered classes, which means that lesser number of students per day within the school premises avail the facilities. Only two of the 16 schools visited had a group hand washing facility in the premises.

Location of WASH facilities was largely seen to be done in an improper manner. Some schools also had a risk of flooding in certain periods of every year but the structures built were not resilient enough (with raised platforms) despite the fact that the schools were also used as evacuation centers when the labour lines get flooded.

Good Practice: Schools in one of the TEs visited not only had a group handwashing facility but also sported a roof top rainwater harvesting tank. Another school had a functional running water facility for the toilets (separately built for the teachers, boys and girls), an additional washing area and a separate group handwashing facility

- **Anganwadis**

Though 212 AWCs exist in the 60 TEs, benefitting 9186 children, only 41% of these have any WASH facilities. Many of the essential activities that need to be taken up at the AWCs were skipped or delayed for lack of funds. These included not only the supplementary nutrition for children under five years of age but also health check-ups for expectant and nursing mothers and adolescent girls. Apparently, the TE management in most of the visited locations seem to have overlooked the fact that the Anganwadis are the focal points for implementation of all health, nutrition and early learning initiatives.

- **Health Facilities**

Nearly half of the health facilities functioned as 'Garden Hospitals' while a third (35%) functioned merely as Dispensaries, owing to a lesser number of households in the TEs or presence of government health centres in the vicinity. All the Garden Hospitals had running water facilities in their campus with the water sourced from the Deep Tube Well. Wards had separate toilets for men and women in adequate numbers along with the running water provision for ablution and handwashing facilities. However, despite the provisions, most of the toilets in many of the Hospitals were not kept clean. The distance between the septic tanks and the ground water source (where the tube well in the campus was the water source) was in many cases seen to be lesser than the prescribed 10 m , creating a risk of contamination.

Good Practice: Segregation of waste was done at specific hospitals using colour coded bins, with appropriate covers and efforts seem to have been made for safe and hygienic disposal.

Allied and Cross-Cutting Thematic

- **Health**

The proportion of gastrointestinal (diarrhoeal) diseases to other non-communicable diseases (including hypertension, diabetes) was about 1:11. A few senior Doctors candidly mentioned that the diarrhoeal disease cases as well as dysentery are not as alarming as it used to be, a decade ago. Situation has changed since, with increased access to improved water and sanitation facilities and reasonably enhanced awareness towards personal hygiene practices.

Poor hygiene practices and unimproved sanitation, particularly in the garden (plantation) contributed to the risk of Helminthiasis. Tuberculosis is another disease prevalent amongst both male and female workers in many of the TEs. The Doctors elaborated that excessive alcohol consumption, smoking tobacco, lack of proper ventilation in dwelling houses, indoor air pollution due to burning of brush wood contribute to the TB burden. Poor housing, unimproved sanitation also contributed to the prevalence of Anaemia within the women labour population

Major causes of morbidity amongst children were diarrhoea (26.6%), Acute Respiratory Infections (24.5%) and Fever (16.7%).

- **Nutrition**

High prevalence of undernutrition was observed among the children in the TE communities. Almost all the gardens had reported at least two cases of SAM in the past 1 year. High Intake of salt, poor intake of nutritional food and lack of awareness among the women on what constitutes a nutritious meal are some of the factors contributing to anaemia, besides long arduous working hours in the field which makes it difficult for women to look after their health and nutrition

- **Shelter**

Household survey indicated that 85% of the respondents resided in the company provided residential quarters while 15% reside in self-owned houses. It could be easily assumed that all those who lived in the self-owned houses would be temporary worker households. Around 45.2% of the total respondents resided in pucca quarters with extension. Poor ventilation is a concern across all the houses in labour lines. Constructed decades ago, most of these houses need repairs and regular maintenance

- **Disaster Risk Reduction**

Limited efforts for mitigating risks from disasters like earthquakes, floods or acute water scarcity seem to have been undertaken over the years in these TEs, leaving particularly the labour line households at the mercy of nature. Neither structural nor non-structural risk reduction had been perceived as an essential component of welfare within the many amendments to PLA 1951 and therefore seen nowhere on the list of actionable tasks for the TE management.

RECOMMENDATIONS

Provision of WASH services should not be looked upon in isolation but in integration with allied thematic sectors like Nutrition, Health, Education and Shelter to ensure Convergence. It would be pertinent to explore ways of utilizing public and private funds in a convergent and integrated manner with multi-sectoral linkages. An elaborate mapping of TE-wise access to WASH facilities (for the labour households) may be undertaken to ascertain the coverage of services, as a starting point.

Continuity of WASH services could be achieved through a blend of technological, institutional, financial, social and environmental sustainability. A multi-pronged, multi-stakeholder systemic approach therefore would be required to usher in, support and sustain the process of continuity.

Water Governance institutions should be constituted at TE level and trained so as to effectively build the institutional capacity for water management. Water quality may be monitored regularly and rigorously and the surveillance results from the water points at labour lines may be uploaded on the PHED database, analysed and addressed to ensure drinking water security at household level. Community orientation sessions should include discourses on household water storage and treatment along with advantages and disadvantages of on-site sludge disposal systems like septic tanks and leach pits, to ensure Water Safety.

A policy advocacy effort to ensure eradication of manual scavenging from the Tea Estates in Assam may be undertaken, coupled with appropriate technological practices that help creating evidence base for stakeholders at state, national and international certification level, as required. Tea Estate management could lead the FSM challenge not only within the TE areas but also within the neighbouring Gram Panchayats by promoting dignified collection, safer conveyance and hygienic disposal of human waste. The FSM roll-out should be done on a case-by-case basis, in a phased manner, with support from stakeholders like PHED, ABITA/BCP and UNICEF.

Efforts for adaptation to extreme weather should not only consider flood resilience but also need to address the possible depletion in ground water table and reduced access to reliable and adequate water supply for the vulnerable worker populations. Structural audit could be done for the household structures, those provided by the TE management as part of the PLA 1951 or constructed by the households themselves in context of multi-hazard resilience covering earthquakes, floods and high wind speeds.

In Conclusion, taking up the collaborative WASH upgradation interventions in select TEs from different demographic, geographic and hazard zones as well as ownership criterion on a pilot stage will encourage other TEs to pace up and realise the goal.

Defining a higher level of WASH service delivery is the need of hour, prioritising the poorest and the most vulnerable among the Tea Tribes community of Assam.

INTRODUCTION

A cup of tea…consumed strong or light, with milk or without, spice flavoured or not is an essential and crucial element of mornings in most of the Indian homes. This storehouse of nutrients which serves as a health booster comes mainly from the tea estates of Assam, supported by the rich loamy soils, low altitudes and ample, tropical rains.

The pre-COVID 19 statistics indicate that the State of Assam produces nearly 52% of India's total tea production, producing more than 700 million kgs of tea annually. The Tea Industry plays an equally crucial role in the economic well-being of the state of Assam. Since its inception as a colonial industrial venture, the Tea Industry has passed through different phases of development contributing heavily towards the social and economic well- being of its workforce. Reports estimate the Tea Estate worker population to be around 6.5 million, (about 20% of population of Assam) with a considerable percentage living in poorly maintained quarters provided by the 800-odd tea estates across Assam. They are among the most backward and vulnerable communities in the state earning just about Rs.207/day, with a few other benefits and accommodation.

BACKGROUND

UNICEF Assam Field Office supports 203 Tea Estates in eight districts of Assam viz; Sonitpur, Bishwanath, Udalguri, Dibrugarh, Tinsukia, Charaideo, Sivasagar and Golaghat under the Ethical Tea Partnership (ETA)[1] programme.

Water, sanitation and hygiene are significant issues faced by the Tea Tribes community living in tea estates, with many of the tea estates still lacking adequate sanitation facilities. In Spite of the legal provisions many households still do not have access to sanitary toilets in some of the tea gardens.

A study conducted by Tata Institute of Social Sciences[2], Guwahati, across 50 Tea

Figure 1 Districts under Tea Cultivation in Assam

Estates during 2019 noted that most of the Tea Estates did not have toilets inside the gardens, households in the labour lines used insanitary toilets which were a decade old, making small improvements on their own. Hence, open defecation was rampant in the labour lines as well as inside the estates. For those having toilets, the faecal sludge was emptied into drains and nullahs, which ended up into local lands and ponds and had the potential to pollute the groundwater.

1: The ETP Programme is an agreement between UNICEF & Ethical Tea Partnership to uphold child protection issues in Tea gardens across 8 districts in Assam besides addressing a broader range issue around health, nutrition, WASH, education and business practice change which would contribute in the realization of the rights of children, adolescent and women.

2: Decent Work for Tea Plantation Workers in Assam, TISS, 2019

However, the Swachh Bharat Mission- Grameen (SBM-G) program being implemented by the PHED, Government of Assam, made good strides to realise the Hon'ble Prime Minister's vision (Chief Minister's vision) of Open Defecation Free Assam, over last few years reaching out to 25 lakh families including those within the Tea Estates. Recent reports[3] have indicated a slight uptick in the construction of toilet facilities in the Tea Estates of the state, with many gardens in Dibrugarh district awarded by the Govt. of Assam for compliance with the SBM-G.

UNICEF Assam in collaboration with RedR India, TTWD, ABITA and BCP commissioned a study on the Water-Sanitation-Hygiene Situation Analysis within a select Tea Estates in these 8 districts.

This study is expected to prepare the ground for the second phase of sanitation programming in India, which aims to realize the safe management of solid and liquid waste and emphasize on the use and maintenance of toilet facilities, further extending them to those who don't have access to it. Additionally, the results of study will also contribute towards smooth and participatory roll-out of the ambitious Jal Jeevan Mission programme, ensuring convergence within the Tea Estates and the State Government of Assam. Further, UNICEF is committed to ensure sustainability of ODF plus in the State which also includes Tea Gardens with focus on equity through its technical support to Public Health Engineering Department and other line departments and District Administrations through State-wide approach, strengthening monitoring & evaluation.

PURPOSE AND OBJECTIVES

The purpose of this assignment was to conduct a situation analysis of Water, Sanitation and Hygiene of 203 tea gardens under Ethical Tea Partnership Programme. The assignment was mandated to assess WASH facilities under the following broad indicators:

- Functionality of WASH facilities in both household and institutional set up (Schools, AWCs/creche' and Health care facilities).
- Faecal Sludge Management status and associated challenges and risk factors in tea garden areas to develop situational analysis of WASH in tea garden
- Availability and accessibility to disaster resilient WASH services and infrastructures.

Key objectives of the WASH Situation Analysis were as follows:

- To assess functionality of WASH facilities in Schools, AWCs/ Creche and Health care facilities in Tea Estates of Assam.
- To understand the gender aspects of WASH facilities by delving into the role of women and girls in decision making in planning, designing and management of WASH facilities and skills of women and girls in operation and maintenance of WASH facilities.
- To collect information on stakeholders' involvement, capacity and available services related to WASH.
- To assess Faecal Sludge Management status and associated challenges and risk factors in Tea Estate areas
- To map high-priority services and develop problem statements related to WASH in Tea Estates including disaster resilient WASH services and infrastructures.

APPROACH ADOPTED FOR THE ASSIGNMENT

Desk review was conducted to understand the context of the tea Estates in the state, WASH priorities and trends and identify gaps in the existing set-up by collecting, organizing and synthesizing available information.

To set the background at the macro level, the analysis was drawn from different secondary sources such as Assam Branch of Indian Tea Association (ABITA), Bharat Chah Parishad (BCP), UNICEF-ETP program.

Sampling Criteria was decided keeping in mind that the analysis will be conducted in select few of the 203 TEs within 8 districts. The criteria ensured that the selected Tea Estates will be those with:

3: https://www.sentinelassam.com/news/singlijan-tea-estate-becomes-first-open-defecation-free-tea-estate/
https://www.sentinelassam.com/north-east-india-news/assam-news/tireless-efforts-make-swachh-bharat-mission-a-success-in-harishpur-tea-garden/

- Increased exposure to hydro-meteorological and geophysical hazards;
- Mixed accessibility, ranging from easy to hard-to-reach areas.
- Sizes ranging from small to large with a corresponding number / range of permanent worker households;
- Diverse socio-economic and demographic characteristics;
- Affiliations to associations like ABITA and BCP
- Ownership variation

It was informed that an end-line survey was being conducted by UNICEF through the affiliate associations within the TEs. Hence to avoid the survey fatigue amongst the facilitators and the TE labour population, it was decided to avoid those TEs and conduct the WASH situation analysis in only such TEs where the end-line survey was not conducted.

Sampling Framework, with a Confidence Level of 99% and Confidence Interval of 15 provided a sample size of 60[4] Tea Estates out of the total 203. It was decided that the National Level Team from RedR India along with officials from UNICEF and TTWD will be covering 18 Tea estates (2 per district) for a qualitative assessment while the enumerators from ABITA and BCP will be covering all the 60 Tea Estates for quantitative data collection.

- 40 (forty) out of the 60 (sixty) TEs surveyed were ABITA associated while the other 20 (twenty) were under BCP.
- While 22 of the 40 ABITA TEs had received Rain Forest Alliance certification, none of the BCP TEs surveyed had obtained it.
- As per the household classification, 30 TEs surveyed (50%) had less than 500 HHs; 21 TEs (35%) had households between 500-1000 whereas 9 TEs (15%) were large in size having more than 1000 HHs. Hatikhola was the smallest TE surveyed with 24 HHs while North Balijan was the largest, with 1444 HHs.
- Twelve out of 60 TEs surveyed (20%) were remotely located.
- All the TEs were owned by different corporate houses. Messamara was the only Government owned ie.,Assam Tea Corporation Limited (ATCL) TE which was visited by RedR Team but household survey could not be conducted there for lack of logistics support.

Selection and Orientation of Enumerators was done in consultation with the associations ABITA and BCP. The Enumerators were selected on the basis of on rapport with the TE Management, fluency in Assamese and ability to convey the questions to the labour households in simple language. Before embarking upon the data collection exercise, the enumerators were provided with 1-day orientation training to sensitize them on the modalities for collecting primary data from the respondents. Coordination and Collaboration with the Tea Estate Management was facilitated by UNICEF through Field Coordinators from ABITA and BCP.

METHODOLOGY

The study adopted a mixed methodology of qualitative and quantitative research. While the qualitative research was undertaken by the RedR India Team during the field visits, the quantitative part was obtained through Household Surveys in the Labour Lines, conducted by the Field Facilitators / Enumerators from BCP and ABITA. These field teams were coordinated by the WASH Coordinators of BCP and ABITA, in consultation with the RedR India Project Coordinator for clarifications and midcourse corrections if any.

A broad Evaluation Framework was prepared for the WASH Situation Analysis based on the objectives and borrowing from UNICEF and other globally agreed WASH evaluation principles and frameworks. It helped in designing the questionnaires and checklists for the process.

Table 1 Evaluation Framework

Adequacy	Are the WASH facilities and services adequate?
Appro-priateness	Are the WASH facilities and services appropriat in terms of quality and utility?
Inclusion	Do the WASH facilities and services adhere to equity and respect inclusion?
Resilience	Are the facilities and services resilient to hazard risks?
Continuity	Do the users have capacity and resources to ensure continuity of services?
Convergence	Is there adequate coordination among stakeholders to ensure convergence?

4: Refer Annexure 1 for the List of TEs Surveyed

FIELD VISITS TO SELECTED TEA ESTATES

Given the geographical coverage of the TEs, the festive season and related availability of the authorities for consultation and facilitators for the field work, it was decided that the RedR India team will cover TEs in two phases.

Accordingly, the first phase of qualitative assessment was conducted during 20th-28th October 2021 wherein the team visited 6 TEs from Sonitpur and Udalguri district. A meeting was held with the Executive Engineer, Public Health Engineering Department, Tezpur on 21st October to explain the purpose and process for the TE assessment. The Survey Tool Kits designed for the purpose were field tested during this visit.

Observations and inferences from the pilot phase of field visits were shared with the Officials of UNICEF Assam Field Office, State Coordinator – WASH in Tea Gardens Program (TTWD) as well as shared with the Monitoring, Evaluation and Learning Team from UNICEF India Country Office, New Delhi. The toolkit alongwith the initial finding was also presented to the ABITA facilitators during their training program. Based on the feedback from these varied quarters, the tool kit was revised and translated into Assamese for further use by the Enumerators. It was also decided to bring in variation in the TE ownership over the next phase to understand the diversities of practices and also within the affiliation with associations.

Second phase of the qualitative assessment was undertaken during 22nd-30th November, wherein the RedR India team visited 12 TEs from Dibrugarh, Tinsukia, Charaideo, Sivasagar and Golaghat districts. These TEs were also selected on the basis of their affiliation with Rainforest Alliance, an international NGO engaged in 'sustainability transformation' through certification of rural agricultural products (including Tea). An additional TE, managed by the ATCL was also visited on 30th November 2021 to understand the differences if any in policies and practices (impacting the tea workers) adopted by the TE management and the reach of the government schemes for water supply and sanitation.

Date	District	Tea Estate	Company	Association
21st October 2021	Sonitpur	Rupajuli TE	Mcleod Russel	ABITA
		Gogra TE	Apeejay	ABITA
22nd October 2021	Udalguri	Panery TE	Mcleod Russel	ABITA
		Atreekhat TE	Mcleod Russel	ABITA
25th October 2021	Udalguri	Nonaipara TE	Goodriche	ABITA
23rd November 2021	Tinsukia	North Balijan	Warren Tea Ltd	ABITA
		Rungagora TE	Assam Company Ltd	ABITA
24th November 2021	Tinsukia	Prabhat	Proprietor Garden	BCP
		Sankar	Proprietor Garden	BCP
25th November 2021	Dibrugarh	Durgapur	Proprietor Garden	BCP
		Phukanbari	Proprietor Garden	BCP
26th November 2021	Dibrugarh	Korangani	Proprietor Garden	BCP
		Kenduguri	Luxmi Tea Corporation	ABITA
27th November 2021	Charaideo	Khagorijan	Proprietor Garden	BCP
	Shivsagar	Thowra	James Warren Tea Ltd.	ABITA
29th November 2021	Golaghat	Rungagora	Jorehaut Group	ABITA
		Difloo	Amalgamated Plantations	ABITA
30th November 2021	Golaghat	Messamara	Assam Tea Corporation Ltd.	

The RedR India Team, comprising the national level WASH Expert and Project Coordinator was accompanied by the UNICEF Consultant for WASH in Institutions, the State Coordinator – WASH in Tea Gardens Programme-cum-UNICEF Consultant based at the Directorate of Tea Tribes Welfare, Assam and the WASH Coordinators from ABITA and BCP.

TOOLS FOR DATA COLLECTION

The Team collected their primary qualitative data through **Key Informant Interviews** with TE Managers, Welfare Officers, Doctors and Teachers. **Focussed Group Discussions** were organised with the Adolescent girls, ASHA and Anganwadi Workers. Women Worker groups were particularly contacted to understand their daily schedules and the WASH issues they experience while at work or homes. WASH facilities in institutions like Hospitals, Schools and Anganwadis were also reviewed. The Team used **Key Informant Interview Questionnaires**[5] and **Focussed Group Discussion Guide**[6] for the purpose. These tools not only supported the discussions but also helped in understanding the WASH related knowledge, attitude and practice deficits at different levels of respondents.

A detailed **Structured Questionnaire**[7] was developed for the Enumerators to be used during the Household Survey. The purpose was to understand the status of WASH facilities and services and ascertain the veracity of claims made by the Key Informants. It was been translated into Assamese for ease of communication with the respondents. The tool was also transferred to KOBO platform, for uniformity of enumeration and analysis. The Enumerators were trained on KOBO application, using smartphones. A detailed WASH Situation Survey was carried out in 1960[8] households from 60 TEs during 22nd November to 10th December, 2021 by Enumerators from ABITA and BCP. Out of these about 1769 survey reports were in proper format and could be analysed.

The detailed report of the Observations and Inferences from the field visits leading towards priority Recommendations is presented herewith. These findings are substantiated with the help of the data collected from the Household Surveys and the Good Practice cases identified during discussions with different stakeholders.

Photo 1: Team meeting with TE Manager and Welfare Officer, Messamara Tea Estate

5: Refer Annexure 2 for Structured Interview Questionnaires – Welfare Officer, Doctor, Teacher
6: Refer Annexure 3 for FGD Guide – Anganwadi Workers, Adolescent Girls, Women Tea Plantation Workers
7: Refer Annexure 4 for Household Survey Questionnaire
8: Derived on random sampling basis. Details of the TEs could be found in Annexure 2

FINDINGS

DEMOGRAPHICS

A total of 1769 respondents between the age group of 16 to 88 years were surveyed, covering 59 tea estates across 8 districts in Assam. The demographic constitution of the respondents is reflected in the table. A majority of the respondents belonged to the age group of 31-40 years, while those below 20 years constituted a meagre share. It must be highlighted here that male constitutes a sizeable proportion of the respondents (57%) while female constitute only 43% of the respondents.

Figure 2 Age Profile of Respondents

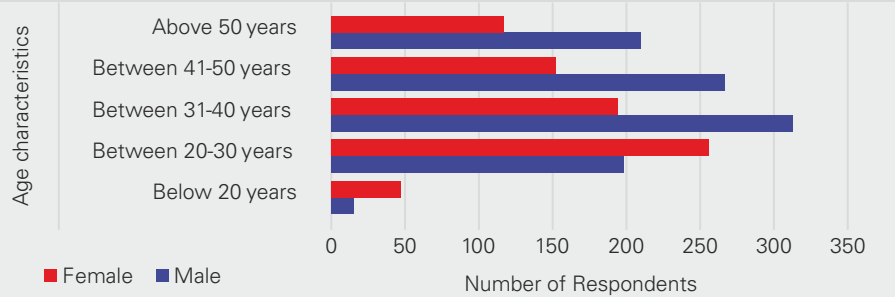
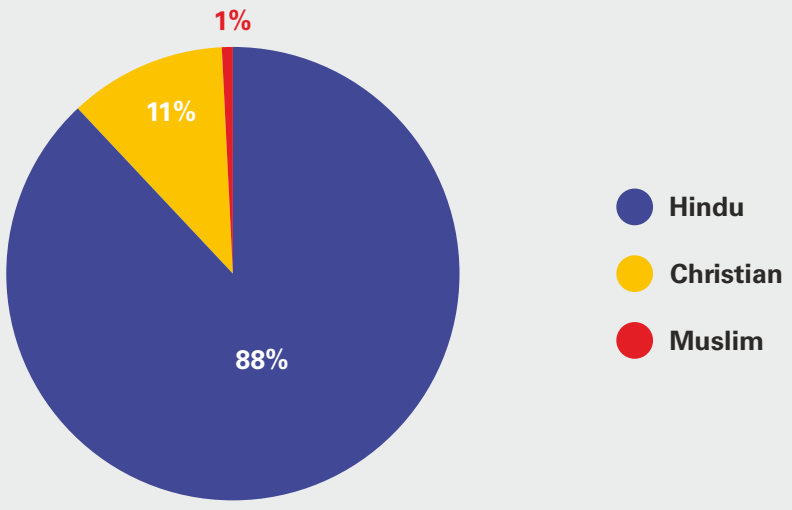


Table 3 Age-wise Gender Profile of Respondents

Age	Gender Profile		Total Respondents
	Male	Female	
Below 20 years	15	47	62
Between 20-30 years	198	256	454
Between 31-40 years	313	194	507
Between 41-50 years	267	152	419
Above 50 years	210	117	327
Total	1003	766	1769

This apart, Head of the Household constituted an overwhelming share of the respondents' group with 64% of the respondents identifying themselves as the Head of the Households

Figure 3 Religious Profile of Respondents



Religion- wise, Hindus constitute relatively higher share (88%) of the respondents, followed by Christians (11%) and a negligible share of Muslims (1%). Majority of the workers used 'Sadri' as their language of communication with each other. Assamese was used as an official language of communication, which they were also fluent in. Observations during discussions and interviews indicated towards a prevalence of early marriage among youth. The girls in the workers' families would typically marry between the age of 16 to 20. However, considering the lack of adequate supporting data, this custom could not be termed as "child marriage".

WASH SITUATION AT HOUSEHOLDS LEVEL

WATER SUPPLY

As per the Plantation Labour Act (1951) the Tea Companies are mandated to provide water only to the Permanent Labour households, thus leaving the Temporary (Faltu) Labour out of the purview of assured, reliable water supplies.

Most of the Temporary Labour HHs depend upon the Permanent Labour for their share of water supplies. The RedR India Team assessed Water Supply situation for determinants of coverage, availability, quality, O & M and structural risk mitigation.

> ***DRINKING WATER:*** *IN EVERY PLANTATION EFFECTIVE ARRANGEMENTS SHALL BE MADE BY THE EMPLOYER TO PROVIDE AND OBTAIN AT CONVENIENT PLACES IN THE PLANTATION A SUFFICIENT SUPPLY OF WHOLESALE DRINKING WATER FOR ALL WORKERS*
>
> *Plantation Labour Act, 1951*

Coverage

Coverage of water supply within the Labour lines was seen to be reasonably well, given the adherence to the PLA norms which asked for at least one water point per four Permanent Worker HHs. This was in the form Ring wells in the Tezpur & Udalguri region or shallow Tube Wells with hand pumps near the Brahmaputra banks or pipe line connected stand posts. This provision had ensured that the households had not to tread a long distance for fetching water.

- About 90% of the households (all permanent worker) interviewed indicated that the distance of the water source from their house was within 10 m.
- Out of the rest, about 8% HHs had to cover a distance of up to 100 m while remaining 2% (mostly temporary worker) had to go beyond.
- Given the proximity of water source, an overwhelming 93% of the households spent less than 10 minutes in fetching water, presenting a positive picture in terms of access to water source.

Over the years, with growing number of family members and splinter/ satellite families the number of HHs within labour colonies and the occupants has grown. Efforts have been made mainly by the HHs to resolve the inadequacy through self- driven efforts particularly in the lower and middle regions, where every household has a Tube Well fitted either with a hand pump or a motor pump, now.

Table 4 Proportion of Households using different sources of water supply

Hand Pump (Tube Well)	76%
Ring Well	4 %
PWS Tea Estate	15%
PWS Govt. of Assam	3%
Other	2%

The management from some TEs (e.g. Nonaipara in Udalguri district) , in compliance with the PLA 1951 had also made arrangements for piped water supplies in the labour lines along with the staff colonies and Manager's bungalows.

However, the system, including the distribution lines, ground water storages and treatment units was seen to be in need of retrofitting. In some TEs the piped water supplies from the Swajaldhara mission had also reached the households but not necessarily functional. The JJM has a provision for retrofitting the existing Swajaldhara mains and distribution lines, Storage reservoirs and Treatment plants. In all the TEs visited measures have also been initiated for rolling out the new Jal Jeevan Mission which aims to provide treated tap water to every household.

Photo 2 Ring well with an Apron

Photo 3 Tube Well - Hand pump with an Apron

Photo 5 Jal Jeevan Mission Stand post

Photo 4 Swajaldhara ESR& Treatment Plant, retrofitted for Jal Jeevan Mission

Water Availability

The quantity of water where the source is Ring wells or hand pumps is seemingly more than adequate for a household and readily available whenever required. However, the quantity differs in case of piped water supplies, ranging from as low as 20 liters per capita per day to more than 50lpcd within the Labour lines...which is still below the national indicator for Rural Water Supply (55lpcd).

This water is supplied in multiple segments over a day, with schedules designed to suit the working hours of Tea Garden Workers. Majority of respondents perceived that the water available for both drinking and domestic purpose was adequate for the household and the tea estate.

Figure 4 Drinking Water Adequacy Perception

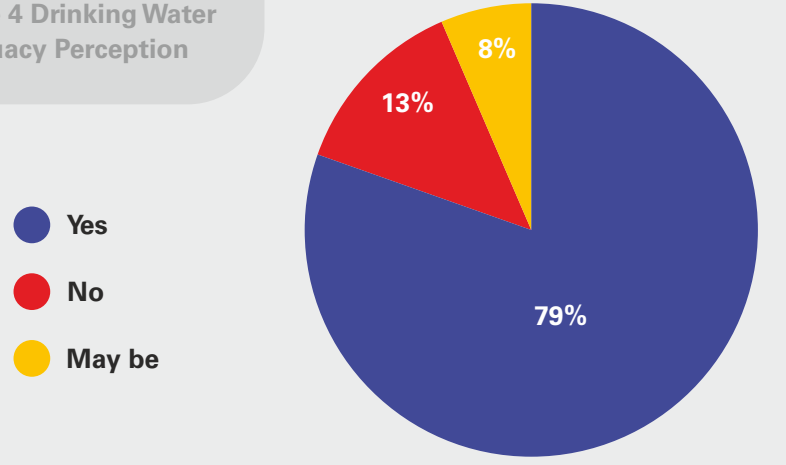


Table 5 Inequity in Water Availability

Residence Type	LPD Water Availability	
	Paneeri	Khagorijan
Labour Lines	100	150
Staff Quarters	500	800
Managers' Bungalows	2500	5000

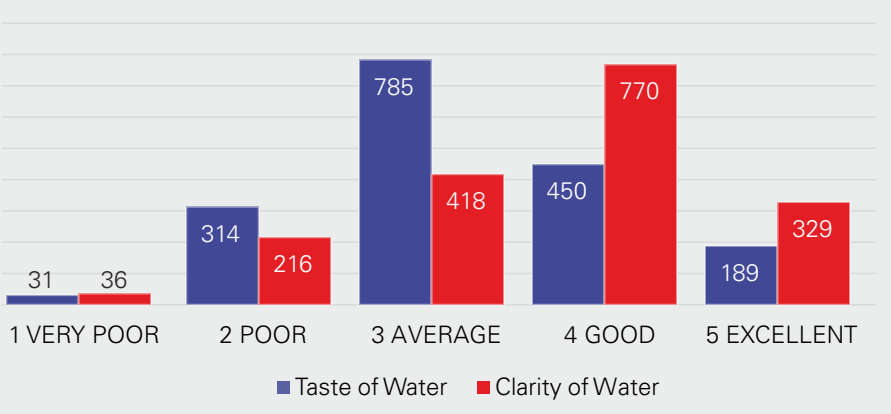
While there was no complaint as such about the availability from the labour lines, the team noticed stark inequity in supplies to different sectors within TEs.

As indicated by Welfare Officers from two of the TEs in different regions visited, the executive staff members received 5 times more water per day than the labour lines while the Managers' bungalows were endowed with 25-35 times more water than the labour lines.

Water Quality

While assessing the perception of the households about the quality of water on three key criterion of taste, odour and colour or clarity, majority of the households gave a positive perception about the quality of drinking water. About 44% gave a rating of 3 (Average) for the taste of water and 4 (Good) for clarity on a scale of 1 to 5 where 1 stood for very poor and 5 for excellent; 83% of the respondents didn't find any odour in the drinking water.

Figure 5 Water Quality - Taste and Clarity



Regardless of the availability or mode of supply, the source of water in all the TEs visited is essentially ground water. Only two TEs indicated lifting water from nearby rivers for drinking water supply. Given the morphology and inherent endemicity of the region as well as the use of pesticides and lack of hygienic disposal of human waste, the ground water is prone to contamination from Iron, Fluoride, Nitrate and Arsenic. The prime contaminant however is Iron (Fe) which exceeds the IS and WHO permissible limits of 0.3mg/l by a whooping margin of 50% (0.46 mg/l) to 900 % (2.7mg/l) as seen in different TEs.

Even though they wait for action from the TE managements, some worker families use home-made sand filters for iron removal. Water pumped from the tube well is passed through the layers of pebbles, charcoal and sand within a plastic container. Filtered water is collected in a bucket and then used. However, the impact of excessive iron content in water is still in many cases visible. Many HHs complained not only about the reddish coat of iron in the washing area but also about the hair-fall and skin diseases as a result of contamination.

Photo 6 A girl demonstrating home-made iron removal plant

Taking the iron contamination into consideration, the erstwhile Swajal program had constructed aeration filtration plants which helped iron removal through oxidation at atmospheric pressure, with chlorine used as a catalyst. The new JJM water supply schemes also comprise Iron Removal Plants, but with pressurised suction filters.

Other harmful contaminants like Fluoride were present in nominal quantities (up to 20% or a fifth of the permissible value of 1.5mg/l) and Nitrates (up to 2% of the permissible value of 45mg/l) are much below the limit and Arsenic was not found at all in the water testing reports of the TEs visited.

Microbial contamination however, does not seem to have been assessed rigorously. The team was informed about & shown the reports of water quality testing which was done twice a year, before and after the monsoons. The samples were tested at the district PHED laboratories as well as the Tezpur laboratory responsible for the TEs' water quality. The reports appeared to be strikingly similar in terms of the results, from places as far away as Sonitpur and Tinsukia. This creates a shroud on the testing procedures and capacities at the government PH laboratories. For example, almost every report indicates the Residual Chlorine result as 0.1mg/l, when either it shouldn't have been recorded (as it's not an inherent parameter but a result of application of a treatment compound like bleaching powder) or if found, should have been in the range of 0.2-0.5mg/l which is allowable. Given that many of the ground water sources in the labour lines are near to the septic tanks or twin leach pits of the Management provided or SBM toilets, there is often a high risk of contamination of ground water source. This could only be detected if the water quality is monitored regularly and rigorously.

Residents of Staff quarters in one of the TEs also complained about oil stains in water collected through tube wells in the residential premises.

Generally, the water quality testing and monitoring were considered to be Health Assistant's responsibility while the water treatment – adding bleaching powder in a 'certain' quantity to the tube wells, ring wells and storage tanks was the duty of a Line Mistry (plumber).

Structural Risk Mitigation

While maintaining the distance between the ground water source and a septic tank in many cases was seemingly impossible, given the layout of the labour lines and the population density, there was always a chance to mitigate the contamination risk by providing platforms with water seals and aprons with a drainage leading to soak pits for the hand pumps as well as ring Wells. However only a handful TEs have rigorously ensured this measure at every HH level. During the HH survey about 63% hand pumps were seen to be having appropriate platforms and aprons.

Photo 7 Hand pump in insanitary condition, potential risk of groundwater contamination

Similarly, the flooding risk in some of the TEs (e.g. Rungagora in Tinsukia) which have seen stagnation of water over longer periods, demands the raising of the water sources above the flood level to ensure resilience. During the HH survey it was observed that 33% HHs were located in such areas where their water points and toilets got flooded or were subject to stagnant water during monsoon. At such TEs where the impact is low but limited stagnation is inevitable, the hand pumps were not seen to be securely fixed to the platform slabs. The hand pump location was seen to be improper (in an area prone to water stagnation) and the platform slab construction lacked resilience.

Distribution lines in such TEs which have piped water supplies were not buried a meter deep as required and not seen to be flood resilient, neither free from risk of damages by trampling or tampering. Retrofitting was allowed as part of the new JJM water supply schemes. However, it wasn't taken up in TEs where the need was the most.

Some of the TEs (in Sonitpur) indicated earthquake risk, having experienced the latest shocks in April 2021. The incident damaged the Elevated Storage Reservoir in the Staff Quarters. Since then the Staff have been left without running and treated piped water supplies and are resorting to groundwater sources.

Operation and Maintenance

In those TEs which had the piped water supplies, moderate efforts were seen to be made to monitor the pipeline damages or pilferages. Most of the stand posts were seen without taps, with water flowing freely whenever supplied creating stagnant cesspools or overflowing, rudimentary drains.

The TE management did mention about having ' Line Mistry' (Plumber) to take care of maintenance but these personnel seemed to be overworked, with responsibilities of operating the pumps, monitoring the damages, repairing and restoring water supplies. The management blamed the callous attitude of the user's for losses in water supplies (since it was free of cost).

Photo 8 Broken taps, damaged standposts

SANITATION

Excreta Disposal

As per the PLA, the TE Managements are mandated to provide toilets only to Permanent Worker Households. Accordingly, the toilets are being provided to the households in phased manner, since the early days. With the growing population within labour colonies, the inadequacy of facilities has crept in.

CONSERVANCY: *ALL LATRINES AND URINALS SHALL BE MAINTAINED IN A CLEAN AND SANITARY CONDITION.*

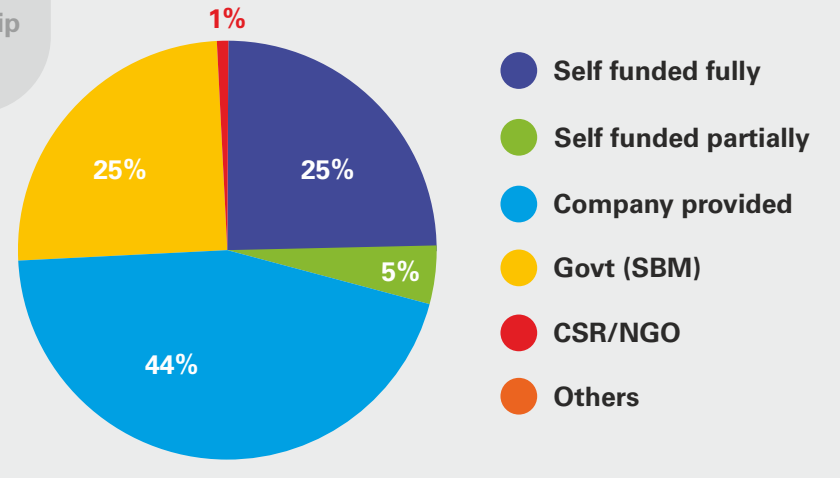
Plantation Labour Act, 1951

Different stakeholders were seen to have contributed towards the sanitation provision in the TEs. About 44% of the toilets have been constructed by the company, followed by 25% constructed under SBM (G) Scheme, 25% fully self-funded, 5% partially self-funded and 1% constructed by NGOs and CSRs like OIL and ONGC.

About 90% of the respondents indicated that they had the toilet facilities. Observations from the field and local experience indicated that the toilets, though available were not sufficient for the families that generally had more than 8 members.

Out of the 10% without toilet facilities, around 54% resorted to open defecation while 45% used neighbour's facilities and 1% used the public toilets constructed by NGOs.

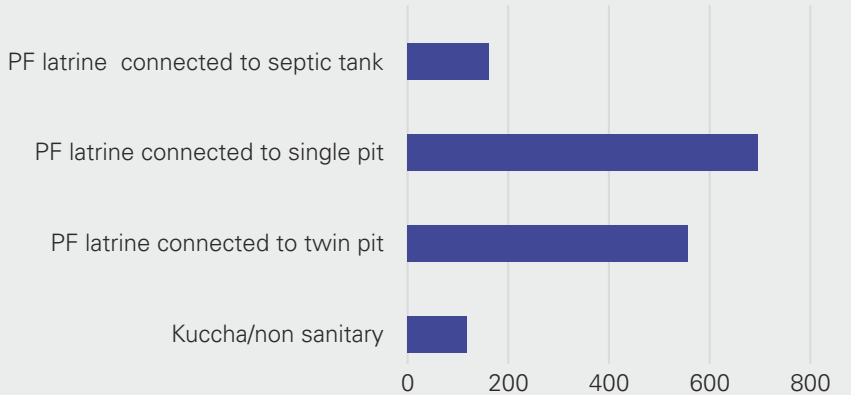
Figure 6 Ownership Nature of Toilets



A degree of variation was observed in the type of toilets available in the households with about 35% having pour flush latrines connected to twin leach pits as being promoted under the SBM-,G while 10.2% of the households have pour flush latrines connected to septic tank. Majority of (44%) having pour flush latrines were connected to single pit and about 7.4% had kuccha structures; some with direct drop pits. The single pit toilets create an insanitary condition with odour and fly nuisance. Further in the densely populated areas like the TE Labour Lines, due to soil infiltration the risk of ground water contamination is always high.

These toilets were mostly without any running water facility for anal cleansing. About 73% of the respondents shared that they did not have access to running water in the toilets.

Figure 7 Type of Toilets



Inappropriate maintenance of the facilities has left the existing structures in unclean and insanitary conditions. The management of various TEs indicated that they were aware of the need for continuous repair, upgradation and restoration of old toilets or provision of new toilets in an incremental manner but expressed inability due to limited funds. This has left some households without toilets, even after advancements made by the SBM (G) over last few years. A few of such households informed about resorting to open defecation even now.

Photo 9 Inadequate distance between ground water source and toilet leach pits

Structural Risk Mitigation

As aforementioned, nearly 33% of the respondents indicated risk of flooding or stagnant water during monsoon. Respondents from TEs visited in the districts of Dibrugarh and Golaghat were seen to be particularly vulnerable to the risk of flooding. Though a majority of the respondents indicated no complaints related to potential risks, the TE management seems to have not taken note of the risk to the structures in particular and to the health of the communities, in general as these toilets would be rendered obsolete due to damages and inadequate maintenance.

Table 6 District wise flooding risk for toilets

Name of the Districts	No. of Respondents
Bishwanath	15
Charaideo	20
Dibrugarh	280
Golaghat	18
Sivsagar	15
Sonitpur	45
Tinsukia	187
Udalguri	1

District-wise figures indicated risk of flooding or water stagnation for 577 toilets (households).

Faecal Sludge Management

Faecal sludge was seen to be contained in a single or twin leach pit or two-compartment septic tank. The design of some of the old septic tank might have been as per the standard specifications but the construction as seen with square dimensions, limited free board, damaged tops and without a soak pit, leaves much to be desired as the objective of anaerobic digestion is not achieved. The scum, sludge and liquid accumulated in uncovered septic tanks were seen to emit offensive odour.

Some of the toilets provided by the TE management in the earlier days were without water seal and offered unimproved sanitation option, which increases the health risk with continued usage.

The septic tanks and single leach pits are emptied once they are full. Appropriate measures for dignified, safe and hygienic desludging and disposal of sludge however seem to be lacking. This reality is apparent in all the Tea Estates visited, where manual labour (Sweepers) are employed for 'unloading' of the septic tanks that get full.

This action is akin to practising manual scavenging, which is banned since 1993 across the country.

The law was extended and clarified to include ban on use of human labour for direct cleaning of sewers, ditches, pits and septic tanks in 2013.

Photo 10 Septic Tank under construction - Owner driven effort

Furthermore, the unloaded sludge is dumped right next to the cleaned up septic tank, supposedly in a ditch. Considering that the toilets and septic tanks are not too far away from the dwelling houses and also the groundwater sources, these actions create a risk of contaminating groundwater and eventually, health of the TE worker population. Discussions with households indicated that there may be manifold cases of diarrhoea and dysentery which go unreported.

On the contrary, toilets built under the SBM (G) within the TEs are twin leach pit toilet where one pit is used at a time. Closure of the filled pit allows time for anaerobic digestion after which the sludge may be used as harmless organic manure.

The TE management does not seem to have thought about mechanisation in sludge collection coupled with aerobic off-site sludge treatment or chemical or biological on-site sludge treatment options.

Curious case of SBM (G) implementation in TEs

As per an open-source progress document available on the website of PHED, Assam, about 275 toilets were built on a daily basis during year 2017-18 within the districts of Dibrugarh, Golaghat, Sibsagar, Sonitpur, Tinsukia and Udalguri. Many of these were constructed in the Tea Estates, where the 2012 baseline surveys had indicated lack of facilities. However, TE wise authenticated and granular data of SBM-G toilets is not available. While the HH Survey attributed 25% of the toilets within the TEs to the SBM (G) work, the details provided by BCP and ABITA facilitators indicated existence of 4626 SBM (G) toilets in 22956 HHs from the 60 TEs which are 20% of the total facilities.

It was seen that toilet construction under SBM-G led to increase in coverage of the improved sanitation facilities in the TEs, particularly bringing the un-serviced temporary worker households under the sanitation umbrella. However, despite achievement of the targets some glaring lacunae were observed which hinder the functionality of system and continuity of service.

- Absence of roof or poor-quality joints to hold the roof to superstructure;
- Lack of door or absence of any locking system where doors were provided;
- Substandard brickwork with ample sand & little cement in the mortar mix;
- Lack of internal and external plastering;
- Absence of water storage or hand washing facility near the toilet;
- Lack of adequate ventilation or lighting
- Inappropriate connection between the superstructure and substructure (Leach Pits)
- Inadequate depth and in a few cases , complete absence of pits;
- Improper covering of the pits.

These flaws have rendered many of the toilets unusable for the purpose meant for. Instead, most of these toilets are being used for sheltering goats or stacking fodder or as bathrooms and washing areas.

Additionally, lack of data triangulation and authentication meant that some of the temporary worker households living in kuchha shelters are at risk of being left out in the SBM-G process. There is limited information at the TE level regarding the shortfall in the number of toilets.

The PHED implementation is dependent on the data made available at the Gram Panchayat level. The situation has a potential risk leading to open defecation being practiced in some of the TEs, wiping out to an extent, the gains of the SBM-G in the state.

Photo 11 SBM Toilet without proper roof joints, door locks, water storage and leach pit cover

Photo 12. SBM Toilet with an open outfall

Photo 13 SBM Toilet without door built in the front yard of a temporary worker household

Sanitation – Solid Waste Management

Labour lines in most of the TEs were seen to be bereft of an appropriate, complete (end-to-end) and functional solution for solid waste management. It was mentioned that orientation about segregation of waste (glass, plastic, tin etc.) was being provided regularly but it hadn't led to creating a general awareness amongst the population. The trash bins at the junctions of roads were seen to be overflowing with mixed solid waste which also included biodegradable waste.

Segregation at source was not reinforced with door-to-door collection in a segregated manner, neither was disposal done accordingly. The HH Survey indicated that only 45% HHs practised segregation of solid waste at source. Further enquiry on the method of solid waste collection revealed that most of the respondent households did not have proper means of waste disposal and had to burn, bury or dispose the waste in backyard or community trash bin, which would lay unattended for days. Only 2% of the respondents shared that door to door collection was done for solid waste.

Photo 14 Aggregated and undisposed solid waste, along the road side

Some TEs mentioned that they had contracts with recycling agencies to collect solid waste from the factory area and the labour lines, however overflowing bins narrated a different story. Mostly the front court-yards of the houses in labour lines were kept clean with kitchen garden and domestic temples (Namghar) in some places but the back-yards were seen to be equally unclean with heterogeneous waste.

Almost all the TEs had a central location designated for weekly market places within the labour lines. Organic and inorganic waste generated during the market days was collected and the areas were cleaned up, as mentioned by the TE management. However the remnants of the latest market days were seen in almost all the open market spaces. Burning or incineration was seen to be used often, from market places to schools to labour line households as a mode of disposal of combustible waste, which also included non-combustible waste like plastic. Burning waste in the proximity of dwellings not only was seen to cause nuisance of smoke but also risk of fire hazard. Further, leachate from the waste dumps can also pollute ground water sources. None of the TEs referred to 'zero-waste' concept or ban on plastic waste, burning or disposal of garbage in natural drains, though these form crucial indicators of the waste management within many certification alliances.

Photo 15 A garden waste composting facility

Good Practices: A few TEs indicated that they organised a competition for cleanliness and conducted a cleanliness drive over a certain week, every year. They also acknowledged and awarded worker households which had clean premises. This is indeed a good practice, which would inspire the households to keep their premises clean.

Some TEs had constructed composting facilities for organic garden waste, as part of certification process. These facilities mostly employed NADEP Composting techniques, comprising rectangular brick tank with aeration holes. Organic material mainly discarded from the factory and garden areas (and rarely from the labour lines) was added in layers and composted, as seen.

Sanitation – Drainage (liquid Waste) Management

Closed drainage networks are expected to be a norm in the rural areas under the SBM- G guidelines however out of the TEs visited only 5% had access to any kind of closed drainage system for grey water. While 94% of the households were connected to open drains about 1% responded that they didn't have access to any kind of waste water drainage, as a result of which the waste water would get stagnated in their surroundings.

Labour lines in most TEs had open drains by the sides of the roads. These were essentially meant for storm water drainage but apparently, the grey water from the bathing and washing areas was seen flowing in the drains for lack of soak pits within the premises. These drains emptied mostly into a natural drainage nearby. Due to uneven topography and lack of apt slope, cesspools were seen in many labour lines, inviting vector breeding and a potential risk of vector borne diseases. Culverts were built where these drains crossed the roads. However, lack of maintenance was evident in some instances as the pipes had cracked with gaping holes also narrowing the road widths at crossings, in many of the places. The residents complained about overflowing drains invading their courtyards as well as cess-pools during monsoon.

Tea production is essentially 'dry' process as little or no water was used during the production. Some Structural provisions were seen to have been made for waste water drainage and disposal within the factory premises in many of the TEs. This was mainly for grey water generated probably due to cleaning of process equipment and premises. Documents proved that regular checks were conducted by the management to ensure the BOD and COD limits, as required for pollution board 'clearance'. Some TEs however, were seen to allow the grey water directly into the natural drains. Dark coloured liquid was seen flowing freely into the drains.

Photo 16 Free-flowing open sewage drains and broken culverts

Good Practice: In some TEs the grey water from the tea factories was let into specially made filtration chambers, positioned serially one below another. While the first of the chambers were filled with filter media like broken bricks the subsequent ones had charcoal and sand or gravel. Before letting into the filtration chambers, the silt traps ensured that solids were prevented from depositing on the filter beds. Water passing through these filtration chambers was then let into the drains.

Photo 17 Wastewater treatment unit

This measure was undertaken as part of the Rainforest Alliance certification process.

The Sustainable Agriculture Standards seen displayed in one of the TEs emphasised that 'waste water from factory, pulp house or chemical washing should be treated through soak pits or other methods.' It further warned against mixing of clean and polluted water and release of untreated water into environment.

HYGIENE

In order to understand the vulnerabilities of individuals and households to WASH related risks, the Sphere Standard (2018) for Hygiene Promotion emphasised upon comprehension of the (affected) people about the major risks to public health and the hygiene practices that they follow, in order to either alleviate or contribute to the risk. Many studies carried out within the TEs until 2020 pointed out the lack of awareness about the health risks amongst the TE labour populations. However, as the Doctors from hospitals visited during this assessment informed that the COVID 19 pandemic has altered the comprehension status and most of the people have now become aware of the risks to health posed by communicable diseases. The household survey corroborated the fact with about 90% of the surveyed HHs showing basic understanding of disease risks.

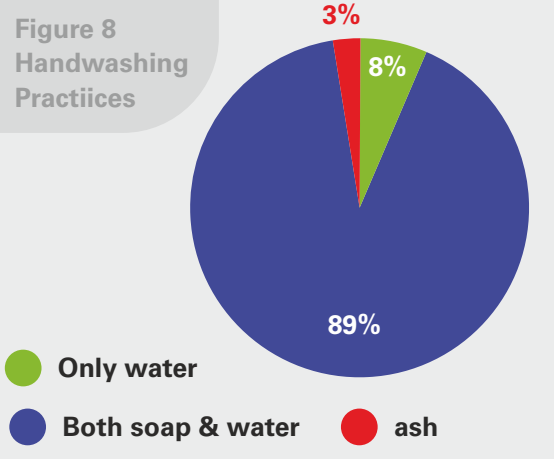
PEOPLE ARE AWARE OF KEY PUBLIC HEALTH RISKS RELATED TO WATER, SANITATION AND HYGIENE AND CAN ADAPT INDIVIDUAL, HOUSEHOLD AND COMMUNITY MEASURES TO REDUCE THEM

Hygiene Promotion Standard 1.1: Hygiene Promotion; Sphere Standards, 2018

Handwashing

The pandemic forced people to relook at hand hygiene and dramatically increased the number of people practising hand washing regularly and appropriately. The house hold survey confirmed that 89% of HHs used water and soap for handwashing.

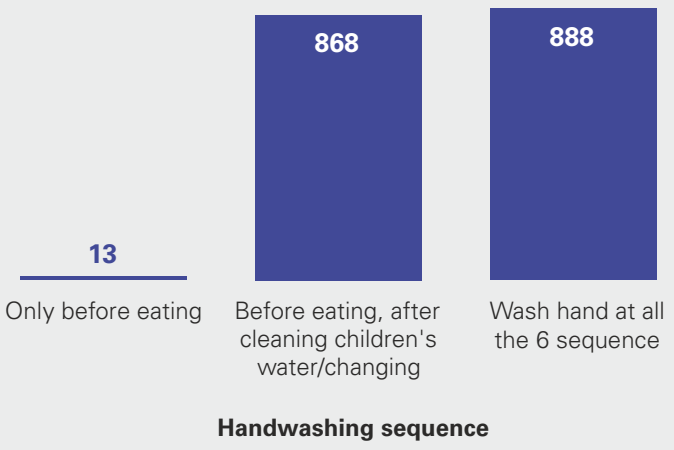
Figure 8 Handwashing Practiices



Majority of the respondents practice handwashing at all the 6 critical times listed down by the enumerator viz., before eating, after eating, after going to toilet, before & after cooking and after cleaning children's diapers / faeces. Rigorous sensitization drives by the garden management and the outbreak of the health emergency has improved the hygiene related behavioural practices among the community.

The TE management indicated that soap cakes were provided to every household during the first and second waves of COVID to enable the practice of handwashing and everyone followed the same. 'Hand washing stations were not only established in the factory premises but also provided for the workers in the plantation area', the team was told.

Figure 9 People following Handwashing sequence



However, since the pandemic restrictions were withdrawn, many of the handwashing stations at the factory premises were seen to be abandoned. Indeed, the water carts do make rounds of plantation areas as was the convention, taking drinking water and tea to the workers in plantation areas, but the soap wasn't included. **Soap was not seen to be a priority part of the grocery list of the HHs visited.**

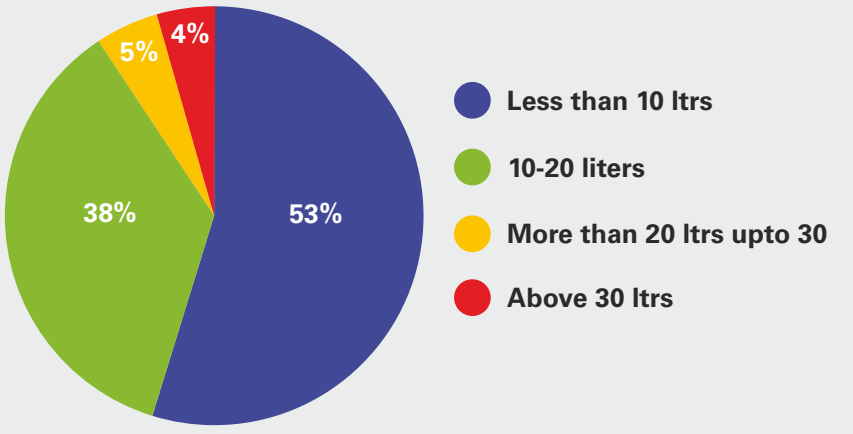
Disposal of Children's Faeces

Despite increase in awareness regarding the communicable diseases, children's faecal matter in some cases was seen to be disposed in an unhygienic manner mostly within the courtyards, creating health risk for the occupants and mainly, the children. Lack of awareness about the risks associated with child's faeces (more harmful pathogens) might be the reason for such practices.

Water Storage and Treatment at HH level

Safe storage and handling of water is essential in maintaining the integrity of water chain. About 91% of the total respondents stored water while the remaining 9% fetched it as and when required from the pump-operated tube wells in their courtyards.

Figure 10 Capacity of household water storages



The methods of water handling at HH level were seen to be poor. Water was generally stored in aluminium pots many of which did not have cove. Storage capacity for majority of households was below 10 liters. Only 4% of the respondents indicated storage capacity of above 30 liters. However about 88% of the respondents indicated that they cleaned the water storage pots on a daily basis. Even when the aluminium pots were covered, many HHs weren't seen to

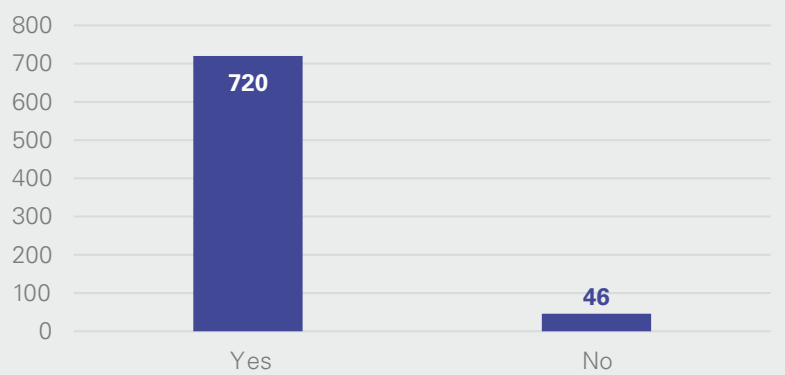
use a ladle to fetch the water but simply a steel glass, held possibly by an unclean hand. Water storages with appropriate covers & taps were seen nowhere in the labour lines.

Good Practice: The HHs have been resorting to boiling of water to tackle the microbial contamination, upon advice from the TE management, since a decade in some TEs. The HH survey indicated that 85% of HHs consumed boiled water, against 5% of people consuming raw water. About 15% of the respondents consumed filtered water, (filtered) using household means.

Menstrual Hygiene Management

Awareness about and access to appropriate MHM material plays a key role in ensuring proper hygiene for an adolescent girl and helps young girls attend schools without discomfort. FGDs were organised with adolescent girls to understand their concerns Though the TE managements are yet to create a space that is private and accessible for the girls to change and dispose their MHM material discreetly, the respondent girls appeared to be better prepared for handling the situation.

Figure 11 Respondents having appropriate material for MHM



Out of the 766 female respondents, 94% have appropriate material for menstrual hygiene management. Out of these 94% respondents, 67% use sanitary napkins, while the rest 33% resort to cloths.

During the HH survey it was observed that not only do the adolescent girls use different types of MHM material but as many as 79% also undertake appropriate disposal of the used material. Burying and burning are the most common practices for disposing the sanitary napkins, with 55% and 24% of the respondents relying on it respectively. Other means include disposal in public dustbins and running water.

Good Practice: With support from UNICEF, the facilitators from ABITA and BCP have organised adolescent girls through clubs in all the TEs. Regular dialogue on MHM with the girls seems to have helped in building informed awareness regarding the subject considered to be a taboo.

WATER SUPPLY AND SANITATION IN GARDEN AREAS

For the tea plantation workers who work tirelessly throughout the day, a potable water facility within the garden areas would have been a boon. However, with no tube wells or hand pumps within the plantation areas, the workers tend to carry their own water bottles to field work. The tea plantations are spread over a vast expanse of land and fragmented in different land parcels over the estate. Secondly, the plantation workers are not stationed in one particular area but keep on moving, as per the need and season. This makes it practically difficult to provide permanent water sources within the gardens, as the management authorities often indicated.

The management therefore resorts to providing tractor towed small water tanks for the benefit of the workers, twice during the day wherever the plucking or any other plantation activity is going on. The management claimed that the water in these tanks, generally 200 litre capacity is of 'potable' quality. However, not all of these tanks are seen to be in a good shape and neither do they have appropriate covers nor functional taps. A few broken and leaking tanks mean lesser potable water for the workers. This creates a risk for contamination of the

potable water during transport and a further health risk. The team witnessed the tank outlet plugged with a wooden stick in one case and with a portion of 500ml mineral water bottle which had a cap and served as a make-shift tap. Many a times, the water is provided along with the tea, which is an essential stimulant for the women plantation workers. However, the team noticed that in one of the TEs the trolley carried only tea and the women resorted to washing and cleaning with the tea itself.

CONSERVANCY: THERE SHALL BE PROVIDED SEPARATELY FOR MALE AND FEMALES IN EVERY PLANTATION, A SUFFICIENT NUMBER OF LATRINES AND URINALS OF PRESCRIBED TYPE, SO SITUATED AS TO BE CONVENIENT AND ACCESSIBLE TO WORKERS EMPLOYED THEREIN

Plantation Labour Act, 1951

Covered water tanker for garden areas, with a long handled ladle provided for fetching water

Despite a clear guideline in the PLA regarding the provision of latrines and urinals in the garden, none of the TEs have made the facilities available for the workers. While the male workers resort to relieving themselves in the open, this has put the female plantation workers at more disadvantage since they do not have a secluded, private and dignified place for ablution, whenever needed. Management quoted a number of reasons ranging from the risk of elephants to lack of running water and theft or breakage by unruly persons, for not creating such facilities within the garden area. This lacunae has not only increased UTI amongst women but also the cases of kidney and bladder stones, as agreed to by some TEs. Adolescent girls and women workers also find it difficult to manage menstrual hygiene due to lack of privacy within the plantation areas. On the other hand, lack of improved sanitation facilities within the plantation areas increases the possibilities of open defecation among the workers.

Good Practice: Only a couple of TEs indicated provision of mobile toilet vans for women, within the plantation areas. These toilets were put up on a trolley and towed by the tractors to the areas where women were working in the gardens. However, impatience and unclean usage were cited as reasons for discontinuation of this facility.

In one of the TEs it was observed that the tanks had proper cover and were supplemented with a long handle ladle mug for drawing water, to avoid secondary contamination

WASH IN INSTITUTIONS

PRIMARY SCHOOLS

Table 12 WASH Facilities in Primary Schools

# of Schools in TEs Surveyed	# of Students (Total)	Number of Water Points	Number of Toilets	Number of Urinals
66	8902	140	113	140

It was seen that the TE management provided for primary level education for the school going children from the labour lines. Generally, the TEs had schools up to fifth standard, after which the students were expected to graduate to the government run schools in nearby villages or towns. (Some TEs also provided school buses to transport the students to and from these schools). The number of primary schools within the TEs obviously depended upon the size of the worker population and some TEs had more than one schools in the campus.

As per these details obtained from the TEs it could be said that the schools adhered partly to the norms specified by the National School Sanitation Manual[9] - with a ratio of 78 students to a toilet. Thirty six out of the 66 schools seem to have gender- desegregated sanitation facilities. Water points however seem to be inadequate given the ratio of 63 students per water point, as against the specified 20.

Two out of the 18 TEs that the RedR India team visited didn't have any schooling facility due to lesser number of households and school-going children. About 7 out of the 16 school premises visited by the RedR team displayed existence of running water facilities, separate toilets for boys and girls and rudimentary hand washing facilities. It could be said that only half of those were actually functioning. Some had a problem with the source while others had systemic (pumping) issues.

Photo 18 A hand pump used as drinking water source in the proximity of toilets in a TE school premises. Toilets were common, some lacked doors and were unclean

Rest of the schools had tube wells or hand pumps, mostly near the toilet blocks for enabling hand washing. However, when inquired about the usage of the hand pumps, the teachers admitted that the same water was also used for drinking. For lack of running water, the cleanliness was not seen to be properly maintained in many places.

9: The National School Sanitation Manual suggests one toilet for every 80 boys plus a male teacher while one unit for every 40 girls plus a lady teacher. The Manual also emphasises on one water tap for every 20 children, to enable proper handwashing. This has to be facilitated through minimum 500 liters of storage for up to 100 children.

It could be said that the water supply provisions in schools are not up to the safety standards though seemingly adequate. The adequacy of water also has a factor of the COVID-19 led staggered classes, which means that lesser number of students per day within the school premises avail the facilities.

In some schools, particularly in those areas with very high iron contamination, the management provided RO filtered water bottles and dispensers.

Water points were provided at the school kitchen facilities where the mid-day meals were prepared and the students were expected to carry water from the kitchen to the toilet blocks, should the need be. Despite the mid-day meals being delivered, most of the schools (14/16) did not have a group hand washing facility in the premises. The handwashing was supposed to be done using the water stored in the tanks. Backyards of the schools, just like those of the households were seen to be unclean and unsafe, due to unhindered and increasing vegetal cover.

Generally, the number of toilets in the schools ranged from two to four, with the same facilities being used by the teachers along with the students. Since all these schools were meant for primary classes, some teachers opined that the issue of menstrual hygiene management was not needed to be tackled, while planning for the WASH facilities.

Location of WASH facilities was largely seen to be done in an improper manner. Some schools also had a risk of flooding in certain periods of every year but the structures built were not resilient enough (with raised platforms) despite the fact that the schools were also used as evacuation centres when the labour lines got flooded.

The concept of hygiene clubs, which is considered a key for creating and sustaining a clean and safe learning environment is not employed to its fullest potential within these schools (except a handful few). Thus the students are made to clean the toilets but the water facilities they get are not necessarily safe and adequate. It needs to be understood that a clean school environment is critical for children to attend the schools, perform well and stay well too.

Most of the primary schools visited had a single teacher, looking after about 50 students studying in different grades.

Good Practice: Schools in one of the TEs visited not only had a group handwashing facility but also sported a roof top rain water harvesting tank. This school was run by a major corporate house, known for its ethical business practices.

Another school had a functional running water facility for the toilets (separately built for the teachers, boys and girls), an additional washing area and a separate group handwashing facility. This school also had a football ground and a volleyball court of its own. Classrooms had walls adorned with graffiti, colourful benches and cupboards to store learning material. Classes were held in shifts to accommodate the students as per COVID protocols and also to allow the sole teacher to supervise the learning needs. This school was run through special efforts put in by a proprietary group.

Photo 19 An ideal , functional School WASH facility, segregated for boys & girls

ANGANWADIS

The concept of Anganwadis, as rural child care centres came into being in the early eighties as part of the ICDS program for combating child hunger and malnutrition in the rural areas. It spread into the TEs, given that the children of the tea workers needed proper attention for alleviating hunger and malnourishment.

A TE has one or more Anganwadi centres depending upon the population of children under five, adolescent girls, pregnant women and lactating mothers in the garden area. Out of the 18 TEs visited, the assessment team could find concrete structures built for Anganwadis in about 14-15 locations. More than half of them however were without any water or sanitation provision. The Anganwadi workers to operate from makeshift structures; in many cases the Anganwadi workers have to bear the construction and maintenance cost of such buildings.

The details provided by the ABITA / BCP facilitators indicate that though 212 AWCs exist in the 60 TEs, benefitting 9186 children, only 41% of these have any WASH facilities.

Table 7 WASH Facilities in AWCs

Number of Children (Total)	Number of AWCs in TEs Surveyed	Number of AWCs with buildings	Number of AWC buildings with WASH facilities
9186	212	185	88

When an AWC has a WASH facility it means that the AW Worker can teach the children how to use the toilets, to keep them clean, to wash hands after toilet usage and anal cleansing etc. These workers are also expected to educate mothers on the importance of improved sanitation and encourage them to put their new learnings into practice, with their children.

During the FGD with the Anganwadi workers in one of the proprietary TEs, it was apparent that many of the essential activities that need to be taken up at the AWCs were skipped or delayed for lack of funds. These included not only the supplementary nutrition for children under five years of age but also health check-ups for expectant and nursing mothers and adolescent girls. It wasn't particularly clear whether the non-formal pre-school education was provided in all the AWCs.

AWCs are also expected to promoting key hygiene practices including handwashing and ensuring inclusion of highly nutritious food types within children's diets. However, along with the necessary protein supplements (like eggs and Nutrella Soya) some of the AWCs had packets of chips ready for distribution to children.

Apparently, the TE management in most of the visited locations seem to have overlooked the fact that the Anganwadis are the focal points for implementation of all health, nutrition and early learning initiatives. The TE management informed about the Creche facilities provided to young mothers however, it was generally located far away from the workplace and lacked basic amenities, preventing mothers from sending their children to the facility.

HOSPITALS AND CLINICS

RedR India team visited 5 proprietary TEs and 13 corporate managed TEs during the assessment. Hospitals, which could also be called as Primary Health Centres, existed in all the 13 corporate managed TEs. These had a resident Doctor, Health Staff including Nurses, Pharmacists, Health Assistants, Ward Boys, Matrons and ANMs etc. Doctors were present in 10 out of the 13 Corporate managed TEs. Whereas, smaller clinics which functioned primarily as First Aid facilities were visited by the Doctors on a periodical basis and mostly run by a sole Pharmacist or a Health Assistant. National Rural Health Mission (NRHM) provides free medicines to all the TE Hospitals.

As per the information provided from 60 TEs by ABITA / BCP facilitators nearly half of the health facilities functioned as ' Garden Hospitals' while a third (35%) functioned merely as Dispensaries, owing to lesser number of households in the TEs or presence of government health centres in the vicinity. Only two

health facilities functioned as Central Hospitals, catering as required to neighbourhood populations along with the TE labour.

Table 8 13 WASH Facilities in Clinics

Number of Households	Number of Health Staff	Number of Beds (Total)	Number of Wards (Total)	Number of Toilets	Number of Water Points
22956	407	1257	260	333	486

The Garden Hospitals generally had large campus which housed the OPD, the in-patient wards for male and female patients, Operation Theatre, Maternity ward with Labour room, a Pharmacy and Consulting rooms for the Doctor and Nursing staff. The Hospitals also had a provision for COVID Care and Isolation centres for active cases. The gardens in the courtyard along with an elaborate arrangement for storm water drainage was pleasing, everywhere. All the Garden Hospitals had running water facilities in their campus with the water sourced either from the Deep Tube Well within the premises or supplied through pipe line from a central storage, which also supported the factory. Most of these hospitals had inpatient capacities for up to 7 male and female patients. Each of these wards had separate toilets for men and women in adequate number along with the running water provision for ablution and handwashing facilities. Handwashing stations at all the hospital wards however were without soaps, though COVID19 protocols had made installations of makeshift and functional handwashing stations mandatory.

However, despite the provisions, most of the toilets in many of the Hospitals were not kept clean. Staff blamed on the attitude of the patients and mainly the attendants, who accompanied them. The septic tanks of these toilet blocks were not always in good shape, with inadequate connections, covers not properly fixed and soak pits, absent. The distance between the septic tanks and the ground water source (where the tube well in the campus was the water source) was always seen to be lesser than the prescribed 10 m, creating a risk of contamination.

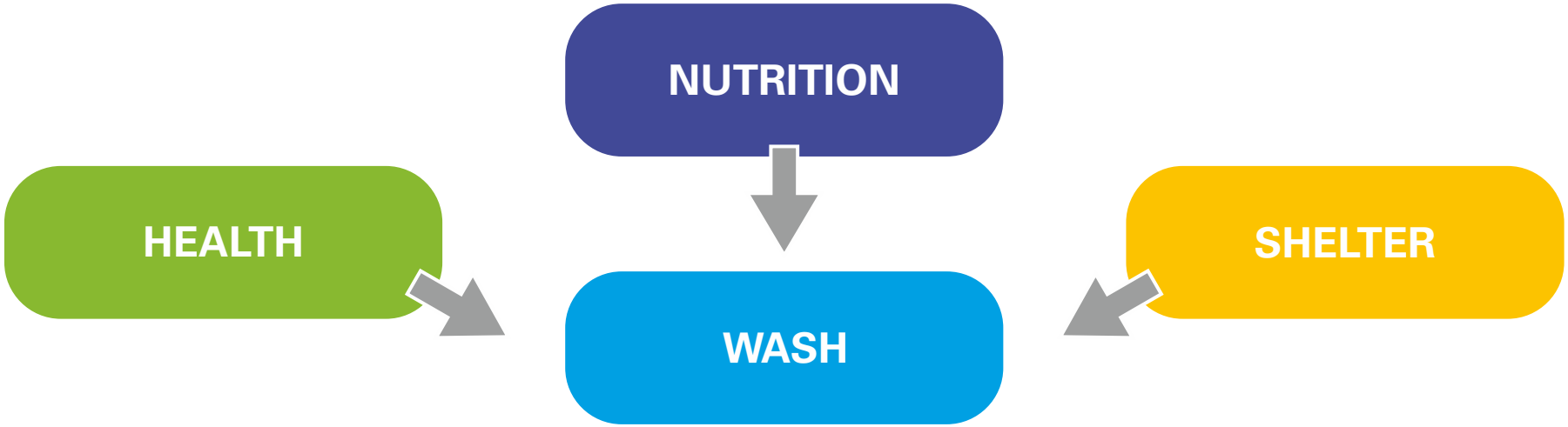
Incidentally, only one Health Assistant (out of as many in 18 TEs visited by RedR Team) was aware of the indicator for distance between septic tanks and ground water source. These Hospitals also followed the bad practice of manual scavenging for emptying the septic tanks with the sludge dumped alongside, as informed by the Doctors, seemingly oblivious of the health risks that the practice created.

Photo 20 A Hospital Toilet without running water, in unhygeinic condition

Photo 21 Multi-coloured waste disposal bins with a waste-disposal protocol

Good Practice: Segregation of waste was done at all the hospitals. While the practice was based on the regulations of the NRHM, it was rigorously followed also because of the garden certification alliance requirements. Accordingly, yellow coloured bins were used for Bio-waste (Cotton swabs, bandages, placenta etc.). The Non-bio waste was further segregated as plastic (IV sets, gloves etc.) dumped in red coloured bins while hazardous glass and steel (ampules, blades, needles) was put in blue coloured bins. Black coloured bins were used for disposing of the chemicals, comprising expired medicines. Incineration of solid waste has stopped almost completely, after the advent of Rainforest Alliance certification.

ALLIED AND CROSS CUTTING THEMATICS



HEALTH

Effective and efficient WASH services and facilities are essential for the wellbeing of TE Workers.

Poor WASH facilities cause most of the diarrohea cases within the TE populations.

Lack of hygiene and sanitation during the bouts of diarrhoea contributes to stunting.

NUTRITION

There is a direct linkage between WASH and Nutrition outcomes since nearly half of childhood malnutrition cases are a result of unclean water and inadequate / unimproved sanitation. Faecal contaminated environments within (some of) the TE labour lines lead to chronic undernutrition.

Nutrition insecurity is also a result of unsafe WASH and food hygiene practices.

SHELTER

Lack of access to improved sanitation (excreta disposal facilities) within the worker household premises causes contamination of water sources and nearby environment. Unavailability of potable quality water at the door- step leads to consumption of contaminated water contributing to poor health.

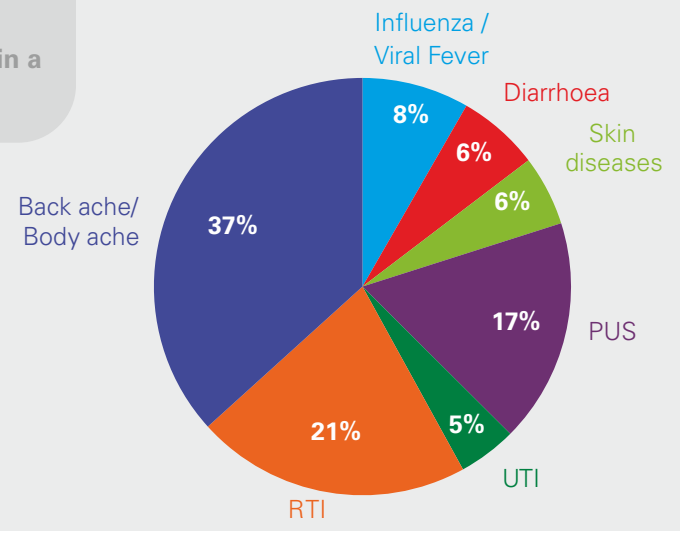
Poorly sited WASH facilities deny equitable access to services and increase protection risks, particularly for women and children.

HEALTH

A hospital in a large TE, with a population of 10,456 people showed an average monthly OPD turnover of 3,874 patients while admissions (In-patient) were about 220. The treatments covered 7 cases of gastrointestinal diseases while there were 81 non-communicable disease cases in the month of August 2021. Another TE with a total population of 3,945 souls indicated 42 cases of Gastrointestinal diseases in the month of October 2021 which were about 6% of the treated cases for the month while skin disease cases were 5%. Whereas, the Respiratory Tract Infections (RTI) were 21% of the treated cases with a maximum male and female patients being treated for back ache and body ache. Urinary Tract Infections were also reported to be about 5 %. Incidentally, the health staff from this hospital as well as a few others informed about a number of patients with blockages in urinary tracts (e.g. kidney stones).

Yet another hospital which catered to an equally large proportion of temporary and permanent worker population had treated 402 diarrhoea (plus Dysentery) cases up to July this year against 4,798 other disease cases including Fever, RTI etc. Despite the fact that these TEs were in different geographical zones, the proportion of gastrointestinal (diarrhoeal) diseases to other non-communicable diseases (including hypertension, diabetes) was about 1:11.

Figure 12
Disease profile in a TE Hospital



Morbidities and mortalities due to diarrhoeal diseases used to be a bane for the TE workers as unsafe water supplies and unimproved sanitation led to acute outbreaks within the TEs, time and again, a decade ago. A few senior Doctors candidly mentioned that the diarrhoeal disease cases as well as dysentery is still seen in the TE labour lines, though not as alarming as it used to be, may be, a decade ago. Situation has changed since, with increased access to improved water and sanitation facilities and reasonably enhanced awareness towards personal hygiene practices. These Doctors also 'thanked' COVID-19 for supposedly improved hygiene behaviour – hand washing in particular as a reason for reduction in diarrhoea cases. Dysentery (or Food Poisoning) however continues as the food hygiene habits and cleanliness are still questionable. The Doctors informed that while there is monthly seasonality for diarrhoeal cases the dysentery happens on a weekly basis, after the wages and market days. Diarrhoea is seen mostly before and during the monsoon months.

While the diarrhoea and dysentery cases hinted at the lack of clean water[10], continued microbial contamination and poor personal hygiene habits; the fungal infection and skin diseases point at ringworm (ring shaped rash, as indicated by the Doctors) which spreads through direct contact with infected people, helped by the heat and humidity at the gardens.

Additionally, the workers are also affected with Hookworms (Helminthiasis) by coming in contact with contaminated soil. Poor hygiene and unimproved sanitation contribute further to the risk of infection.

Disease tracking done on an year-wise basis for last three years in one of the hospitals mentioned above indicated that while the gastrointestinal diseases continue to bother the TE workers , there is a steady rise in the cases affected by Respiratory Tract Infections, including both upper and lower (e.g. Bronchitis) tract infections. The TE workers are exposed to air borne allergens while in the plantation area as well as to the tea dust in factories, resulting in respiratory ailments.

10: Study report from TISS and Oxfam (2019) did quote 'the lack of clean and plentiful water on the estates and the fact that the habit of filtering water is almost entirely absent 'as the common cause for diarrhoeal diseases.

Table 8 13 WASH Facilities in Clinics

Year	Tuberculosis	RTI	Dysentery	Diarrhoea
2018	30	1857	478	455
2019	29	1946	1226	424
2020	17	3056	150	651

Tuberculosis is another disease prevalent amongst both male and female workers in TEs. The Doctors elaborated that excessive alcohol consumption, smoking tobacco, indoor air pollution due to burning of brush wood contribute to the TB burden. Shelter conditions, which include high household occupancy (density) within a poorly ventilated house further increase the exposure to infectious TB droplets. Poor nutrition and inadequate food intake compared to the quantum of work that is put in, exacerbates the risk of disease.

While asked about the 'over the counter' dispensing at the Hospitals and clinics the Health Assistants informed about the antifungal medications being picked up along with the oral rehydration solutions (ORS) for diarrhoea and vomiting. Additionally, the pain killers for body ache and paracetamols for fever are picked up, routinely.

Alcoholism among workers

Apart from all these health complications, a high rate of alcohol consumption amongst men and women workers adds to their health woes. Alcohol was also the reason behind a relatively high cases of liver cirrhosis among workers. A few workers commented that 'drinking is the way to relax and forget the body ache after a hard day's work'. Health Staff indicated that after every Saturday which is a weekly pay day, the local hooch is consumed to the hilt by the workers, so much that they report unwell for work on Mondays.

Free flow of locally brewed cheap liquor has impacted almost every household in the labour lines all across the TEs visited. So much so, that children of alcoholic parents were seen to be dropping out of schools to earn livelihood for families and themselves taking up drinking at very young ages.

Health Status of Women Workers

A typical trend of disease prevalence was seen among the Women workers. This was mainly related to the odd and strenuous working hours, the head loads that the women workers carried, staying without water or proper sanitation facility for long and the strange habit of drinking salted tea at work and alcohol abuse at homes. This has resulted in the women workers reporting for anaemia, skin diseases, fungal infection and hypertension. Discussion with a young Doctor in one TE and an experienced Health Assistant in another revealed that nearly 20% female patients at the hospitals in the TEs suffer from hypertension while 30% of them are anaemic. The weight that the women workers carry – 24 kg by the end of work day leaves a trail of back ache and body pain.

Limited access to health care, poor housing, unimproved sanitation contribute to the prevalence of Anaemia within the labour population in the Tea Estates putting particularly the young and expecting mothers at risk. Though the Maternal Mortality figures were reported as zero in the TEs visited, research carried out by a legal empowerment organisation indicates that *these conditions contribute to Assam having highest maternal mortality rate in India.*[11]

Morbidities amongst Children

Major causes of morbidity were diarrhoea (26.6%), Acute Respiratory Infections (24.5%) and Fever (16.7%). Morbidity status was proportional to the immunization and most of the health establishments informed about conducting the routine immunisations for the new born and children, regularly. Morbidity status was also found to be statistically significant with some other contributing factors like religion, socio-economic status, number of siblings, etc.

Proportion of underweight children according to their age was 64%.

11: A Matter of Life and Death: Surviving Childbirth in Assam's Tea Plantations, Nazdeek (2018)

Health issues arising out of Chemicals Spraying

Tea Estates use Class II[12] insecticides (like Deltamethrin, Permethrin) for controlling tea plant pests and diseases. Discussions with Health staff indicated that workers complain about dizziness and vomiting occasionally. Side effects like breathing difficulties, may also occur due to sustained exposure, as indicated by a Health Staff. Welfare Officers from most of the TEs emphasised upon efforts for minimizing the pesticide usage and providing protective and safety gear (face masks, gloves, leather shoes) for the workers in adherence to the Plant Protection Code (2014) developed by the ETP.

In general, it was observed that the healthcare systems in TEs were emphasising more upon the treatment (or lack of it) and displayed moderate attention towards provision of health care that helped in tackling the social determinants of health, including WASH. Further, the team noted the feeling of mistrust between the patients and doctors in at least a third of the hospitals visited. This also had a bearing of an incident that occurred in a couple of TEs a few years ago, where doctors had been assaulted by the worker families owing to misperceptions of negligence. This incident had led to some doctors quitting the TE service for sake of life.

Impact of COVID 19

The Health Staff from various TEs mentioned that vaccination drives were carried out with near 100% coverage of the first dose achieved and demonstrated in different places. Masks were distributed to the workers and handwashing facilities were provided. Awareness campaigns about safe social distancing were carried out. Tracking and tracing was also done by the TEs in collaboration with the government staff. Health facilities, large and small were kept ready with isolation wards for positive cases from within the TEs and nearby GPs.

During the first wave of COVID, the plantations were locked down for nearly 3 months, forcing the worker populations to fend for themselves on the basis of the meagre reserves they had. The TE management in some locations provided free ration particularly to the permanent labour households but for the lack of wages or any other kind of income generation opportunity, the living conditions worsened for them.

Photo 22 COVID 19 Protocols at a TE

The situation of temporary worker households was further aggravated as they were not in the list of the TEs, no of the local government for receiving any kind of benefits. Overcrowded and unventilated houses within labour lines with limited access to food, potable water, improved sanitation and necessary aid were a recipe for disaster. However, the Health staff indicated only sporadic casualties during COVID period but pointed towards co-morbidities like hypertension and diabetes as the cause for aggravation of the disease. Data wasn't available, for triangulation of facts.

NUTRITION

High prevalence of undernutrition was observed among the children in the TE communities. Almost all the gardens had reported at least two cases of SAM in the past 1 year. In one of the gardens in Golaghat, the Anganwadi Worker shared reports of two SAM children from the labour line who had been referred to the Nutrition Rehabilitation Centres twice within one year. Another TE reported 3 cases of MAM but no SAM. ICDS workers cite poor infant and child feeding practices as one of the reasons for undernutrition among children.

School based weekly, iron and folic acid supplementation was seen to be carried out in all the schools visited and it benefited the school going girls in particular. However, given the high proportion of school drop-outs and non-school going girls particularly in the adolescent age, it was not known how the supplementation reached such a vulnerable sector.

12: Moderately Toxic, as classified by WHO

Iron deficiency and anaemia among women is widespread across all the gardens. Poor intake of nutritional food and lack of awareness among the women on what constitutes a nutritious meal are some of the factors besides, long arduous working hours in the field which makes it difficult for women to look after their health and nutrition. Unaffordability of nutritious food is another obvious concern. There were hushed stories of early marriages of anaemic girls, early pregnancies and low birth-weight babies. Discussions with adolescent girls threw light on instances of poor nourishment attributed to various retraining factors like dropping out of schools to look after the siblings, additional household responsibilities at young age as the parents go out on work, unavailability of nutritional, wholesome diet etc. A woman worker has to work through her pregnancy and resume work as soon as possible after giving birth to the child. This practice denies the babies proper nutrition through exclusive breastfeeding. The babies are often taken to the garden areas by the mothers for lack of functional crèche or day care facilities.

Photo 23 Meeting with AWC Workers and Adolescents

A considerable number of AWCs lack building facilities, forcing Anganwadi workers to operate from makeshift structures; in many cases the Anganwadi workers have to bear the construction and maintenance cost of such buildings. While discussing with the AWWorkers and Health Staff it was generally agreed that malnourishment provides an 'entry point' for diseases like diarrhoea, RTI leading to more serious conditions like tuberculosis which are seen commonly among the plantation workers. The AW workers also understood their responsibility towards malnourished children who struggle to overcome diseases that are generally curable.

SHELTER

Nature of Housing

Most of the permanent labourers reside in quarters provided by the management in adherence to the PLA 1951, which mandates the employer to provide and maintain necessary accommodation for every worker and their family. Household survey indicated that 85% of the respondents resided in the company provided residential quarters while 15% reside in self-constructed/self-owned houses. It could be easily assumed that all those who lived in the self-constructed houses would be temporary worker households.

HOUSING: IT SHALL BE THE DUTY OF EVERY EMPLOYER TO PROVIDE AND MAINTAIN FOR EVERY WORKER AND HIS FAMILY RESIDING IN THE PLANTATION NECESSARY HOUSING ACCOMMODATION.

Plantation Labour Act, 1951

Most of the TEs had provided reasonably good living space (only) for the Permanent Labour households, ranging from 1500 sq.ft to as large as 3500 sq.ft. in some cases. However the pucca houses built by the TE management were not more than 550 sq.ft. area, comprising 3 rooms each. These were built in 'twin' style with a common wall between the two neighbouring households. Most of the estates visited had pucca housing, except select gardens in

Dibrugarh. With increase in the number of family members over the years, the households have resorted to building extensions within the existing structure in order to accommodate the family members. The extensions are mostly kuccha with some quarters having raised pucca structures, especially in the gardens visited in Tinsukia and Golaghat.

Non-resident permanent workers residing in accommodations outside the estate are entitled to a House Rent Allowance amounting to Rs.3400/- per annum. This is also applicable for those permanent labourers residing within the estate who have not been allotted a quarter. Some of the workers have availed housing under the PMAY scheme within the estate. The TE management from different locations referred to providing 'new' houses ranging from 20-100, every year and also allocating some resources for repairs of old structures. However, fund crunch was a prime hurdle, as indicated by a Welfare Officer.

Conditions of the Housing

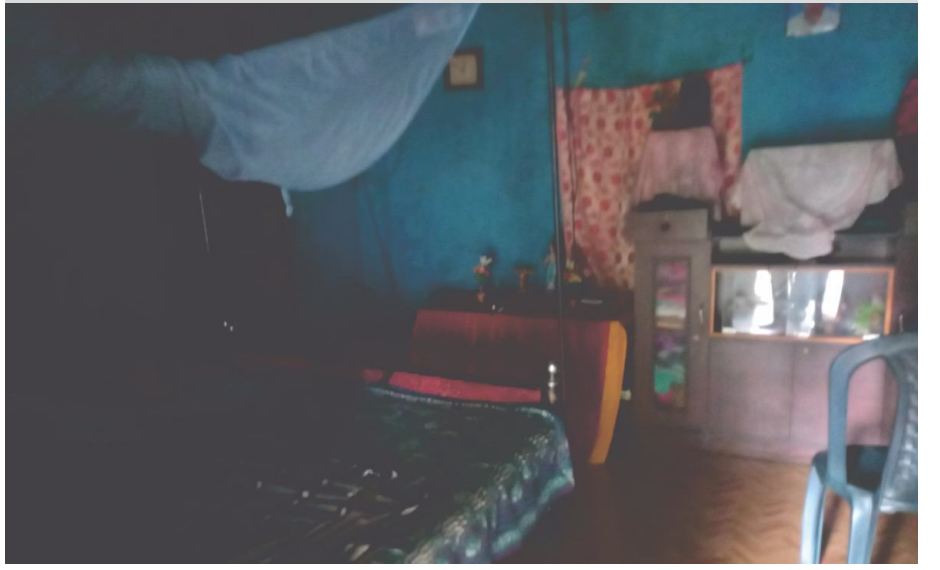
Around 45.2% of the total respondents resided in pucca quarters with extension while 37.9% resided in pucca quarters without extension. Notably, a meagre 1.5% of the total respondents resided in PMAY houses and the rest 15.4% resided in kuccha houses which included company owned quarters as well as houses built by themselves.

Observations recorded by the enumerators noted certain parameters on the plinth of the housing reflecting on flood mitigation strategies adopted by the company/households, availability of proper ventilation, cracks and damages in the structure and overall cleanliness of the houses. A majority of the observations noted how the quarters lacked proper ventilation and lighting as a result of which the household members had to resort to artificial lighting even during daytime.

Poor ventilation is a concern across all the labour lines. Haphazard extensions on existing structures made by the worker families to provide space for the growing numbers, have blocked any or all of the sources which would let in daylight as a result of which the inhabitants have to rely on artificial lighting even during daytime. In some labour colonies, the corrugated GI roofing had holes, which would have let the rainwater inside. Despite large space, proximity in siting of the toilets with leach pits and ground water sources like tube wells / hand pumps or ring wells invites health risks.

Constructed decades ago, most of these houses need repairs and regular maintenance.

Photo 24 A House without light and ventilation



The quarters haven't been renovated or repaired for years, except in few cases where the management has constructed new quarters on raised plinth, upto 2 feet from the ground considering the flood water level, with provisions of roof extractors which facilitate ventilation, separate toilet and bathroom. These structures are unlike most of the old quarters which are mostly low lying (without a plinth) and susceptible to flooding; besides they don't have separate toilet and bathroom facilities.

Many of these houses didn't have a dedicated kitchen within the built up premises. The teams witnesses kitchens established as an extension. The reason being the habit of using brushwood for cooking. Despite the advent of the Ujjwala scheme, which has provided the LPG Cylinders in every home, the

households have rarely refilled the cylinders and mostly resorted to cooking on chulhas also because the firewood is supplied regularly.

Mostly, all the labour lines have access to electricity and houses are illuminated during the evenings. However defaulting on payment of monthly bills is a common phenomenon, resulting into connections being cut and many a labour line households plunging into darkness.

DISASTER RISK REDUCTION

The TEs of Assam, which is one of the most highly climate vulnerable state in India, have been experiencing hydro-meteorological hazards, which have a potential of turning into disasters if not managed well.

Perennial flooding is experienced at Rungagora TE in Tinsukia district, on the banks of river Dibru, a tributary of mighty Brahmaputra. The Welfare Officer mentioned that there were 6 incidents of flooding this year wherein a number of families from two out of eleven of the labour lines had to be shifted to safer havens. Apart from the labour lines, some sections of the tea gardens and roads get flooded annually in Rungagora. The playground of the primary school building which doubles up as flood shelter was seen to be silted too.

A few other TEs like Rupajuli in Sonitpur reported incidents of sporadic cloud bursts and flash flooding over the last few years leading to incidents of water logging. However, limited efforts for mitigating disaster risks seem to have been undertaken over the years in these TEs, leaving particularly the labour line households at the mercy of rain God.

Rest of the TEs mostly indicated that 2021 was a difficult year due to high deficit of rainfall both in quantity as well as number of rainy days. This had led to an increase in average maximum temperature creating moisture stress for the tea shrubs and a risk of reduced harvest. The Ethical Tea Partnership has said that in Assam, one of India's wettest states, tea estates received less than 50% of the rainfall required during the first harvest period in 2021[13].

The risk gets compounded, as some Welfare Officers mentioned, by the depleting ground water levels in those areas where the labour lines are dependent upon shallow tube wells. Not an alarming situation yet but the chances of water scarcity for domestic consumption in the winter months were imminent.

Apart from the climate hazards, Assam has also experienced geo-physical events over the past. The Great Assam Earthquake of 1897 or the Independence Day earthquake in 1950 are etched in the memories of many for the trail of devastation that they left. On 26th April 2021 a massive tremor of 6.4 Richter magnitude had hit Assam's Sonitpur district. Tremors were felt in the tea estates too. The Elevated Storage reservoir in Gogra TE in Sonitpur district was damaged and the water supply to the staff quarters was disrupted. It stays unrepaired till date.

It was obvious DRR, either structural or non-structural had not been perceived as an essential component of welfare within the many amendments to PLA 1951 and therefore seen nowhere on the list of actionable tasks for the TE management.

DAILY WAGES AND DEPENDENCY

That the TE workers, both permanent and temporary, do not have a purchasing power to help improve their living standards is a direct result of the wages that they receive. At a time when workers on the MGNREGA within Assam and across the country receive Rs.265/day with a guaranteed income for 100 days, the TE workers receive Rs.207/day. Different bodies / associations from the community have been demanding for hike in wages since long but the success has alluded them so far.

Many of the households have more than one worker in the TEs. While one of them is a permanent worker who could get the mandated benefits, other (a spouse or grown up child) becomes a non-permanent (Faltu) worker deemed to get seasonal work whenever the need is. With a growing number of members in the family, children who cannot get accommodated within the TE jobs tend to move out to the places as distant as Delhi and Bengaluru in search of livelihoods, living their spouses and children at the TE labour colonies.

13: https://www.ethicalteapartnership.org/wp-content/uploads/2021/11/Climate_report_web.pdf

Apart from the increasing necessities that are to be addressed at domestic level, a TE worker is also plagued with addictions which take a toll on his / her monthly income. The addictions not only deprive the households of the bare minimum but also create a health risk and an aggravated income loss due to absence from work arising out of illness.

Though the workers tend to spend on the illegal hooch, they often refrain from purchasing essential supplies for personal hygiene. At least half of the workers interviewed informed about the absence of soap in their households despite the fact that the handwashing with soap was a habit consciously inculcated after the first wave of COVID19. This underlines that despite the knowledge and awareness, the hygiene practice gets hampered mostly by the behavioural traits, habits and differing priorities.

The Welfare Officers indicated towards the in-kind benefits like- housing, providing brushwood for kitchens or the free medicines supplied through NRHM as well as the recently initiated free ration scheme under the Right to Food Program (Food Security Act 2013) of Government of India as a supplement for the lesser daily wage. Some even indicated that the cost of social benefits is more than the wages and pointed out that these (e.g. free ration) provisions have made the workers lazy and indifferent towards their tasks. Alternatively, the PLA (1951) which aimed at creating a legal framework and minimum standards for provisioning of Shelter, Water, Sanitation, Health services as 'social benefits' has perhaps resulted in creating a dependency syndrome among the worker households. This was apparent because very few worker households adopted 'self-driven' measures for repair and maintenance of assets created decades ago. As noted in a study report by Columbia University (2014)[14], the benefits ultimately reinforce the dependency of workers: even if the law were fully enforced, workers would still never be in a position to own their own houses or land, or accumulate savings with which to leave the plantation.

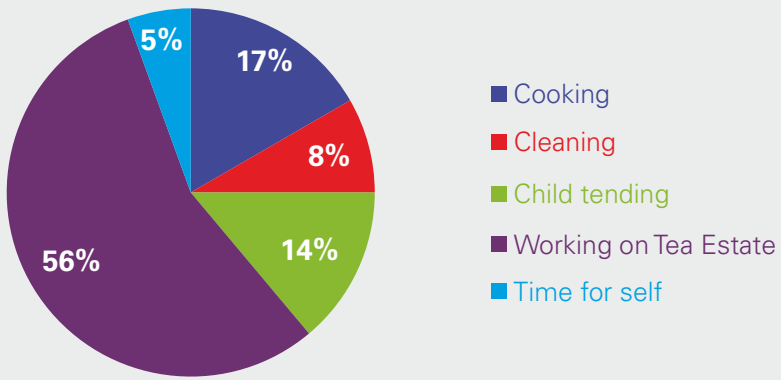
The tendency to wait for the TE management to send the maintenance teams to repair damages or even desludging, small or big to the toilets (for example) meant that the HHs simply resorted to using the unsanitary facilities or practice open defecation.

14 : World Bank, Tata and Enduring Abuses on India's Tea Plantations

A DAY IN THE LIFE OF A WOMAN TEA PLANTATION WORKER

The woman worker spends more than half her day doing back-breaking work while the other half is spent in taking care of the house, the children and the husband, as it came up from discussion with the women tea-pluckers.

Figure 14 How does a woman tea plantation worker spend her day?



The woman worker generally wakes up by sunrise, freshens up, fetches and organises water for domestic consumption, prepares food, readies the children for schools and is then herself ready to leave for the plantation by 7.00 am at the hoot of the siren, every day. After working for nearly 3 hours continuously, she gets some break for tea and water before resuming plucking till lunch time. While the TE management takes care of seemingly potable water provision, lack of safe and dignified space for ablution means that she has to relieve herself in the plantation areas, when needed. Not always are the plantation areas near the labour lines, but some women workers do reach their homes to care for the elderly, the non-school going children and many a times, an unemployed husband. She forces her way back to work within an hour and ensures that she has plucked no lesser than 24 kg of tea leaves by 5pm when another hoot of the siren calls it a day at work.

Her day is not over, though. After reaching home, she has to again get back to cooking for the family members, have food, clean up the leftovers before finding little time for herself by 10 pm in the night.rs.

Photo 25 A woman worker in the garden

The woman plantation worker is also a mother who cannot afford quality time for rearing her children and ensuring their wellbeing including regular visits to clinics and immunizations for those under five, leave alone the maternal education.

While the woman plantation worker literally carries the fragile financial security of her household on her tired but capable back, the man seems to be grossly absent from most of the work, whether it is the household chores or financial support to the household.

The woman worker faces multifaceted challenges while carrying herself at plantation work and homes. The cultural barriers mean that though the woman is primarily responsible for water and sanitation provision and overall management, it is always the menfolk who make decisions about the investment (regarding the domestic water storage, treatment or toilet construction, for e.g.). The social limitations which result in lesser education levels than her male counterpart means that she has limited information about the upcoming government schemes like JJM, which would facilitate water provisioning. Despite being the sole wage earners sometimes, the socio-

cultural barriers mean that the woman plantation worker doesn't raise her voice nor speak up in front of a gathering of men, leave alone participation in decision making. Defecation and Menstrual Hygiene are such taboo subjects that the woman worker finds herself in an embarrassing position while at a decision making stage, even if by default. The woman plantation worker is more disadvantaged as she also has to cope up with domestic violence.

Photo 25 A woman worker in the garden

'The JJM approach acknowledges the difficulties faced by women plantation workers,' quoted an Engineer from PHED, Dibrugarh. He further mentioned that the women workers' SHGs will be established, provided with training and equipped for water quality monitoring once the JJM is operationalised. However the Engineer was clueless when asked whether these additional tasks would not only be adding on to the workload of a woman tea plantation worker but also making her responsible for the quality of services on which she has a minimal control.

RECOMMENDATIONS

CONVERGENCE

Evidence has suggested that convergent actions have helped in reducing the chronic vulnerabilities faced by populations perennially at risk. The TEs would also require a convergent action from the different stakeholders considering that the ongoing government schemes - SBM (G) and JJM necessary for ensuring adequate (100%) sanitation and water coverage. Convergent WASH investments will also help in reducing the burden of unpaid labour on women and adolescent girls and improve nutritional status of children within the TEs.
Acceptance of WASH services and proper usage could be enhanced if capacities are built adequately and access is created for improved WASH systems through sustained funding and collaborative monitoring from different stakeholders which includes the government, the TE management as well as the UN agencies and corporate donors.

Provision of services is assured at least to an extent for the permanent worker households however the condition of the temporary worker households is deplorable, as aforesaid. With lesser number of days of guaranteed income the temporary worker households find themselves being pushed to the fringes of poverty. It was informed that the Government of Assam has already started issuing MGNREGA job cards to the TE workers. This is a welcome move to provide alternative employment, mainly to the Temporary Workers. If these MGNREGA works contribute towards improving the access to the TEs or construction activities including PMAY houses, schools, Anganwadis or building flood and scarcity resilience through structural reinforcements.

Provision of WASH services should not be looked upon in isolation but in integration with allied thematic sectors like Nutrition, Health, Education and Shelter to ensure convergence.

Given the fact that the social and environmental determinants of WASH are adversely affected by poor quality roads up to the TEs, lack of uninterrupted power supply etc., convergent funding approaches will also help in addressing these rural infrastructural deficits. A large variation was apparent in the inherent capacities (and intent) of the Tea Estates to effectively deliver the WASH services even when mandated under the PLA 1951. Financial and skilled human resource crunch was cited as a reason for not being able to provide regular maintenance for shelter or WASH facilities, mostly leading to worker population resorting to substandard services. **It would be pertinent to explore ways of utilizing public and private funds in a convergent and integrated manner with multi-sectoral linkages.**

An elaborate mapping of TE-wise access to WASH facilities (for the worker households) may be undertaken to ascertain the coverage of services, as a starting point.

CONTINUITY OF SERVICES

It is important to ensure continuity of WASH services, given the investment that is being made by the government now (through the JJM or SBM-G) on top of the original capital and operational investments made by the Tea Estates, as per the mandates of PLA 1951.

Continuity of WASH services could be achieved through a blend of technological, institutional, financial, social and environmental sustainability. A multi-pronged, multi-stakeholder systemic approach therefore would be required to usher in, support and sustain the process of continuity.

While technical sustenance could be achieved through user-friendly hardware services institutional sustenance would ensure that policies and practices are compatible to and addressing the user's demands. Social sustenance stands on the foundation of inclusive, gender-equal facility provision while financial sustenance could be achieved if the users contribute towards the maintenance.

Water for domestic consumption may be provided through piped systems, as intended by the JJM however lack of water audit, rigorous oversight for checking pilferages, unaccounted usage and repairing damages, continuous operation and maintenance – replacing the leaking taps, damaged pipelines and valves is essential for improving water efficiency and ensure continuity of service. Poor O & M is generally resultant of lack of funds for continuing preventing maintenance and absence of trained personnel for carrying out maintenance jobs regularly. Lack of community engagement for management of the WASH facilities as seen within the TEs and supposed absence of 'risk communication' also leads to improper usage of facilities and hampering the continuity. It could be further coupled by resistance to pay for the repairs of the facilities or for the tariffs of services availed. **An enabling, congenial environment helps motivating people, management, coordinating agencies and government to take up the O& M seriously and ensure continuity of services. Defined roles and shared responsibilities will help in reaching the greater common goal.**

UNICEF will have a key role to play in this process in order to support the TE Management and the Government through strategic value additive inputs for betterWASH governance. UNICEF may;

- Disseminate goodWASH practices
- Support capacity building of beneficiaries
- Ensure integration of gender sensitive approaches for improved access to, usage of and control overWASH facilities
- Continue policy advocacy for strengthening WASH systems

Table 15 Stakeholder role in WASH Governance

TEA ESTATE MANAGEMENT	GOVERNMENT OF ASSAM	ABITA / BCP
Ensuring maintenance and upgradation of WASH facilities	Providing leadership	Coordinating between TE Mgt. and Government
Supporting & monitoring implementation of government Schemes.	Ensuring continuity in funding	Mapping access to WASH services, ascertaining service deficits
Developing supplementary financial mechanismsand paying the tariff for WASH services on a regular basis and actively participating in local WASH governance.	Enabling local institutional structures for transparency and accountability in	Engaging labour communities on WASH rights and responsibilities

The worker communities as well need to step up their involvement through organized peer groups for influencing the execution of government schemes (than merely receiving the benefits), agreeing to cost sharing and paying the tariff forWASH services on a regular basis and actively participating in localWASH governance.

ENSURING RIGOUR IN WATER SECURITY AND SAFETY

Provision safe and adequate drinking water to the worker households is an infrastructural duty for the TE management as per the PLA 1951. Lack of finances has however often been quoted as causes towards inability of the TE management to reinforce the water supply and distribution networks for uninterrupted and safe water supplies. Apart from the damages to the supply network or relative unsustainability of ground water source particularly due to the long rain stress period, power cuts and non-payment of electricity bills were also cited as the reasons for interruptions in water supply to the labour lines.

JJM and Water Security

Reliability and sustainability of drinking water sources and systems, which include mechanisms for bulk water transfer, treatment and distribution contribute towards water security and safety for the consumers. The fact that the JJM is at various stages of implementation in Assam, the tap water connection will eventually be provided to every household in the labour lines and staff quarters from TEs. However, till such time as the JJM schemes become fully functional, the TE management should provide for retro-fitting and low-cost sand filtration tanks as a short term 'water-security' solution to households within the labour lines.

Water Governance institution may be constituted at TE level and trained so as to effectively build the institutional capacity for water management. This institution will look into the various aspects of effective and efficient water management including retrofitting old connections, facilitating new connections, detecting and repairing leakages, testing water quality, monitoring usage, collecting tariff as decided and generating awareness among the consumers on upkeep and maintenance. TE management could also decide to support these initiatives through technological reinforcement for iron removal or chlorine dosing to ensure appropriate water quality. Besides tackling the 'usual' challenges in water supply and distribution, this community based initiative at the TE level would also ensure effective risk communication and sustained community engagement.

Water Safety through WQM&S

Water quality may be monitored regularly and rigorously and the surveillance results from the water points at labour lines need to be uploaded on the PHED database, analysed and addressed to ensure drinking water security at household level. The TE Clinics and Hospitals linked to NRHM should be reinforced with a provision for testing of water quality (along with regular water treatment). Field Testing Kits (FTKs) should be provided to the TE Clinics / Hospitals for primary detection of chemical and biological contamination of all drinking water sources in the TEs. The WQM&S should follow an elaborate process which includes;

- Organising a dedicated group of staff (Health Assistant, ASHA, Anganwadi Workers, Teachers etc.) and workers as part of (Tea Estate Water Governance Committee) for WQM&S.
- Training and Capacity building of the designated group for WQMS
- Scheduling collection and testing of water samples from all water points at regular intervals
- Scheduling Sanitary Surveys at regular intervals
- Information Management (Data entry) as per the PHED protocols and uplinking with JJM's Water Quality management Information System.
- Remedial treatment action (apart from the ongoing chlorination measures) to address the quality issues under guidance from PHED

It has to be understood that not only the treatment protocol but the process itself has to be standardised across the TEs.

Water Safety through Improved Hygiene Behaviour

Handwashing with soap is essential to break the faecal-oral chain and ensure that water borne and excreta related diseases are avoided. Knowledge of the disease risk needs to be supplemented with aiding attitude and persistent practice. It was quite good that during the COVID 19 pandemic, many TEs had followed a sustained schedule to enhance the knowledge and enable the practice of improved hygiene behaviour. It would be better if such orientation sessions include discourses on household water storage and treatment along with advantages and disadvantages of on-site sludge disposal systems like

septic tanks and leach pits. This would not only lead towards informed maintenance of sanitation facilities but also further enhance water safety at household level.

At Primary school and Anganwadi level it is important to support structural efforts that encourage and sustain the improved hygiene behaviour through adequate, reliable running water supply with hygienic drainage disposal. Solar reticulated pumping should also be tried where power supply is unreliable.
Water Safety through Improved Sanitation

Given the fact that nearly half of the TE provided toilets are of 'unimproved' category, there is an urgent need for upgradation of these toilet facilities. A detailed technical audit should be conducted to ascertain the nature and extent of damages and retrofitting requirements for these toilets and repairs be undertaken diligently in coordination with UN, Private sector and the government, through convergence of financial resources.

This exercise will also help in understanding the needs for improvements within the SBM (G) toilets constructed in the TEs.

Evidence Based Advocacy for Eradicating Manual Scavenging

Manual Scavenging is defined as 'the (use of manual labour for) removal of human excrement from latrines, cleaning of septic tanks and sewers'. Driven by class, caste and income divides, the practice continues to be the most degrading and undignified of the tasks carried out by humans. Despite stringent legal provisions, manual scavenging seems to have continued within the TEs in an unabated manner. Even though a number of mechanised as well as combined biological and chemical systems have been introduced country-wide for sludge disposal the direct human intervention in the process has still continued in all the TEs visited.

National policy on Faecal Sludge and Septage Management (2017) had emphasised upon the safe collection, treatment and disposal of all human waste that is collected from onsite sanitation systems such as septic tanks, in order to achieve safe sustainable sanitation for all. The situation in Tea Estates in rural areas of Assam is however different than what was emphasised in the policy.

A policy advocacy effort to ensure eradication of manual scavenging from the Tea Estates in Assam may be undertaken, coupled with appropriate technological practices that help creating evidence base for stakeholders at state, national and international certification level, as required .

Reliance on on-site sanitation without any proper means for treatment of faecal sludge is akin to unhygienic disposal of human waste which creates a risk for environmental and public health. If the sludge is considered as a resource worthy of recycling, this also means a lost economic opportunity.

PROMOTING APPROPRIATE TECHNOLOGY OPTIONS FOR FAECAL SLUDGE MANAGEMENT

Tea Estate management could lead the FSM challenge not only within the TE areas but also within the neighbouring Gram Panchayats by promoting dignified collection, safer conveyance and hygienic disposal of human waste. Support from the PHED and UNICEF Field Office would help in popularising the concept and replicating within different tea growing regions of Assam in an incremental manner. While the PHED could provide the strategic lead, the knowledge management could be handled through UNICEF Field Office.

Multiple options are available in the Indian market for safe and hygienic FSM. These could be done in either centralised or decentralised manner using permutations of chemical, biological and physical (or mechanical) processes. While the Septic Tanks constructed under the PLA 1951 or Twin Leach Pits promoted under the SBM-G or the Bio gas plants are examples of decentralised biological treatment, lime treatment at household level provides a decentralised chemical treatment option. Whereas, the Stabilisation Ponds offer a centralised biological treatment option. The planning for FSM should follow 'full treatment cycle'.

Table 11 FSTM Options

Centralised Biological Treatment	Centralised Biological and Mechanical Treatment	Decentralised Biological Treatment	Decentralised Biological &Mechanical Treatment	Decentralised Chemical Treatment
Combination of Anaerobic and Aerobic Waste Stabilisaiton Ponds	Tiger Worm Based Biofilter Faecal Sludge Treatment Plant	Septic Tanks Twin leach pits	Upflow anaerobic filters	Lime treatment for individual households or lagoons

Two Key centralised biological and mechanical treatment methods- Waste Stabilisation Ponds and Tiger Biofilter Faecal Sludge Treatment Plant- are elaborated here.

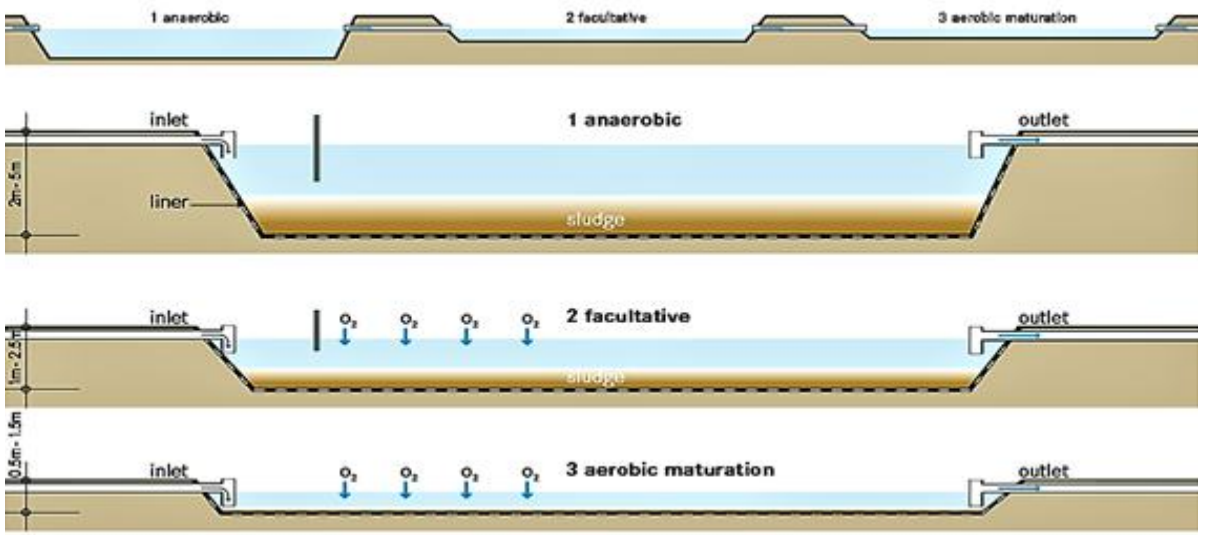
WASTE STABILISATION PONDS

These ponds could be used in series for treating sludge through natural process aided by wind, sun and microorganisms. These structures (Ponds) perform Anaerobic, Facultative and Aerobic functions with distinct design characteristics

The Process

The sludge is collected from the septic tanks or toilet pits using the extractors and transported to the Anaerobic pond which is about 3 m deep. Sedimentation process over 2-7 days, helps in removal of solids and BOD is reduced by more than half as the anaerobic bacteria convert organic carbon into methane. The solids get accumulated at the bottom of the pond. The liquid is then transferred from Facultative pond which is 2 m deep and then to the Aerobic pond in the end, which is about a meter deep. The Facultative pond further removes the BOD (up to 75%) while the Aerobic Pond allows photosynthesis as the sun's rays can penetrate through the shallow depth and support algal growth

Figure 15. Typical structure of a Waste Stabilisation Pond Source Tilley et al (2014) sswm.info



Design Considerations

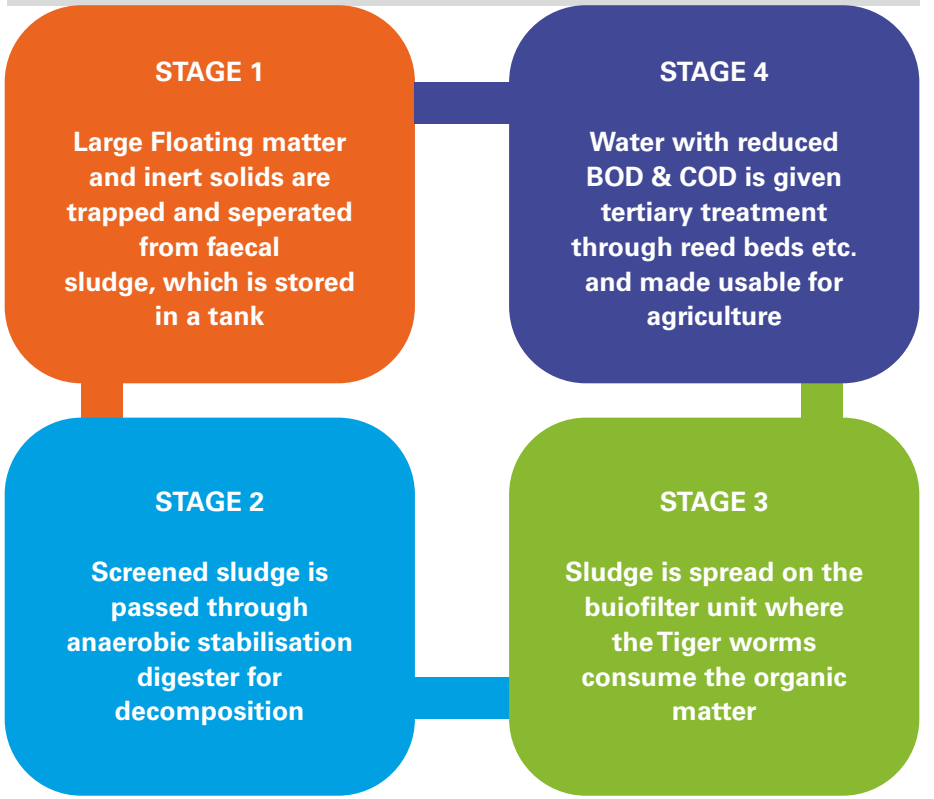
Apart from the depth considerations, the WSPs necessarily need a pre-treatment (baffle filters) to prevent garbage entering into the ponds and formation of scum. Further to ensure that the sludge doesn't contaminate groundwater, all the ponds have to be lined with impervious material (e.g HDPE sheet). The excavated material is used to create a shoulder berm. Fencing could be done in the treatment area to prevent animals straying.

TIGER BIOFILTER FSTP

This is a vermi-filter based faecal sludge treatment technology which utilises specially bred earthworms (Tiger Worms Eisenia fetida or Manure Worms) which are capable of consume trapped faecal sludge and convert it into manure after using it for their metabolism and reproduction.

The Process

Figure 16 Tiger Bio Filter Staged Process



15: Ref: Economic Comparison Assessment of FSM versus Piped Sanitaiton: Case of Tiruchirapalli; 5th March 2017.

16: Estimate provided by M/s Primove Infrastructure Development Consultants Pvt. Ltd.

Design Considerations

The Tiger Biofilter FSTP consists of a;

- Sludge Storage tank with a capacity of 1000 liters and fitted with a screen chamber.
- Anaerobic stabilization reactors about 3-4 if separate HDPE tanks are used or a constructed, sealed septic tank with baffles.
- Biofilter unit comprises Tiger Worms spread over filter beds
- Planted gravel filter (reed bed) is used for tertiary treatment

The Storage Tank, Anaerobic Tank and the Biofilter are in series such that gravity flow is maintained, to avoid pumping at different stages. Entire complex could require no more than 600 sq.m of space if designed for a capacity of 1000 liters of sludge treatment per day.

Comparative Characteristics (Advantages / Disadvantages)

While both the treatment methodologies achieve high BOD reduction, produce nutrient rich co-compost and present no real problems with odour or vectors, there are a few specific advantages of each, as discussed below.

Table 12 Distinction between WSP & Tiger FSTP

Waste Stabilisation Ponds	Tiger Biofilter FSTPs
Resistant to organic shockloads	Extra bio-media prevents organic shockloads
No electrical energy	Limited electrical energy required for pumping
Final sludge removal requires expert oversight	Easy to operate and maintain
High capital cost (large land), Low operating cost	Low capital (space efficient) & operating costs
Estimate for 1KLD plant for 400 HHs (2000 people): Rs.1505/ person[15] (Cost includes land)	Estimate for 1 KLD plant 400 HHs (2000 people): Rs.450/ person[16] (Cost does not include land)

It has to be noted that all the Centralised as well as Decentralised options include mechanical extraction (desludging) of the toilet pits or septic tanks and conveyance in a tank mounted on a tractor-trolley to the final disposal site. These extractor- tanker trolleys could be operated by the Sweepers' who are currently engaged in the sludge removal process, thereby generating a dignified source of income.

These methods could be applied on a case-by-case basis after an assessment of the number of HH / users, frequency of desludging, sludge load treated per day, availability of landmass located away from habitation and safer from flood, supplies and local expertise for construction.

The FSM roll-out should be done in a phased manner, with support from stakeholders like PHED, ABITA/BCP and UNICEF. The stages would include;

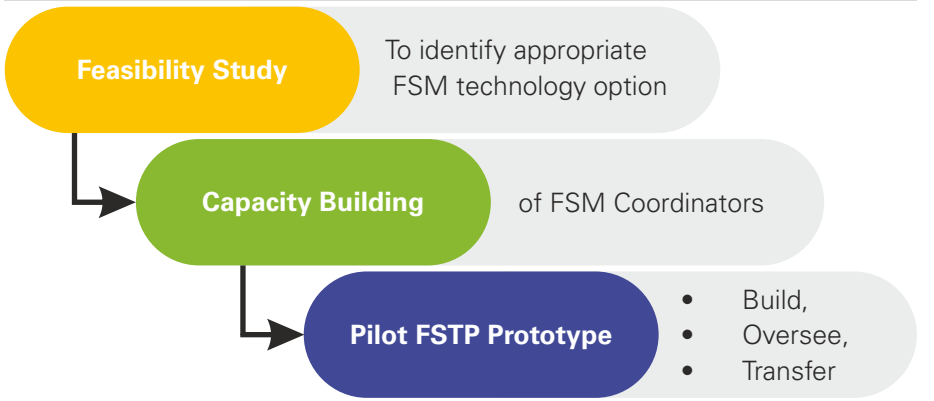
- **Feasibility study for identification of an appropriate technology option for FSM:** This could be supported by UNICEF wherein a Technical Support agency could be commissioned to conduct a feasibility study in select TEs based on geographical location, hazard profile, labour population size and ownership. The study would yield a prototype of FSM technological option for each category and develop a strategy for implementing an end-to-end solution in a collaborative manner. A mode business plan for each prototype could be developed as a resultant output, including the regulatory framework.

- Capacity building of FSM Coordinators from ABITA / BCP and Community Sanitation Committee : These Coordinators would in turn be responsible for informed advocacy with TE management and awareness generation among the TE labour communities about the efficacy of FSM technology (as identified through the feasibility study) and oversee the implementation in consultation with the TE management and Community Sanitation Committee established for the purpose (or a holistic community WASH institution at TE level)

- Establishment of prototype FSM plans in select TEs, including the operations support comprising extraction, conveyance and treatment. This could be carried out over a period of 1-2 years in consultation with the TE management. The technical support agency would provide the necessary process and knowledge support including human resources for building the prototype, overseeing the technical inputs and project cycle management, in partnership with UNICEF Field Office.

The prototypes would be transferred over to the TE management after the gestation period of 24 months, from the date of commencement.

Table 12 Distinction between WSP & Tiger FSTP



SUPPORTING DISASTER RESILIENT WASH FACILITIES DEVELOPMENT

Due to lack of adequate and reliable data, the extreme weather events reported to have affected the TEs over last few years cannot be automatically attributed to climate

The preliminary need is to conduct a baseline survey to measure the frequency and amplitude of extreme climate events within the TEs which result in either excessive precipitation or scarcity of water. Efforts for adaptation to extreme weather (changing climate) should not only consider flood resilience but also need to address the possible depletion in ground water table and reduced access to reliable and adequate water supply for the vulnerable labour populations. This becomes more important since the new water supply measures planned by the government are mostly ground water based.

Table 13 Suggestive Actions for Increasing Resilience of WASH Systems to Flooding[17] and Stagnation

	Effects of Flooding or Stagnation	Techniques for increasing resilience
Generic	Riverbank erosion, inundation of low lying areas, water stagnation	Structural measures for flood water diversion, river training Non-structural measures like water governance, regulations with guidance from State government
Water Supply	Lack of access to potable water	Protection of Tube wells and hand pumps Identification of alternate ground water sources
	Contamination of ground water source	Promoting Point of Use water treatment Deploying flood resilient treatment techniques like shock clorination Training and Capacity building of maintenance staff Maintaining stock of chlorine
	Damage to Hand pumps	Proper siting Deeper foundations for aprons Raising slab above HFL as required Securing hand pump to the slab with spout above HFL Watertight casing for TWs & covers for ring wells
	Ring wells getting flooded	
	Tube wells getting flooded	
	Damages to ground water storage reservoirs (GSRs)	Proper siting Good concreting with proper curing time Arranging emergency storages (HDPE)
	Flooding of PWS water treatment site –treatment process and supply disrupted	Generator back up for continuous power Standby pumpsets Maintaining stock of chlorine
	Damage to pipe network	Using pipes with apt pressure gauge Organising alternative supplies; short term water tankering
Sanitation	Flooding of IHHLs, damages to superstructure, Inundation of leach pits, septic tanks- health risks, contamination	Designing excreta disposal facilities with raised platforms Containment chambers (tanks /pits) could be partially raised above ground considering HFL and ensuring feasibility for desludging in normal times Construction of septic tanks to be water tight Minimising blockages of conveyance pipes and containment chambers by educating users on proper usage
Hygiene	Contamination of HHWS and loss of NFI	IEC dissemination and awareness generation regarding HHWS&T NFI distribution (ensuring that stocks are maintained)

It is apparent that deforestation in the upstream catchment of rivers leads to excessive runoff in the drainage area creating risk of flooding in the low lying downstream. Lack of overarching water governance and regulations make structural and non-structural improvements difficult. Poorly sited and unprotected water sources as well as inappropriately designed (non-flood resilient) facilities limit the access to potable water and improved sanitation, for the labour populations who are inherently vulnerable.

In such TEs which face scarcity **Drought Resilient WASH Systems** should be built adopting harmonious watershed management approach, integrating measures for land and drainage line treatment in catchment, runoff and storage zones; soil and water conservation for surface and ground water recharge; better land use planning; managing shallow and deeper aquifers etc. Rain water harvesting for school buildings should also be promoted. Solar reticulated water pumping technologies could help providing a buffer for the school water supplies, which are rendered dysfunctional due to frequent power failures.

Structural audit may be done for the household structures, those provided by the TE management as part of the PLA 1951 or constructed by the households themselves in context of multi-hazard resilience covering earthquakes, floods and high wind speeds.

17: Adapted from Techniques to improve resilience of community WASH systems in flood prone areas, CARE Nederland, June 2012

IN CONCLUSION

Looking at the relative ineffectiveness, inefficiencies and uncertainties shrouding the water supply and sanitation services provision through different stakeholders within the TEs, the travesty of tea tribes becomes all the more glaring. The two main problem areas that surface are a) water security and safety along with b) safe and dignified disposal of excreta.

The National Family Health Survey (NHFS-5, 2019-20) informs that less than 90% of population of Assam (along with other NE States like Manipur, Meghalaya and Tripura) has an access to improved drinking water. The household survey within the TEs has indicated that despite the advent of the government sponsored schemes like JJM and SBM-G, the labour lines are still miles away from safe and potable drinking water supplies at doorstep. Inadequacy of supplies, inequitable access, and unreliable supply timings have made the labour lines depend upon the unprotected and unmonitored hand-pumps and ring wells for their specific drinking water needs.

Similarly, sanitation and particularly the issue of excreta disposal cannot be considered 'concluded' with mere provision of super structures and excreta containment provisions. The need therefore is to provide for safer facilities for hygienic excreta disposal in centralised or decentralised manners, on a case-by-case basis. Eradication of manual scavenging is a must, as an issue of human rights and dignity.

Washing hands regularly has saved lives. The COVID 19 pandemic has clearly demonstrated the virtues of hygiene along with access to improved sanitation and safe water as key determinants for preventing the disease spread.

The Sustainable Development Goal 6 has set an ambitious target of achieving universal access to safe drinking water, improved sanitation and sustained hygiene behaviour at universal level. The State Government of Assam has made impressive progress in reaching out to the unreached in terms of service delivery. However, it is understood that the technological, financial, institutional and social factors together influence the continuity of service delivery.

Photo 27 Women workers resting after a hard day's work

Taking up the collaborative WASH upgradation interventions in select TEs from different demographic, geographic and hazard zones as well as ownership criterion on a pilot stage will encourage other TEs to pace up and realise the goal.

Stakeholders including the Government, the TEs, UNICEF, ABITA / BCP and the Certification authorities, therefore need to outline the goal and work harmoniously, in tandem to empower the Tea Estate Worker communities to usher in the change within their lives through upgradation in WASH services provision.

Water for drinking and domestic consumption need not be seen as a commodity and improved sanitation need not be considered luxury but a greater public good.

Better and improved WASH facilities ensure health and wellbeing of workers, further contributing towards enhanced livelihood and economic security.

Defining a higher level of WASH service delivery is the need of hour, prioritising the poorest and the most vulnerable among the tea tribes of Assam.

ANNEXURE I : LIST OF TEA ESTATES VISITED

Name of the gardens in Zone 1									
Sl. No	Name of the CSC	Below 500 HH	500-1000 HH	Above 1000 HH	Company Name	District	Block	Location	Certification
1	Sobha Roy Challiha	Achabam			Amalgamated Plantation P Ltd	Dibrugarh	Joypu	Semi Remote	
2			Borpatra		Stewart Holl (Goodricke)	Charaideo	Sepekathi	Remote	RA Certified
3	Gokul Saikia			Chubwa	Amalgamated Plantation P Ltd	Dibrugarh	Panitola	Road Side	
4		Maud			Maud Tea & Seed Co	Dibrugarh	Panitola	Remote	RA Certified
5	Urmila Gogoi			Greenwood	Assam compay Ltd.	Dibrugarh	Lahoal	Remote	
6	Geetali Gogoi		Rungagora		Assam compay Ltd.	Tinsukia	Guijan	Semi Remote	RA Certified
7				Panitola	MK Jokai Agri Plantations (P) Ltd	Tinsukia	Guijan	Road Side	
8	Nitu Gharphalia			Balijan North	Warren Tea Ltd.	Dibrugarh	Panitola	Remote	
9		Hollonghabi			Hollonghabi Tea Estate	Tinsukia	Hapjan	Road Side	
10	Sujata Tanti		Dirial		Mcleod Russel	Dibrugarh	Tengakhat	Semi Remote	RA Certified
11			Itakhooli		Mcleod Russel	Tinsukia	Hapjan	Road Side	RA Certified
12	Bitul Phukan			Samdang	Mk Shah Export Ltd.	Tinsukia	Hapjan	Semi Remote	RA Certified
13		Daisajan			MK Jokai Agri Plantations (P) Ltd	Tinsukia	Hapjan	Remote	RA Certified
14	Alphi Lahan	Tippuk			Itas Prabhat Llp.	Tinsukia	Hapjan	Road Side	
15				Beesakopie	Mk Shah Export Ltd.	Tinsukia	Kakopather	Semi Remote	RA Certified
16	Babori Sonowal		Phillobari		Mk Shah Export Ltd.	Tinsukia	Kakopather	Remote	RA Certified
17			Baghjan		Mk Shah Export Ltd.	Tinsukia	Hapjan	Remote	RA Certified
18	Pranjal Hussain			Dikom	Russel Tea India ltd.	Dibrugarh	Panitola	Road Side	RA Certified
19			Borborooah		Assam compay Ltd.	Dibrugarh	Borborouah	Road Side	RA Certified
20	Parinita Dutta		Santi		Dhunshree Tea & Industries ltd.	Dibrugarh	Tengakhat	Remote	
21			Madhuban		Borbheta Estate Pvt. Ltd	Dibrugarh	Tengakhat	Semi Remote	
22	Jagdish Keot	Dilli			Dhunseri Tea & Industries Ltd.	Dibrugarh	Joypur	Road Side	
23			Tinkong		Andrew Yule & Co	Dibrugarh	Tinkong	Road Side	RA Certified
24	Manoj Tanti	Kenduguri			Luxmi Tea Com. Pvt. Ltd.	Dibrugarh	Tinkong	Remote	
25		Azizbagh			Joonktollee Tea and Industries Ltd.	Dibrugarh	Tinkong	Semi Remote	

Name of the gardens in Zone 1									
Sl. No	Name of the CSC	Below 500 HH	500-1000 HH	Above 1000 HH	Company Name	District	Block	Location	Certification
26	Manoj Gogoi	Teloijan			Teloijan Tea Co. Ltd	Dibrugarh	Khowang	Semi Remote	
27			Bhamun		Andrew Yule & Co	Dibrugarh	Khowang	Semi Remote	
28	Deepmala Kahar		Thowra		James Warren Tea	Sivasagar	Demow	Remote	RA Certified
Name of the gardens in Zone 2									
Sl. No	Name of the CSC	Below 500 HH	500-1000 HH	Above 1000 HH	Company Name	District	Block	Location	Certification
29	Babli Gogoi		Difloo		Amalgamated Plantation P Ltd	Golaghat	Bokakhat	Remote	RA Certified
30			Rungagora		Jorehaut Group Ltd	Golaghat	Charaingia	Remote	
31	Jitu Phukan			Amgoorie	Amgoorie India Ltd	Sivasagar	Amguri	Semi Remote	RA Certified
Name of the gardens in Zone 3									
Sl. No	Name of the CSC	Below 500 HH	500-1000 HH	Above 1000 HH	Company Name	District	Block	Location	Certification
32	Kanika Das	Paneery			McLeod Russel India Ltd	Udalguri	Udalguri		RA Certified
33			Nonaipara		Goodricke Group	Udalguri	Khoirabari		
34	Deepak Teli		Sessa		Empire & Singlo Tea Ltd		Sonitpur		
35			Rupajuli		McLeod Russell	Sonitpur	Rangapara		RA Certified
36	Dipankar Sahoo		Nya Gogra		McLeod Russell	Sonitpur	Pub Chaiduar		RA Certified
37			Arun		Gillanders Arbuthnot & Co. Ltd.	Sonitpur	Borchola		
38	Birju Tassa			Monabari	McLeod Russell	Biswanath	Baghmara		RA Certified
39		Bromahjan				Biswanath	Chaiduar		RA Certified
40			Behali		McLeod Russell	Biswanath	Behali		RA Certified

ANNEXURE II : STRUCTURED INTERVIEW QUESTIONNAIRES

KEY INFORMANT INTERVIEW WITH ASHA/ANGANWADI

1. Profile of the institution

1.1 Type of Institution

1.2 Coverage in terms of no. of beneficiaries:

1.2.1 PregnantWomen:

1.2.2 Lactating Mothers:

1.2.3 Children: Boys ( ) Girls ( )

1.2.4 PWD (Indicate the age and gender):

1.2.5 Adolescent:

1.3 Coverage in terms of area

1.4 Services provided

1.5 Total No. of staff

1.6 No. of SAM children

1.7 No. of MAM children

1.8 No. of overweight children

1.9 Services provided by the AWC?

1.10 Whether the AWC/creche has a nutrition garden?

2. Water, Sanitation & Hygiene:

2.1 Availability and type of drinking water source in the premises?

2.2 Availability of drinking water filtration / treatment? (including type of treatment) Whether water quality test is done? If yes, what's the frequency?

2.3 How much water is available, regularly per day for the following:

a) Drinking

b) Toilet usage

c) Cleaning the premises

d) Handwashing

e) Other use

2.3.1 What is the storage capacity?

2.3.2 Is the water adequate for users?

2.4 Are drinking water sources accessible to PwD? (Prompt: Whether there are Provision for ramps, railings etc)

2.5 Availability of urinal and latrine facilities?

2.7.1 Distance of water source from toilet (incase running water is not available)?

2.8 Distance of toilet from the main building?

a) Within 10 meters

b) 10-100 meters

c) 100-500 meters

2.9 Type of toilets in the institutional set up? (Prompt: Pour/Flush latrine to the open, Pour flush latrine connected to septic tank, Pit latrine without slab, Pit latrine with slab).

2.10 Type of Fecal matter disposal arrangement (Prompt: Leach pit, septic tank or others)

2.11 Frequency of cleaning the toilets? (Daily, few days a week, no specific schedule). Who cleans the toilets (arrangement)? Is there ensured supply of adequate cleaning material?

2.12 Safety, usability & child friendliness- availability of lighting, ventilation, proper doors with knob, hooks, proper size (toilet)/height (Urinal) etc. Wherever applicable is their facility for female friendly provisions (shelf, covered dustbin for disposal of used pads, facility for safe disposal of used sanitary pads)

2.13 Is there some monitoring system in place for regular cleaning, Maintenance of water and sanitation facilities at the institutional level?

2.14 Whether the AWC/ Creche has trained – service providers/ staff/faculty on in water, sanitation and hygiene?

2.15 Whether the AWC/ Creche has developed SOP for safe use of water, toilet, handwash facilities (In view of COVID).

3. Disasters & its Impact :

3.1 How are the water and sanitation facilities accessed during monsoon/ flooding/ landslides? Is there any impact of flood or other disasters on the toilets?

3.2 How quickly are the water and sanitation facilities restored after any hazardous event?

3.3 Who is responsible for ensuring the functioning in a post-disaster situation? Is there a committee of users, that is involved in decision making, post disasters?

3.4 Do you get support from the Government /Tea Estate Management or the NGOs working in the area for facility restoration?

4. Solid & Liquid Waste Management:

4.1 Is the waste generated by the centre segregated? Yes/No

4.2 What is the method of solid waste collection? (Prompt: Door to door garbage collection, collection from common trash bin)

4.3 How is the waste transported to the disposal point (Prompt: Segregated or Mixed)

4.4 Where do you dispose the garbage(solid waste)?

a) Burning in open; b) Dumping in Landfill; c) Neither burning nor landfill d) Composting e) Any other

4.5 Where is the waste water from centre toilet disposed?

4.6 What are the types of drains available for letting the grey water?

a) Open b) closed c) No Drains

4.7 Does the waste water get stagnated near the centre often? Yes No

Observation:

- Are there adequate nearby functional handwashing points/stations available for hand washing at critical time (at entrance, near toilet, near dining area)? Whether the height of the handwashing appropriate for the users?
- Whether adequate supply of soap, water etc regularly available near handwashing points? If not reasons?
- Whether appropriate IEC/ instructions available for effective use of the water, toilet, handwash facilities.
- Whether relevant IEC/ guidance available near waste generation points?

CHECKLIST FOR ASSESSING WASH FACILITIES IN HOSPITALS

Key Informant Interview with Medical Staff

1. Profile of the institution

1.1 Type of Institution

1.2 Coverage in terms of beneficiaries

1.3 Coverage in terms of area

1.4 Services provided

1.5 Total No. of staff

2. General Information:

2.1 No. of households members who have been reported of the following diseases over the past 1 year:

a) Diarrhoea

b) Cholera

c) Respiratory Tract Infection

d) Eye Infections

e) Any other, please specify

2.2 No. of referrals made by the hospitals for the households over the past 1 year?

2.3 Covid cases:

a) Active cases: b) Cured cases:

2.4 Covid Vaccination Coverage:

2.5 What are the prevalent community practices for disease control? (Prompt: use of mosquito nets, boiling of drinking water etc)

2.6 What are the major incidence of diseases prevalent in the community, is there any particular season for the outbreak? (Prompt: Japanese Encephalitis, Malaria etc)

2.7 What are the ongoing disease control efforts by the hospital and garden management?

3. Water, Sanitation & Hygiene:

3.1 Availability of drinking water source in the premises?

3.1 Availability of drinking water filtration / treatment? (including type of treatment). Whether water quality test is done? If yes, what's the frequency?

3.2 How much water is available, regularly per day for the following:

a) Drinking _____

b) Toilet usage _____

c) Cleaning the premises _____

d) Handwashing _____

e) Other use _____

3.2.1 What is the storage capacity?

3.2.2 Is the water adequate for users?

3.3 Are drinking water sources accessible to PwD? (Prompt: Whether there are Provision of ramps, railings etc)

3.4 Availability of urinal and latrine facilities?

3.5 Availability of separate toilets for male and female? How many of these toilets are functional? If No, what are the reasons for its non-functionality

3.6 Availability of water inside the urinal and latrine:

a) Running Yes No

b) Spot source Yes No

3.7 Distance of water source from toilet (incase running water is not available)?

3.8 Distance of toilet from the main building or workspace (factory/garden)?

a) Within 10 meters

b) 10-100 meters

c) 100-500 meters

3.9 Type of toilets in the institutional set up? (Prompt: Pour/Flush latrine to the open, Pour flush latrine connected to septic tank, Pit latrine without slab, Pit latrine with slab)

3.10 Type of Fecal matter disposal arrangement (Prompt: Leach pit, septic tank or others)

3.11 Frequency of cleaning the toilets? (Daily, few days a week, no specific schedule). Who cleans the toilets (arrangement)? Is there ensured supply of adequate cleaning material?

3.12 Safety, usability & child friendliness- availability of lighting, ventilation, proper doors with knob, hooks, proper size (toilet)/height (Urinal) etc. Wherever applicable is their facility for female friendly provisions (shelf, covered dustbin for disposal of used pads, facility for safe disposal of used sanitary pads)

3.13 Is there some monitoring system in place for regular cleaning, Maintenance of water and sanitation facilities at the institutional level?

3.14 Whether the hospital has developed SOP for safe use of water, toilet, handwash facilities (In view of COVID).

4. Disasters & its Impact :

4.1 Impact of flooding on the toilets and water facilities during monsoon? How are the water and sanitation facilities accessed during monsoon/ flooding/ landslides?

4.2 How quickly are the water and sanitation facilities restored after any hazardous event?

5. Solid & Liquid Waste Management:

5.1 Is the waste generated by the hospital segregated? Yes No

5.2 What is the method of solid waste collection? (Prompt: Door to door garbage collection, collection from common trash bin)

5.3 How is the waste transported to the disposal point (Prompt: Segregated or Mixed)

5.4 Where do you dispose the garbage(solid waste)?

a) Burning in open; b) Dumping in Landfill; c) Neither burning nor landfill d) Composting e) Any other ____

5.5 Whether facility (in case health care facility is being covered) have ensured arrangement for the safe disposal of infectious waste?

5.6 Where is the waste water from hospital toilet disposed? _____

5.7 What are the types of drains available for letting the grey water?

a) Open; b) closed; c) No Drains

5.8 Does the waste water get stagnated near the centre often? Yes No

Observation:

- Are there adequate nearby functional handwashing points/stations available for hand washing at critical time (at entrance, near toilet, near dining area)? Whether the height of the handwashing appropriate for the users?
- Whether adequate supply of soap, water etc regularly available near handwashing points? If not reasons?
- Whether appropriate IEC/ instructions available for effective use of the water, toilet, handwash facilities.
- Whether relevant IEC/ guidance available near waste generation points?

CHECKLIST FOR ASSESSING WASH FACILITIES IN SCHOOLS

Key Informant Interview with Teachers

1) Profile of the institution

1.1 Type of Institution (Whether owned by govt, garden or pvt./LP, ME, HS)

1.2 Coverage in terms of students

1.2.1 Total students: Boys: Girls:

1.2.2 PWD (if any):

1.3 Total No. of staff

1.4 Whether the school provides mid day meal to students?

1.5 Whether the school has a nutrition garden?

2. Water, Sanitation & Hygiene:

2.1 Availability and type of drinking water source in the premises?

2.2 Availability of drinking water filtration / treatment? (including type of treatment) Whether water quality test is done? If yes, what's the frequency?

2.3 How much water is available, regularly per day for the following:

a) Drinking

b) Toilet usage

c) Cleaning the premises

d) Handwashing

e) Other use

2.3.1 What is the storage capacity?

2.3.2 Is the water adequate for users?

2.4 Are drinking water sources accessible to PwD? (Prompt: Whether there are Provision for ramps, railings etc)

2.5 Availability of urinal and latrine facilities?

2.6 Availability of separate toilets for girls and boys? How many of these toilets are functional? If No, what are the reasons for its non-functionality

2.7 Availability of water inside the urinal and latrine:

a) Running Yes No

b) Spot source Yes No

2.7.1 Distance of water source from toilet (incase running water is not available)?

2.8 Distance of toilet from the main building?

a) Within 10 meters

b) 10-100 meters

c) 100-500 meters

2.9 Type of toilets in the institutional set up? (Prompt: Pour/Flush latrine to the open, Pour flush latrine connected to septic tank, Pit latrine without slab, Pit latrine with slab).

2.10 Type of Fecal matter disposal arrangement (Prompt: Leach pit, septic tank or others)

2.11 Frequency of cleaning the toilets? (Daily, few days a week, no specific schedule). Who cleans the toilets (arrangement)? Is there ensured supply of adequate cleaning material?

2.12 Safety, usability & child friendliness- availability of lighting, ventilation, proper doors with knob, hooks, proper size (toilet)/height (Urinal) etc. Wherever applicable is their facility for female friendly provisions (shelf, covered dustbin for disposal of used pads, facility for safe disposal of used sanitary pads)

2.13 Is there some monitoring system in place for regular cleaning, Maintenance of water and sanitation facilities at the institutional level?

2.14 Whether the AWC/ Creche has trained – service providers/ staff/faculty on in water, sanitation and hygiene?

2.15 Whether the AWC/ Creche has developed SOP for safe use of water, toilet, handwash facilities (In view of COVID).

3. Disasters & its Impact :

3.1 How are the water and sanitation facilities accessed during monsoon/ flooding/ landslides? Is there any impact of flood or other disasters on the toilets?

3.2 How quickly are the water and sanitation facilities restored after any hazardous event?

3.3 Who is responsible for ensuring the functioning in a post-disaster situation? Is there a committee of users, that is involved in decision making, post disasters?

3.4 Do you get support from the Government / Tea Estate Management or the NGOs working in the area for facility restoration?

4. Solid & Liquid Waste Management:

4.1 Is the waste generated by the school segregated? Yes No

4.2 What is the method of solid waste collection? (Prompt: Door to door garbage collection, collection from common trash bin)

4.3 How is the waste transported to the disposal point (Prompt: Segregated or Mixed)

4.4 Where do you dispose the garbage(solid waste)?

a) Burning in open

b) Dumping in Landfill

c) Neither burning nor landfill

d) Composting

e) Any other

4.5 Where is the waste water from school toilet disposed?

4.6 What are the types of drains available for letting the grey water?

a) Open b) closed c) No Drains

4.7 Does the waste water get stagnated near the school often? Yes No

Observation:

- Are there adequate nearby functional handwashing points/stations available for hand washing at critical time (at entrance, near toilet, near dining area)? Whether the height of the handwashing appropriate for the users?
- Whether adequate supply of soap, water etc regularly available near handwashing points? If not reasons?
- Whether appropriate IEC/ instructions available for effective use of the water, toilet, handwash facilities.
- Whether relevant IEC/ guidance available near waste generation points?

Key Informant Interview with Welfare Officer

1. Profile of the Tea Estate:

1.1 Total area covered:

1.2 Total number of workers- Permanent: Temporary:

1.3 Total Population:

1.4 Total no. of Households:

2. Water, Sanitation & Hygiene:

2.1 Availability and type of drinking water source in the premises?

2.2 Availability of drinking water filtration / treatment? (including type of treatment) Whether water quality test is done? If yes, what's the frequency?

2.3 How much water is available, regularly per day for the following:

a) Drinking

b) Toilet usage

c) Cleaning the premises

d) Handwashing

e) Other use

2.3.1 What is the storage capacity?

2.3.2 Is the water adequate for users?

2.4 Are drinking water sources accessible to PwD? (Prompt: Whether there are Provision for ramps, railings etc)

2.5 Availability of urinal and latrine facilities?

2.6 Availability of separate toilets for male and female? How many of these toilets are functional? If No, what are the reasons for its non-functionality

2.7 Availability of water inside the urinal and latrine:

a) Running Yes No

b) Spot source Yes No

2.7.1 Distance of water source from toilet (incase running water is not available)?

2.8 Distance of toilet from the main building?

a) Within 10 meters

b) 10-100 meters

c) 100-500 meters

2.9 Type of toilets in the institutional set up? (Prompt: Pour/Flush latrine to the open, Pour flush latrine connected to septic tank, Pit latrine without slab, Pit latrine with slab).

2.10 Type of Fecal matter disposal arrangement (Prompt: Leach pit, septic tank or others)

2.11 Frequency of cleaning the toilets? (Daily, few days a week, no specific schedule). Who cleans the toilets (arrangement)? Is there ensured supply of adequate cleaning material?

2.12 Safety, usability & female friendly provisions (shelf, covered dustbin for disposal of used pads, facility for safe disposal of used sanitary pads)

2.13 Is there some monitoring system in place for regular cleaning, Maintenance of water and sanitation facilities at the institutional level?

2.14 Whether the garden has trained – service providers/ staff/faculty on in water, sanitation and hygiene?

2.15 Whether the management has developed SOP for safe use of water, toilet, handwash facilities (In view of COVID).

3. Disasters & its Impact :

3.1 Impact of flooding on the toilets and water facilities during monsoon? How are the water and sanitation facilities accessed during monsoon/ flooding/ landslides?

3.2 How quickly are the water and sanitation facilities restored after any hazardous event?

3.3 How does the Tea Estate Management work for the restoration of water and sanitation facilities post disaster?

3.4 Who is responsible for ensuring the functioning in a post-disaster situation? Is there a committee of users, that is involved in decision making, post disasters?

3.5 What are the ongoing disease control measures undertaken by the garden management? (Prompt: Regular spraying, provision of safety kits for workers etc)

4. Solid & Liquid Waste Management:

4.1 Is the waste generated in the factory and other places in the garden segregated? Yes No

4.2 What is the method of solid waste collection in the garden?

4.3 How is the waste transported to the disposal point? (Prompt: Segregated/Mixed)

4.4 Where do you dispose the garbage(solid waste)?

a) Burning in open

b) Dumping in Landfill

c) Neither burning nor landfill

d) Composting

e) Any other

4.5 Where is the waste water from factory toilet disposed?

4.6 What are the types of drains available for letting the grey water?

a) Open

b) closed

c) No Drains

4.7 Does the waste water get stagnated near the factory and office often?

Yes No

Observation:

- Are there adequate nearby functional handwashing points/stations available for hand washing at critical time (at entrance, near toilet, near dining area)? Whether the height of the handwashing appropriate for the users?
- Whether adequate supply of soap, water etc regularly available near handwashing points? If not reasons?
- Whether appropriate IEC/ instructions available for effective use of the water, toilet, handwash facilities.
- Whether relevant IEC/ guidance available near waste generation points?

ANNEXURE III FGD GUIDE

FGD conducted with Adolescent Girls

1) Profile of the participants (school going, drop outs etc)

2) Availability of water and sanitation facilities in the households, schools? Functionality and usability of the toilets? What are the items used for menstrual hygiene management? Where do they dispose the items?

3) Activities undertaken by girls throughout the day? Daily activity calendar
Enquire into their role in taking care of their siblings, fetching water & firewood etc

4) What kind of trainings have you received in the adolescent groups? Whether any special training on water, sanitation, hygiene, nutrition, protection etc? What kind of activities you have undertaken in the community

5) What suggestions and recommendations would you like to give for improvement of WASH facilities

FGD conducted with men and women plantation workers

1) Availability of water and sanitation facilities in the plantation site? Functionality and usability of the toilets? Incase of discussion with women, probe whether there are facilities available for pad disposal?

2) How far do you go to urinate or defecate, while on duty? (Applicable for the women engaging in plucking leaves) Do women feel safe going for ablution during dark?

3) What are the other activities undertaken by men and women throughout the day? Try to understand their daily workload?

4) Are the facilities provided by the garden management adequate for the users? If not, how far do you go to collect extra utilities (water, firewood etc.)

5) What kind of trainings have you received from the garden management? Whether any special training on water, sanitation, hygiene, nutrition, protection etc?

6) Who takes care of the young children while you are out for work?

7) What has been the role of men and women across the various stages of toilet installation (Probe into the involvement of the participants across various stages in terms of their numbers)

a)	Site Identification:	Male	Female
b)	Purchase of Raw Material:	Male	Female
c)	Selection of Mason:	Male	Female
d)	Investment on the construction:	Male	Female
e)	Monitoring of construction work:	Male	Female
f)	Regular cleaning:	Male	Female
g)	Investment on Repair & maintenance work:	Male	Female
h)	Cleaning of the toilet facility and sludge:	Male	Female

ANNEXURE IV HOUSEHOLD SURVEY QUESTIONNAIRE

I. General Information:

1. Date:
2. Name:
3. Age:
4. Gender: Male Female Others
5. Religion:
6. Tea Estate: Line:
7. Gram Panchayat:
8. District:
9. Are you the HoH? Yes/No
10. List down the number of family members in the households as per their age and gender

Sex	0-5	6-18	19-35	36-60	60+
Male					
Female					

II. Education & Socio-Economic Conditions:

1. No. of family members working in the Tea Estate?
2. Status of the nature of employment:

Name	Status (Permanent/Temporary)

3. Are the family members involved in any other occupation? Yes No

   If yes, select the appropriate option:

   a) Agriculture
   b) Petty Trade
   c) Daily Wage Labourer
   d) Others
4. Education qualification of the family members. Please state the number of family members as per their qualification:

Sex	Haven't been to school	Primary schooling	Matriculate	HS Pass	Graduate
Male					
Female					

5. Are there any PwD in the household? Yes/ No

   If yes mention the number:
6. Where is your house located?

   a) Inside the Tea Garden b) Outside the Tea Garden
7. Nature of Housing:

   a) Self-owned b) Company Quarter c) Rented
8. Condition of the housing:

   a) Tin roofed brick house b) Thatched house
   c) Quarter with extension d) PMAY housing
   e) Others Please specify

Observer's note on the housing condition:

III. Water Services

1) What is the main source of household water supply?
   a) Handpump
   b) Well
   c) Piped water supply by govt.
   d) Piped water supply by Estate
   e) Others please specify

2) Does the handpump have a platform? Yes No

3) If handpump or well, describe the nature of the main source of water supply (whether shared with other households, total no. etc)

4) If community owned, how far does it take to reach the water source?
   a) 10 meters
   b) 10-100 meters
   c) 100-500 meters
   d) Beyond 500 meters

5) How much time is spent on a trip to fetch water
   a) Less than 10 minutes
   b) between 10-30 minutes
   c) More than 30 minutes

Observer's note on the water condition:

6) How do you consume drinking water?
   a) Boiled b) Filtered c) Raw

7) Who is responsible for collecting water for drinking and household purposes?
   a) Men
   b) Women
   c) Adolescent girls
   d) Adolescent boys
   e) Children
   f) All of the above

8) Do you store drinking water? Yes No
   a) If yes where & what is the capacity, (enquire if it is covered)
   b) Do they have cover, tap?

9) Is the water adequate for your household?

10) Do you feel that the water supply is adequate for the Tea Estate residents?

11) How often do you clean the drinking water storage?

12) On a scale of 1 to 5, how would you like to rate the quality of drinking water against the following parameters (here 1 stands for very poor and 5 stands for excellent):
   a) Clarity of water
   b) Taste of water
   c) Odour of water

If the rate is between 4 and 5, could you explain the reason behind the rating?

12) What mechanisms should be followed at the community and household level to improve the water related issues?

13) Do you use the same water source during flooding /landslides? If not, which other source is available? Or is there any other support for water supply that you get during disasters?

IV. Sanitation Services:

1) Do you have latrines in your house? Yes No

If yes, what type of latrine do you use:

a) Kuccha toilet

b) Pour/Flush latrine connected to single pit

c) Pour/Flush latrine connected to twin pit

d) Pour flush latrine connected to septic tank

e) Others, please specify

If no, then where do you defecate?

a) Public Latrine

b) Open defecation

c) Others, please specify

1.1 If single pit/twin pit, is it covered with slab? Yes No(skip logic question)

1.2 If septic tank, does it have a soak pit? Yes No (skip logic)

2) Does your latrine have water seal? Yes No

3) Nature of toilet (Skip Logic question, applicable for those answering yes):

a) Self-Funded (fully) b) Self-Funded (Partially)

c) Funded by Govt. Scheme (SBM) d) Funded by CSR/NGO

e) Any other specifiy

4) Do you have running water supply inside the toilet? Yes/No (Skip logic question)

5) Do you have a Handwashing facility near the toilet / inside the house? Yes No

6) What do you use for washing hands with? Soap, Ash or any other material?

(Enumerators to observe the HW facility and make note of the status)

Observer's note on the existing toilet condition:

7) How often do you clean the septic tank? clicked)

a) Once in 3 months b) Six monthly

c) Annually d) Only when its full

8) Does the latrine get flooded during monsoon? Yes No

9) How does your family cope with the problems of flooding of toilets during floods?

10) What are the mitigation strategies adopted by your family to avoid flooding of toilets?

11) What mechanisms should be followed at the community and household level to improve the sanitation related issues?

12) Are you aware of the risks associated with open sewage disposal? Yes No

If yes, can you describe

13) Is handwashing facility available near the toilet? Yes No

If yes, is it functional? Yes No

v. Solid & Liquid Waste Management:

1) Do you segregate the solid waste generated from your household into organic & inorganic? Yes No

2) How is the solid waste collected?
   a) Dump in the community trash bin
   b) Door to door collection by vehicle
   c) Any other, specify

3) How is the solid waste transported to the disposal point?
   a) Segregated
   b) Mixed
   c) Don't Know

4) Where do you dispose your household garbage(solid waste)?
   a) Burning in open
   b) Dumping in Landfill
   c) Neither burning nor landfill
   d) Any other

5) Where is the waste water from household disposed?

6) What are the types of drains available for letting the grey water?
   a) Open b) closed c) No Drains

7) Does the waste water get stagnated near houses often? Yes No

vi. Hygiene Facilities:

1) Do you have appropriate items for menstrual hygiene management?
   Yes No (Skip Logic)

   If yes what do you use: a) Pad b) Cloth c) Menstrual cup d) Others

2) How do you dispose your menstrual hygiene items? (Skip logic question)
   a) Burn it b) Bury it
   c) Throw in running water or open drainage
   d) Dispose in public dustbin
   e) Others

3) When do you wash your hands?
   a) Before eating
   b) After eating
   c) After going to toilet
   d) After cooking
   e) Before Cooking
   f) After cleaning children's waste or changing diaper
   g) Others

4) What cleaning agents do you use to wash your hands during critical times?
   a) With water only
   b) Water and soap
   c) Ash
   d) Any other

Observer's note on the cleanliness of household surrounding:

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facilitating humanitarianism

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