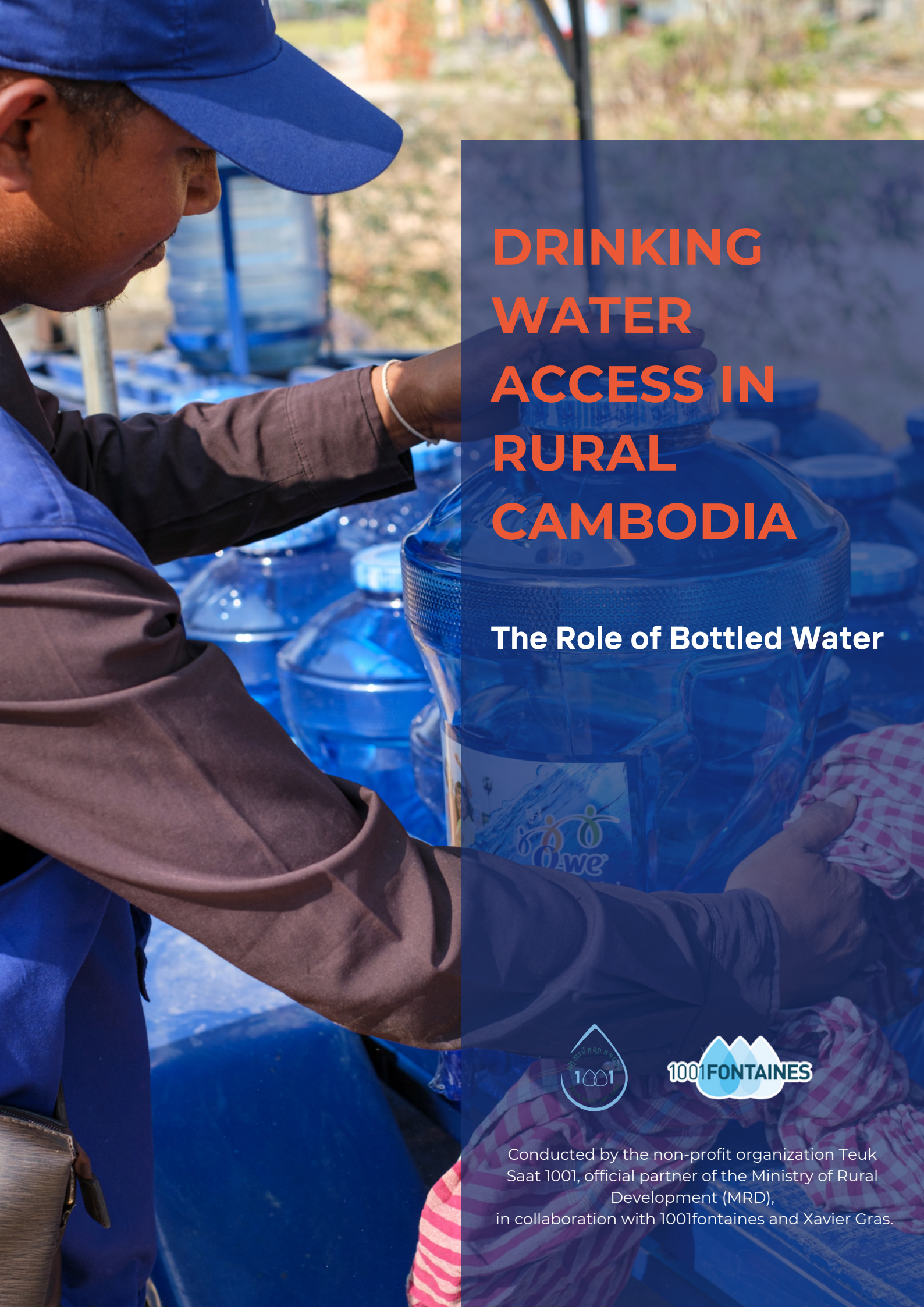




DRINKING WATER ACCESS IN RURAL CAMBODIA

The Role of Bottled Water



Conducted by the non-profit organization Teuk Saat 1001, official partner of the Ministry of Rural Development (MRD), in collaboration with 1001fontaines and Xavier Gras.

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GLOSSARY

Improved Water Source: includes piped water, public taps, standpipes, tube wells, boreholes, protected dug wells, springs, rainwater, water delivered via a tanker truck, and bottled water.

Safely Managed Water Source: an improved water source that is accessible on premises, available when needed, and free from fecal and priority chemical contamination.

Water Kiosk: small water purification plants installed by Teuk Saat 1001 in collaboration with the Ministry of Rural Development and communes. Raw water from a local source is purified using a multi-step filtration process including UV treatment technology, ensuring compliance with potability standards.

O-we: the community-based brand of safe water produced and conditioned in reusable 20-liter bottles at Teuk Saat 1001's water kiosks.

O-we consumers: individuals who identify O-we safe water as their primary drinking water source.

ID Poor: identified poor and vulnerable households following a government standardised procedure, so that they can access benefits such as social transfers, healthcare and other targeted services.

ACRONYMS

CDHS: Cambodia Demographic and Health Survey

NIS: National Institute of Statistics

WHO: World Health Organization

MRD: Ministry of Rural Development

RGC: Royal Government of Cambodia

1.

INTRODUCTION

Cambodia has significantly increased access to drinking water services over the last few decades, particularly from 2014 to 2022[1]. During this period, the percentage of the rural population using an improved source of drinking water rose from 60% to 87%. This progress is especially noteworthy in rural areas, which have historically faced greater challenges in accessing drinking water.

Despite substantial improvements in piped water infrastructure, enhanced access to improved water sources has mainly been driven by bottled water. This trend, observed in neighboring countries like Vietnam and Thailand, where bottled water has become a crucial drinking water supply solution even in rural areas, remains relatively undocumented.

Teuk Saat 1001 is a nonprofit Cambodian organization that has worked with the Ministry of Rural Development (MRD) for the past 20 years. The organization aims to support access to safe drinking water in rural communities by establishing water purification plants (water kiosks) and training locally recruited entrepreneurs to manage them.

Teuk Saat 1001's approach involves delivering treated water in 20-liter reusable bottles to homes, ensuring compliance with World Health Organization (WHO) water quality standards, and providing convenience to households, which encourages adoption. Scientific studies[2] demonstrate the positive health impacts of this initiative, and its 20-year track record is a testament to its sustainability, with water sales revenues fully covering operating and maintenance expenses.

Currently, Teuk Saat 1001 supports a network of more than 340 water kiosks, serving a over million consumers.

[1] Cambodia Demographic and Health Survey (CDHS), National Institute of Statistics (NIS)

[2] Hunter, P.R., Risebro, H., Yen, M. et al. Water source and diarrhoeal disease risk in children under 5 years old in Cambodia: a prospective diary based study. BMC Public Health 13, 1145 (2013).





This study aims to document the role of Teuk Saat 1001's water brand, O-we, and bottled water as a segment in enhancing access to drinking water in rural Cambodia.

It intends to provide insights into how O-we water is perceived and valued in household drinking water practices. Additionally, it evaluates whether this solution is universally applicable, considering the socio-economic profiles of the consumers.

The study confirmed that bottled water is now the dominant source of safe drinking water for rural households. It is the primary drinking water source for 46% of the rural population, with Teuk Saat 1001's 20-liter bottles accounting for 26% of this.

The study highlighted that Teuk Saat 1001 services reach all quintiles of the population, validating its significant contribution to the Royal Government of Cambodia's (RGC) objective of universal access to safe water.

However, the study raises concerns about the other share of small and 20-liter bottled water supplied by fragmented players who likely do not benefit from the same level of professional support that distinguishes Teuk Saat 1001 as a nonprofit driven by the mission of enhancing access to safe drinking water.

While bottled water has gained a growing importance in rural water access, other patterns such as boiling water (28%) or not treating it at all (6%) persist. It indicates that significant work remains to achieve universal access to safely managed water in rural Cambodia.



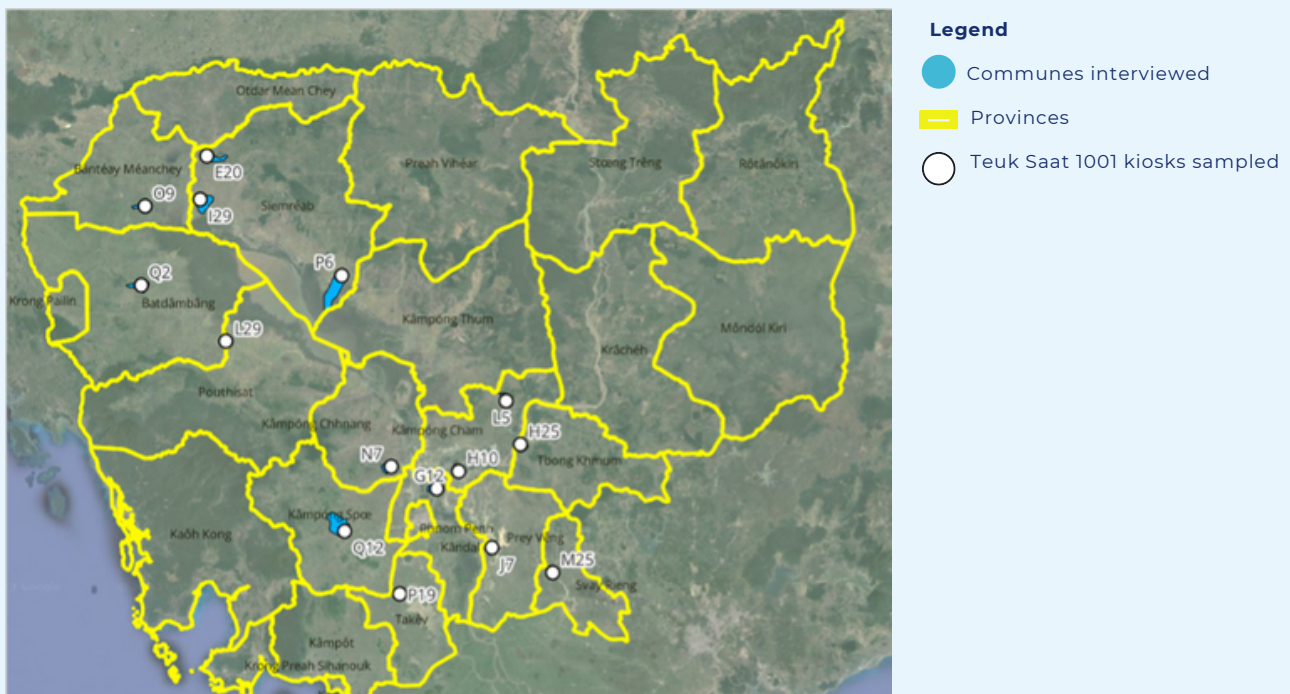
METHODOLOGY

The study conducted in September 2023 aimed to inform drinking water behaviors in the 340 rural communes where Teuk Saat 1001 operates, covering a catchment area of more than 3 million inhabitants. A total of 15 communes were randomly selected to provide representative data.

Two levels of data collection were performed: over 3,200 contact surveys to accurately assess the distribution of water sources within the population, with a 2% margin of error; and 1,000 interviews to gather qualitative insights on socio-economic profiles, satisfaction levels, and consumption habits (20% O-we consumers / 80% non-O-we consumers).

Teuk Saat 1001 leveraged its network of trained field staff for data collection using tablets and appropriate software, with bias risks mitigated through external quality control. Data analysis was outsourced to an independent, seasoned expert.

The key takeaways from the study are being used by Teuk Saat 1001 and its long-term partner 1001fontaines for external communication, aiming to share learnings with water sector practitioners and partners.



3.

FINDINGS

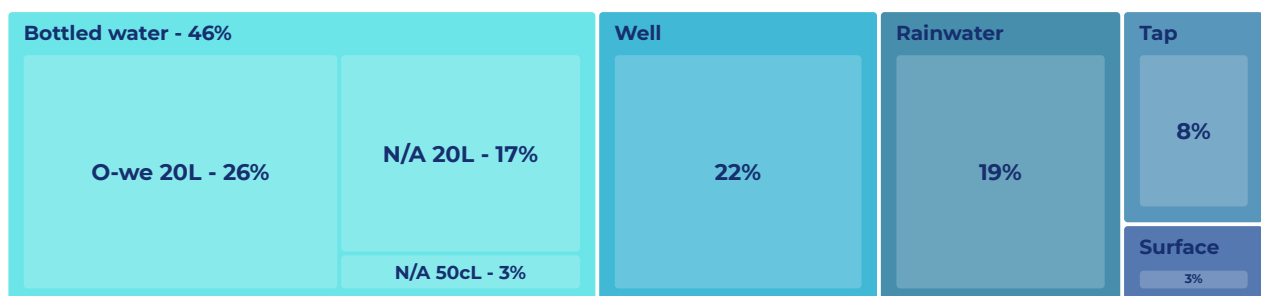
3.1

BOTTLED WATER: THE PRIMARY DRINKING SOURCE IN RURAL COMMUNES

The survey provides insights into drinking water sources in rural areas, revealing that bottled water is the main source for 46% of the surveyed population. **Teuk Saat 1001's brand O-we, supplied by local entrepreneurs adhering to strict operating standards, is the primary water source for 26% of the population** in the communes where Teuk Saat 1001 operates.

The remaining bottled water consumers are served by fragmented players, primarily in 20-liter reusable formats. While small 50cl formats exist and contribute significantly to local plastic pollution, they are not widely adopted as main drinking source.

Figure 1: Drinking Water Sources Repartition



Despite over 30% of the surveyed population having access to tap water, only 8% actually drink from it. This shows that rural households often differentiate water sources depending on the need to be addressed, such as housework, hygiene, and irrigation, and have a specific behavior for drinking water.

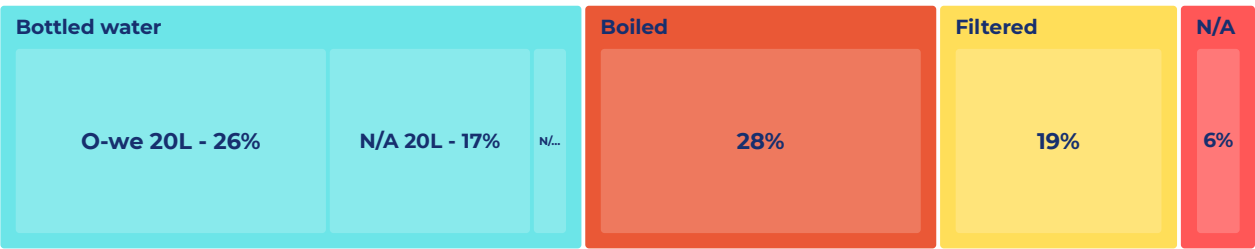


3.1

BOTTLED WATER: THE PRIMARY DRINKING SOURCE IN RURAL COMMUNES

Additionally, 60% of the population use multiple drinking water sources. Exclusivity to a single water source is relatively higher among O-we consumers, with over 50% relying solely on it, compared to those using rainwater and surface water, which are affected by climate fluctuations throughout the year. In contrast, O-we service is continuous. **O-we water consumers tend to maintain a stable spending pattern for safe drinking water, even during the rainy season, and do not switch to rainwater.**

Figure 2: Drinking Water Including Treatment Practices



Regarding water treatment practices, except for bottled water consumers, most of the population treats their water before drinking, typically through boiling or filtering. However, **6% of the population still consumes untreated water.**

Except for O-we, whose quality is monitored monthly following WHO potability standards adhering to safely managed criteria, there is a lack of clear public information about the actual quality of the water consumed by the rural population.



3.2

TEUK SAAT 1001'S REACH TO THE POOREST

Teuk Saat 1001's consumers are distributed across all population quintiles in relatively balanced ratios, with fair representation among the poorest segments. Notably, **16% of O-we users are categorized as ID poor, closely aligning with the national average of just over 18% in 2023.** This suggests that O-we water is affordable even for the poorest at an average cost of 1,800 riels for 20 liters. Monthly expenses for O-we drinking water constitute less than 3% of a household's monthly budget, a commonly accepted threshold for affordability.

Figure 3: Quintile Distribution Among O-we Consumers Compared to the Total Surveyed Population

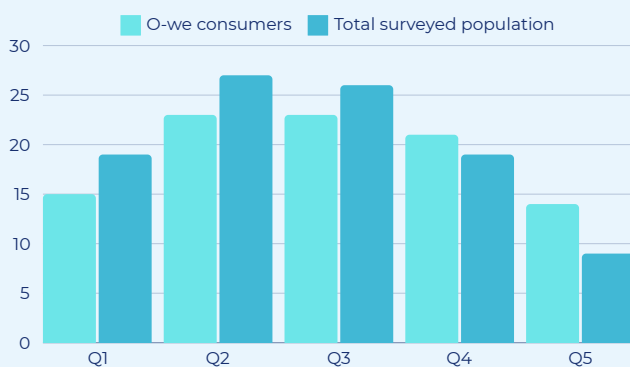
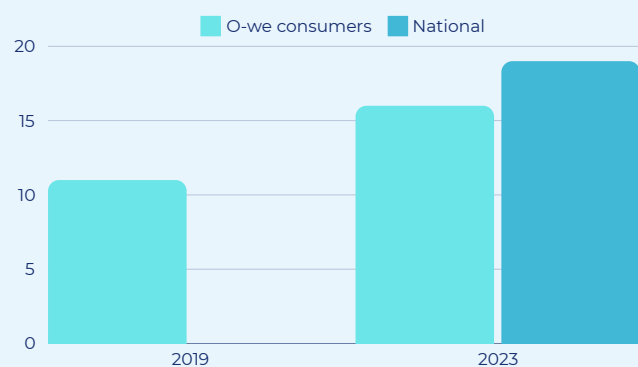


Figure 4: Share of ID Poor among O-we consumers



The service attracts people through various channels, including door-to-door visits, visibility of the O-we delivery vehicle and recommendations. This confirms the efficiency of Teuk Saat 1001's awareness methodology, including strong engagement with local key opinion leaders for water kiosk setup, a week of mobilization within villages to promote the service, and a standardized branding package used by entrepreneurs.

Figure 5: O-we awareness channels



3.3

BEHAVIOR CHANGE TOWARDS IMPROVED HEALTH

The introduction of Teuk Saat 1001's service significantly impacts safe drinking water access and related behaviors for rural communities. For instance, 39% of O-we users previously consumed boiled surface, well or rainwater, while 23% drank untreated surface, well, or tap water. Switching to O-we thus marks a clear step towards healthier behavior and can also result in saving significant time.

Figure 5: O-we consumers' previous drinking water source

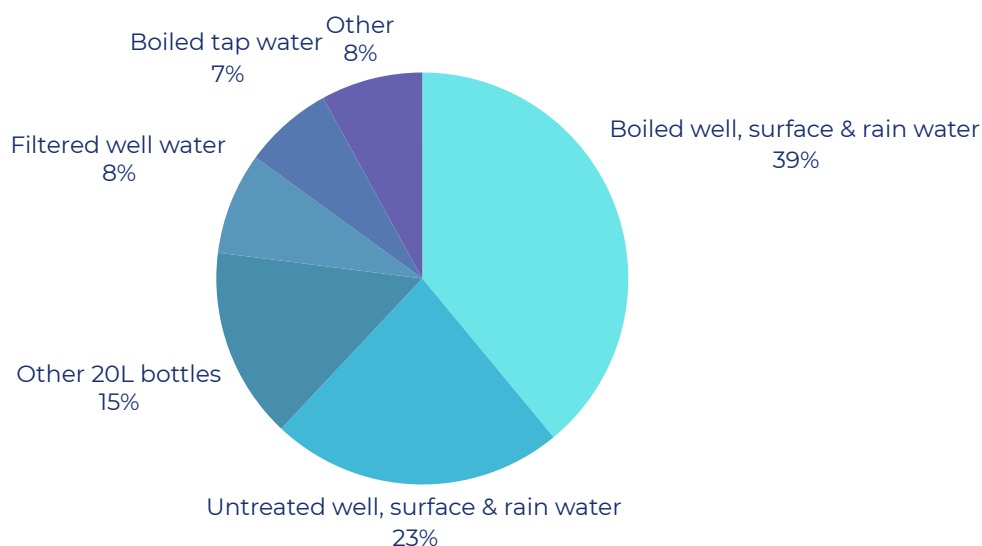


Figure 6: Perceived health effect since consuming O-we



Many users have reported positive health effects since switching to O-we water, with 24% noting a very positive effect, 10% a positive effect, and 12% a minor positive effect.

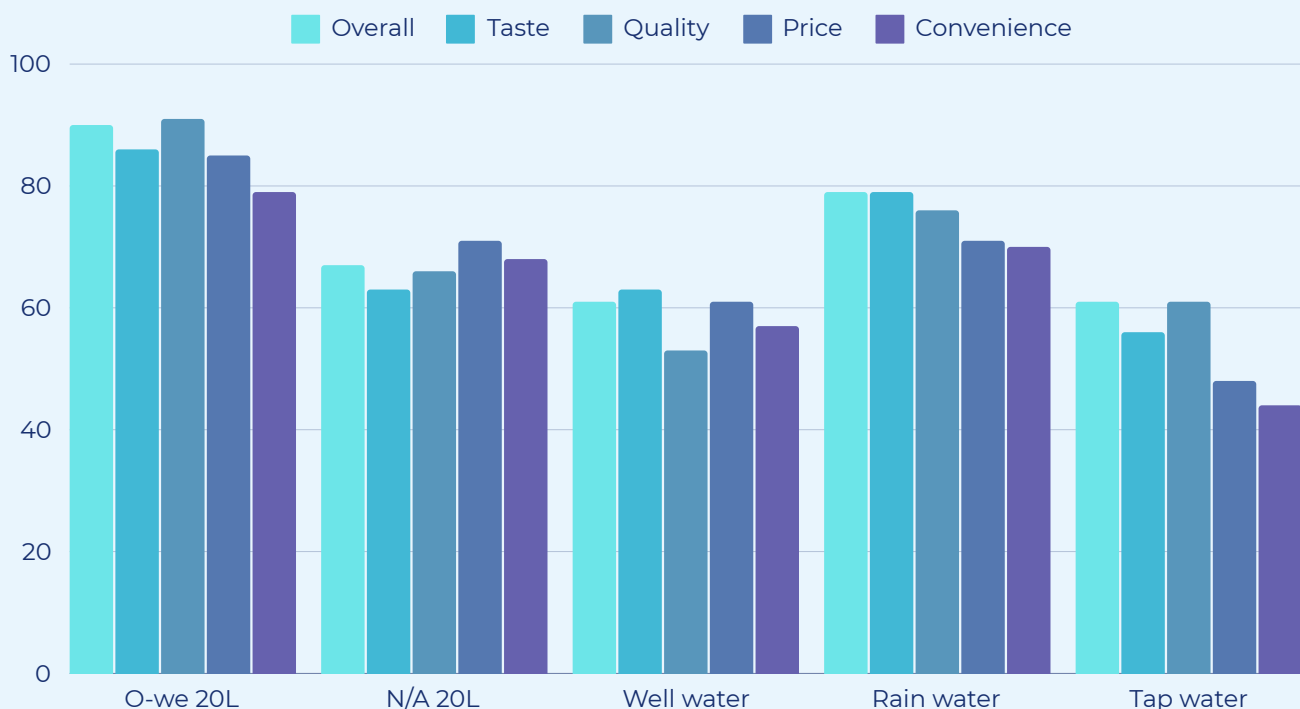
For the non-consumers, there seems to be an important room to grow and encourage more people to switch to safe consumption practices. 24% of non-users require improvements in O-we delivery services to their village to consider adopting this solution, while 49% of non-O-we consumers are simply unaware of the service. This means Teuk Saat 1001 can expand its impact by enhancing awareness-raising activities and helping the entrepreneurs improve their delivery routines.

3.4

ACHIEVING HIGH CUSTOMER SATISFACTION: THE RESULTS AND PROMISE OF TEUK SAAT 1001

Satisfaction levels among O-we consumers are notably high compared to those using other water sources, particularly in terms of quality. This reflects Teuk Saat 1001's commitment to equipping and supporting its local entrepreneurs to provide the best service to households. This support includes training to operating standards, encompassing the crucial step of bottle disinfection, monthly quality tests, and ongoing technical maintenance.

Figure 7: Satisfaction levels accros water sources



This satisfaction is key for long-lasting consumption of safe drinking water over years. There is still room for improvement in service convenience, especially concerning delivery logistics. This topic is well identified within Teuk Saat 1001, and the team is committed to addressing it.

An impressive 73% of O-we consumers are willing to recommend O-we to others, promising growing demand for Teuk Saat 1001 entrepreneurs to meet.

4.

CONCLUSION

The study underscores Teuk Saat 1001's significant contribution to the Royal Government of Cambodia's (RGC) goal of achieving universal access to safe drinking water.

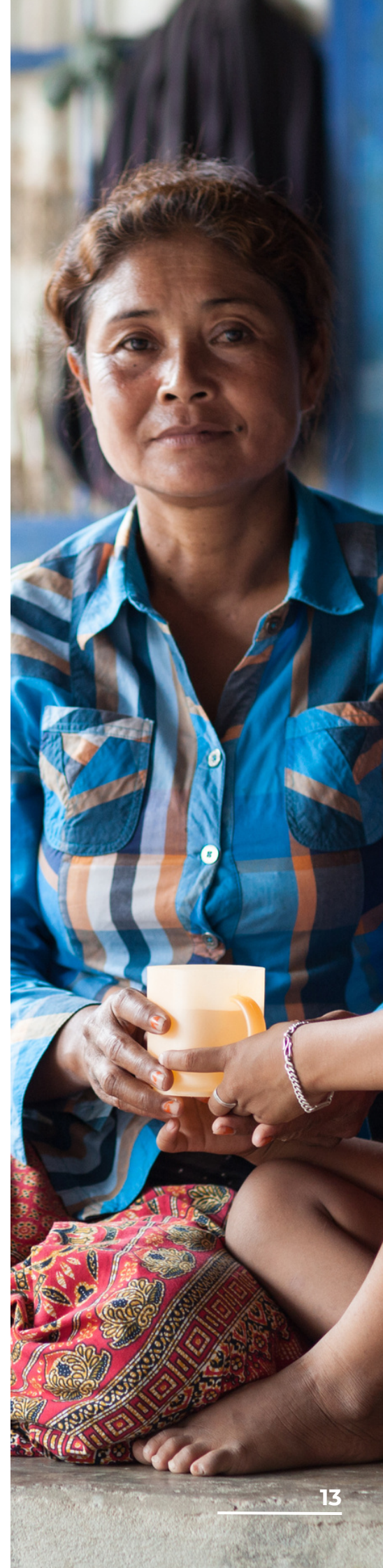
Teuk Saat 1001's 20-liter bottled water serves as the primary drinking source in rural communes where it operates, effectively reaching diverse socio-economic segments including the poorest.

The survey underscores that Teuk Saat 1001's model, which ensures both water quality and affordability, achieves high satisfaction levels among users, fostering trust and continued use.

Overall, despite significant improvements in rural access to improved water sources in recent decades, the continued consumption of untreated water and reliance on boiled self-supplied groundwater indicate that **much work remains to achieve universal access to safely managed drinking water in rural Cambodia.**

While bottled water is poised to play a pivotal role in future progress, the presence of fragmented and potentially unregulated bottled water providers raises concerns. Unlike Teuk Saat 1001, these profit-driven suppliers may lack adherence to rigorous standards and comprehensive support structures, potentially compromising water quality and undermining public health efforts.

This underscores the necessity for cohesive support systems to ensure that all improved water sources meet safely managed standards, especially in the face of growing climate change threats already impacting existing services.





Four years after achieving breakeven on operating costs - a testament to the sustainability of Teuk Saat 1001 approach - this study marks a significant milestone in demonstrating the extent of Teuk Saat 1001 impact in rural drinking water access.

This report serves as a tool for engaging with our partners and provides valuable insights and inspiration for shaping future strategies. **Teuk Saat 1001 will maintain a strong focus on ensuring differentiated quality of service. We will notably work on:**

- **Improving production processes** to enable local entrepreneurs to effectively meet demand and enhance resilience to climate change.
- **Supporting entrepreneurs in optimizing delivery logistics** to better serve their communities.
- **Developing targeted awareness strategies** for the most vulnerable segments still relying on unsafe water sources.
- **Expanding partnerships at local and national levels** to accelerate these efforts and further amplify social impact in communities.

By continuing to innovate and adapt, Teuk Saat 1001 is committed to maximizing its contribution to Cambodia's progress towards universal access to safe drinking water, ultimately improving public health and enhancing the quality of life in rural communities.



ANNEX I

DETAILED SAMPLING METHODOLOGY

The study's surveys were conducted across 15 communes where Teuk Saat 1001 operates a water kiosk. The table below summarizes key information on the study scope, including a total population of 3 million people and detailed survey sampling and precision.

	Sample	Survey Scope
Number of communes	15	268
Cumulated population	153,558	3,046,628
	Sample	Margin of error
Contact survey	3,248	2%
O-we consumers	291	7%
Non O-we consumers	722	2%

Contact Surveys

Conducted with a random sample of resident households, these surveys aimed to characterize all households in the study area. The purpose was to gather demographic data and insights on drinking water sources. Sample sizes for contact surveys were set in proportion to the population in each commune, ensuring less than 1% variance between the proportions of household survey samples in each commune.

User/Non-user Surveys

These surveys targeted predetermined numbers of households primarily consuming O-we water and households using other water sources. This was done to characterize these groups across the entire study area.

Sampling Methodology

Field team selected households randomly and deployed to the main villages of each commune following a collection methodology:

- Random walking was performed, with contact surveys every 3 houses and interviews every 5 contact surveys.
- Each team was placed at a precise GPS point to cover the entire village in each commune.
- The staff worked in teams of 2, covering each side of the same road to cross-verify data.
- GPS coordinates were recorded for each survey to create maps for checking the representativeness of the sampling.

ANNEX II

TEUK SAAT 1001 MODEL

Teuk Saat 1001 supports access to safe drinking water in rural communities by establishing water kiosks and training locally recruited entrepreneurs to manage them.

Using this approach at scale, Teuk Saat 1001 today supplies 1,150,000 people across rural Cambodia with safe drinking water, ensuring long-lasting positive outcomes through self-sustaining operations.

1. Teuk Saat 1001 sets up water kiosks in partnership with rural communes, providing them with safe and affordable water services.

Water kiosks are small water purification plants set up directly in underserved areas. Water is purified locally and bottled into 20L reusable bottles, meeting WHO quality requirements. The bottles are home-delivered and sold at an affordable price, ensuring everyone can access this essential service. Additionally, safe water is delivered for free to over 1,000 primary schools, improving children's health and education.

2. Teuk Saat 1001 trains local entrepreneurs to operate the water kiosks, ensuring sustainability and enabling them to earn a living.

Training covers everything from water technical skills, marketing, finance, entrepreneurship, and team management. Over 82% of all the water kiosks that were launched since the initiative inception in 2005 are still operating today.

3. Teuk Saat 1001 oversees a network of support platforms for its entrepreneurs, providing wrap-around services that ensure excellence in operations and maintenance.

Entrepreneurs pay a monthly contribution from their sales in exchange for services that ensure sustainability: consumable supply, water quality monitoring, technical maintenance and business coaching. Since a sufficient number of entrepreneurs operate in Cambodia, the support functions of Teuk Saat 1001 are self-funded.

4. Teuk Saat 1001 is developing as a major safe water provider in rural Cambodia.

With over 340 communes reached across 18 provinces, Teuk Saat 1001 and the Ministry of Rural Development are setting a role model for achieving universal access to safe drinking water.



Subsidies fund the water kiosks' set-up



ENTREPRENEURS

The water kiosk finances its operational expenses from Day 1, and starts contributing to support functions from Month 3



TEUK SAAT 1001 SUPPORT

With multiple kiosks, operation and maintenance support functions are sustained



Teuk Saat 1001 utilizes its entrepreneurs and expertise to help impact grow.

COMMUNITIES



