

# IRC

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## **Bottled Water: A Viable Alternative for Ensuring Safe Drinking Water in Rural Cambodia?**

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## INTRODUCTION

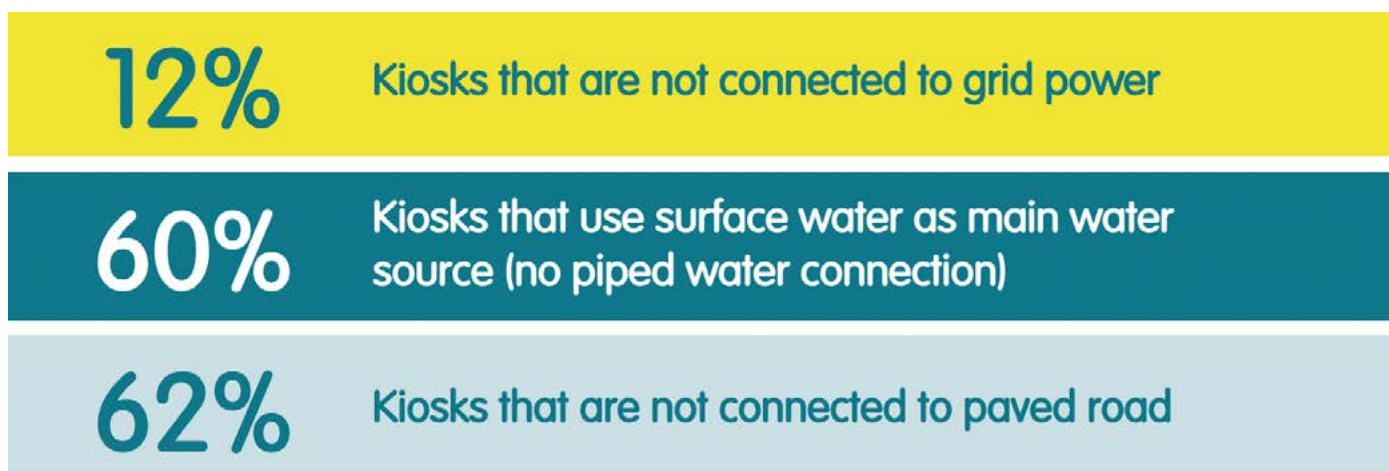
Access to safe drinking water is a fundamental human right that is recognised by the United Nations and is clearly marked out in the Sustainable Development Goal 6.1. Although significant progress has been made in improving access to clean water globally, rural areas still face a huge challenge in ensuring safe drinking water for their communities. Given this context, commercial bottled water in certain areas, has gained significance as a reliable water source, particularly in underserved regions. However, there are several concerns raised regarding the negative consequences associated with bottled water such as plastic pollution, resource depletion, and misleading marketing practices<sup>1</sup>.

To discuss these concerns, this paper focuses on a compelling case study of Teuk Saat 1001, a Cambodian NGO established by 100fontaines. Teuk Saat 1001 has successfully implemented a community-driven bottled water initiative in rural communities. Currently, Teuk Saat 1001 operates a network of over 300 water kiosks, which are small purification units directly set up in underserved rural areas. Figure 1 below illustrates Teuk Saat 1001's presence in communes where 12% of their water kiosks are not connected to electricity connection, 60% lack piped water supply, and 62% lack access to paved roads. These facilities produce

WHO-standard safe drinking water, packaged in 20-litre bottles and delivered to households at an affordable price. This service has been praised by local authorities as a complementary solution to existing water supply delivery mechanisms and thereby encouraging the adoption of safe behaviors among the community.

The study aims to analyse the organization's approach to ensure quality, accessibility, and sustainability and how it sets itself apart from other commercial bottled water providers. The Teuk Saat 1001 model prioritises a public-private partnerships (PPPs), promotes local entrepreneurship, and encourages robust capabilities. This paper intends to identify opportunities for enhanced national government leadership. Given the need for innovative approaches in providing safe drinking water at scale, and the increasing role of bottled water for drinking needs, ensuring monitoring and regulation over such services is key to fostering their scalability, quality and affordability. The objective is to incentivise positive outcomes and draw insights that can be applied across the broader drinking water sector by leveraging the lessons learned from Teuk Saat 1001's experience in their communities.

Figure 1: 1001 Water Kiosks coverage in rural Cambodia



1. Global Bottled Water Industry: A review of impacts and trends – United Nations University, 2023



## QUALITY & CONVENIENCE AS KEY DRIVERS FOR ADOPTION

Teuk Saat 1001 recognised the need for safe drinking water in rural Cambodia where the majority of the population historically relied on tube wells and surface water sources<sup>2</sup> leading to health risks mainly related to pathogens. Back in 2005, when the organisation first introduced its bottled water services, the households typically consumed the water without any treatment<sup>3</sup> while some treated it by boiling. Teuk Saat 1001's value proposition was to offer high-quality packaged drinking water through community-driven brand identity. This proved to be highly preferred by community members in terms of time and convenience, as compared to other available options.

To demonstrate the impact of Teuk Saat 1001's intervention, a comparison of primary options for drinking needs in rural Cambodia is presented in Table 1. This collation is developed through desk research and visual observation of the options. The organization's model outperforms other methods like household water filters or boiling water in terms of

time, convenience, and quality. These factors caused a shift in consumption patterns and showed a growing willingness to pay for quality drinking water in rural areas.

Today, in spite of the expansion of piped water supply in rural Cambodia, Teuk Saat 1001's sales have not been significantly impacted. In fact, it is even higher in communes where tap water is available. This is because households primarily use tap water for non-drinking purposes due to concerns about quality and taste.

Bottled water is used specifically for drinking because of a guarantee in quality. Hence it continues to be valued by the local population. This recognition emphasizes the importance of considering bottled water as one of the solutions for providing safe drinking water in rural Cambodia. Also, its consumption is expected to grow in tandem with economic development. The escalating consequences

2. General population census 2019

3. Cambodia Demographic and Health Survey 2010

Table 1: Comparison of different water service models for drinking water in rural Cambodia

	TS 1001 model	Private bottled water entrepreneur	HH Water Filter	Boiling water
Affordability for the household	Medium	Medium	High	High
Time	High	High	Medium	Medium
Convenience	High	High	Medium	Low
Quality	High	Medium	Medium	Medium

of climate change is likely to position bottled water as one of the safe water solutions during extreme events, further emphasizing its strategic importance. Currently, this is giving rise to private informal water bottle

entrepreneurs who do not adhere to water quality standards or have stringent testing. This has led to a need for regulating this service delivery model.



## NATIONAL SCALE WITH LOCAL PUBLIC-PRIVATE PARTNERSHIPS (PPPS) AND ENTREPRENEURSHIP

Teuk Saat 1001's growth from 150 to approximately 250 water kiosks between 2015 and 2020 was facilitated by adopting a dual approach - involving public partnerships and local entrepreneurship.

Collaborations with the Ministry of Rural Development (MRD) allowed Teuk Saat 1001 to establish water kiosks in rural communes. Partnership arrangements were made based on the willingness of communes' representatives to have a water kiosk. In exchange for providing bottled water supply to the community which included free water provision to primary schools, Teuk Saat 1001 was granted land and access to water sources. This partnership model significantly supported the expansion of the network, enabled lower set-up costs, and stimulated sales growth through local endorsement by public representatives. It also received overwhelming support from rural communes that often struggle to secure decentralized budgets for community projects such as water supply services.

Alongside public partnerships, Teuk Saat 1001 fostered local entrepreneurship by recruiting and training individuals to run their micro-enterprises. The involvement of local entrepreneurs has been crucial to the success of the Teuk Saat 1001 model in contrast with community-managed services. Although entrepreneurs do not bear the risk of losses nor own the infrastructure, they make a living from the activity that encourages performances. Teuk Saat 1001 provides comprehensive training to entrepreneurs in all aspects of production and distribution. Managing the training and support to enhance the income of entrepreneurs has become a core expertise of the organisation.

Despite the challenges posed by the Covid-19 pandemic, the number of Teuk Saat 1001 kiosks continued to grow. They had 296 kiosks by the end of 2022. The organisation is currently active in 18 out of the 25 provinces in Cambodia with their daily consumers being more than 6% of the total rural population, including children served through the water-in-school program, representing a significant 20% of the footprint.

While the expansion of Teuk Saat 1001 demonstrates the effectiveness of its approach, it is crucial to acknowledge the significant limitations that prevent it from being considered a role model. As an NGO-led and incremental initiative operating under dedicated memorandum of understanding with the Ministry of Rural Development, the water kiosk model lacks a legal framework that grants official status to its infrastructure. The water kiosk model operates in a grey zone due to the absence of official guidelines regarding important aspects such as coverage objectives, tariffs, and taxes. These are typically addressed in Public-Private Partnership frameworks in the water sector, providing clarity and structure for the involvement of private operators and paving the way for pro-poor tariffs leveraging subsidies.

This lack of proactive government involvement in shaping a legal framework for the water kiosk model can be attributed, in part, to the model's limited capacity to provide only 1.5 litres per capita per day. This amount falls significantly short of the government's commitment to ensuring a minimum of 50 litres per capita per day, raising questions about the level of government interest in supporting the development of the model. It is worth noting, however, that the water kiosk model could contribute to major public health outcomes beyond the scope of SDG6.



# A NOVEL APPROACH TO RURAL WATER SUPPLY SERVICE QUALITY AND SUSTAINABILITY

Teuk Saat 1001's operational sustainability is evident through the impressive survival rate of the kiosks launched since 2005, which stands at 82%. Furthermore, the organization's commitment to water quality is demonstrated by the water supplied complying with WHO standards above 95% of the time, monitored on a monthly basis. These achievements are made possible through the support capabilities and structure of Teuk Saat 1001 as a social franchise with five regional offices and 115 staff overseeing decentralized water kiosks.

The social franchise model provides crucial support to entrepreneurs, including monthly coaching, supply of consumables and branded materials, quality monitoring, and technical assistance for maintenance. These support capabilities come at a cost, which was partially subsidised until 2020. However, as the network of water kiosks expanded and became more performant, monthly fees paid by entrepreneurs (e.g., 20% of monthly sales) have balanced out the costs of all support structures including headquarters (in Phnom Penh) and regional offices. With some water kiosks having been in operation for more than

15 years, and considering the limited ownership of entrepreneurs, Teuk Saat 1001 now faces the responsibility of covering capital maintenance expenditures through a mix of transfer (grant), debt, and carbon finance.

The initial capital investment for each water kiosk, amounting to USD 36,000, covers the costs of physical set-up and upfront capacity building. This investment has been and remains fully subsidised through international development aid and private philanthropy to fulfill the social mission of providing affordable and high-quality water to rural communities. It is important to note that this financial model poses limitations on attracting private investors and hampers the potential for scalability. Nevertheless, the direct funding support received from the national government for capital expenditures of a water kiosk in Prey Veng Province serves as an optimistic gesture. It indicates that exploring public finance mechanisms could be a viable approach to further establishing water kiosks as a publicly supported solution for achieving the government's goals.

Table 2: TS1001 financial model

CapEx	CapManEx	OpEx	DS Ex	Cost recovery (%)	Profit (%)
Transfer (grant)	Tariff + Transfer	Tariff	Tariff	100% (for OpEx)	0% at franchise level 8% at kiosk level





## AN EVOLVING MARKET CONTEXT THAT CALLS FOR QUALIFYING TS1001 VALUE PROPOSITION

Driven by the increasing demand for safe drinking water, the bottled water market in Cambodia has witnessed significant growth in recent years. While large-scale commercial brands mainly cater to urban areas and are often unaffordable for rural households, numerous family-run businesses have emerged to produce and distribute drinking water in rural communes. However, these entrepreneurial ventures vary in size and quality and are primarily motivated by personal profits, driven solely by market demand. Consequently, some of these businesses neglect production costs and compromise on quality or prioritise small formats over 20 litres reusable bottles, disregarding concerns about plastic pollution.

Although the Ministry of Industry, Science, Technology, and Innovation (MISTI) is responsible for regulating the commercial sector, including bottled water producers, the small and decentralized nature of these businesses makes it challenging to enforce effective quality control procedures.

This evolving market landscape poses an additional challenge for Teuk Saat 1001 in advocating for its innovative approach to safe water service delivery. The Teuk Saat 1001 water kiosk model sets itself apart from the commercial and informal bottled water market in several significant ways. Unlike profit-driven businesses, Teuk Saat 1001 actively

engages local communities in governance, ensuring their participation and representation to maintain the community-focused nature of the service. Entrepreneurs operating under Teuk Saat 1001 adhere to TS1001's compliance structure that oversees quality control, ensuring consistent service delivery and effective risk management. Moreover, Teuk Saat 1001 considers factors beyond market considerations, such as plastic pollution, by exclusively using 20-litre reusable bottles and offering home delivery to enhance accessibility, even if it leads to lower profit margins per litre. However, it poses a risk that Teuk Saat 1001 may deviate from its social mission as the market trends towards a more privatized model, especially without enforced national leadership on community-based water kiosks.

An opportunity lies in Teuk Saat 1001 and the Ministry of Rural Development collaborating to build upon a solid track record of fostering a culture of service, sustainable operations, and water quality, along with local authorities. Together, they can design a more mature public-private partnership scheme for community-based water kiosks, drawing lessons from MISTI's successful experience in licensing private piped water operators to achieve universal access to safe water in rural areas. Furthermore, Teuk Saat 1001 could further align with MISTI regulations and collaborate in enforcing quality standards and risk

management, leveraging its 15 years of experience in managing small-scale production facilities across the country. Sharing insights on decentralised testing facilities and logistics could potentially aid the

government in shaping rural-based processes, with the ultimate goal of driving quality in the commercial sector thereby, enhancing public health security.



## CONCLUSION

While bottled water is not typically associated with contributing to universal access to safe drinking water, but rather seen as a potential liability, this case study analysed the approach to ensuring quality, accessibility and sustainability of a community-based bottled water service model. Over the course of more than 15 years of incremental development, Teuk Saat 1001, in collaboration with the Cambodian Ministry for Rural Development, has successfully provided rural inhabitants with safe and affordable water at scale, in a sustainable manner.

While demonstrating the success and quality of the service, the case study also sheds light on the limitations and risks of this NGO-led initiative, as it is not fully regulated by the government, unlike the piped water sector, for example. The entrepreneurial nature of the model also blurs the distinction between this initiative and the commercial bottled water sector, potentially raising concerns about unfair competition

due to its financial model involving subsidies. However, given the current progress towards achieving Sustainable Development Goal 6 (SDG6), it appears that community-driven bottled water services could make a difference, subject to government decision-making, in promoting safer behaviour change, expanding coverage in rural areas, and enhancing resilience to climate change.

To fully leverage the potential of these unconventional approaches, a shift is required from infrastructure-centred policies to context-based and need-focused systems. Major development funders, recognising the value of such approaches and supporting sovereign investments, are starting to acknowledge their potential for ensuring access to safe drinking water in specific contexts. By embracing these alternative solutions, governments can foster inclusive and sustainable access to safe drinking water while addressing the challenges of SDG6.

Image Credit: Teuk Saat 1001. O-we is the brand name of TS 1001 bottled water



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