

CIRCULAR ECONOMY BUSINESS CASE STUDIES IN SOUTHEAST ASIA



TONTOTON

- Sihanoukville, Cambodia
- Waste management
- <https://tontoton.com/>
- Analysis period: 2021-2024

Community-based Recovery of Plastic Waste

Business Spotlight

TONTOTON is a social enterprise operating in Cambodia and Vietnam that addresses the critical issue of plastic pollution, particularly through collection and retrieval of mismanaged ocean-bound plastics, using an innovative, community-driven model. TONTOTON established a network for collecting plastic waste, including non-commercially recyclable plastics, and retrieving 'orphan' plastic waste from beaches, roadsides, uncontrolled dumps etc. In addition, the company developed recycling options for each type of plastic. TONTOTON promotes plastic litter reduction for environmental sustainability while providing opportunities for local communities. The model incorporates the collection, treatment, and conversion of plastic waste into valuable products, alongside action to generate awareness and provide financial benefits to the community. This approach generates plastic credits for abandoned plastics retrieved from the environment, that are certified by the Ocean Bound Plastics programme of Zero Plastic Oceans. Through collaboration and a comprehensive awareness programme, TONTOTON exemplifies a scalable and effective circular economy solution for plastic waste management while creating the concept of Impact as a Service. Additional investment through impact

investors could help this successful business model to further scale up its impact.

Keywords

Ocean bound plastic, Plastic credit system, Plastic waste management solutions, People empowerment

Innovation

Manufacturing, End of life management, Resource circularity



Context and baseline

Plastic constitutes a significant portion of daily waste in Cambodia, particularly in major cities where it can account for between 20% and 34% of total waste, as in Sihanoukville. In Cambodia, the market for recyclable plastics like PET is informal in nature, inefficient in waste collection services, and lacking source segregation and sorting facilities. Moreover, no strategies are in place to address the issue of low-value plastics that are considered non-economically recyclable (such as plastic bags, food packaging, cups, etc.), which can constitute up to 80% of the debris collected along the coast.

Unwanted 'orphan' plastics (mismanaged, non-recyclable and post-consumer plastic items) spreading virtually everywhere is of concern, because this waste is essentially on its way to accumulate in the oceans. To address this problem, Barak Elshtein created the social enterprise TONTOTON.

This company offers comprehensive, circular solutions for retrieving, collecting and managing all types of plastic waste. The solutions include collection, treatment, incentives, and awareness initiatives, and they are largely financed by a certified plastic credit system. TONTOTON contributed to establishing through the Zero Plastic Oceans (ZPO)¹ Initiative. Initially launched in Vietnam, TONTOTON has now shifted its primary focus to Sihanoukville on the Cambodian coast, where it involves the local community and has set up a Material Recovery Facility (MRF), which now also includes a visitor centre. This facility recycles both low-grade plastics (destined for 'co-processing' as alternative fuel) and non-commercially recyclable plastics into 'impact' products.

Innovation

TONTOTON's unique approach to orphan plastic waste recovery employs a comprehensive and holistic strategy to effectively handle all types of plastic waste and convert these into valuable products. This provides 'Impact as a Service' (IaS): cleaning up abandoned plastic waste from the environment (the impact) through the service provision of a community network of plastic collectors and recyclers.

The initiative is notable for several key innovations. First, TONTOTON developed an efficient collection network that includes not just informal waste pickers but also involves local communities in waste segregation, simultaneously offering them

supplementary income to support their livelihoods. Second, they have set up a holistic range of circular solutions specifically designed for managing low-value or non-commercially recyclable plastics that are typically overlooked, and utilising all possible recycling methods. In addition, TONTOTON has introduced a range of impact products by producing and supply recycled plastic boards (used for e.g., classroom construction, furniture for schools but also small products carrying the OPB certificate, such as coasters, key chains etc.). These products serve as catalyst to raise awareness for reducing plastic pollution and making responsible use of plastic.

All the collection, processing, and production, including design, cutting, and finishing, is done 100% in-house at TONTOTON, showcasing an end-to-end recycling solution.

Financial feasibility is secured from the payments received for the Ocean Bound Plastic credits, which are certified by the Zero Plastic Oceans initiative, which TONTOTON helped develop and establish. Notably, TONTOTON became the first enterprise globally to be certified under the Ocean Bound Plastic (OBP) Neutrality Standard for Service Providers in 2021, a certification that requires third-party verification by the Control Union and aims to prevent OBP plastic waste from reaching the oceans. The plastic credits created by TONTOTON can be purchased by companies and other organisations, or by individuals seeking to compensate their plastic footprint or wishing to contribute to cleaning up the environment for charitable purposes. A great feature of this plastic credit system is that the results are very tangible. Each unit is equivalent to one metric tonne of plastic collected and prevented from entering the oceans.

Furthermore, TONTOTON's awareness programmes are exceptionally thorough, spanning from community-based solutions to awareness campaigns such as the 'Plastic Free Coastlines' programme funded by the United Nations Development Programme. TONTOTON has also established a visitor centre designed to engage visitors by converting their entrance fees into tangible plastic collection efforts, showcasing the impact of their contributions directly.

This multi-faceted approach addresses not only the environmental issue of mismanaged or leaked plastic waste, it also fosters economic opportunities and awareness, highlighting the effectiveness of integrating community involvement with innovative clean up and recycling solutions.

¹ Zero Plastic Oceans was established in 2019 as a non-governmental organization (NGO) dedicated to addressing plastic pollution issues. ZPO was born from the observation that most plastic waste ending up in the ocean comes from abandoned plastic waste, the so-called "Ocean Bound Plastic" (OBP). See: <https://www.obpcert.org/about-zero-plastic-oceans/>



Circular Economy impact

TONTOTON exemplifies the resource circularity strategy for the circular economy, as it works to retrieve orphan plastic waste from the environment and communities, and then recover and recycle plastic materials and/or energy from the recyclable plastic waste itself.

Plastic waste is brought by collectors and TONTOTON's pick up teams to the Material Recovery Facility (MRF) in Sihanoukville for segregation into different fractions. Plastic waste that is still commercially recyclable is first recovered, baled and sold to local recyclers. PET (mainly bottles) is directed to a third-party bottle-to-bottle recycling factory. Next HDPE, LDPE, PP, and PE that is still in comparatively good condition is re-formed into new board products through heat-processing techniques, into e.g. plastic boards and lumber for furniture and construction. The remaining degraded plastic waste is sent for co-processing to INSEE Eco-Cycle for use as alternative fuel for the cement industry.

The non-commercially-recyclable plastic is shredded and turned into building materials for the community: houses, classrooms or smaller 'impact' products sold at the souvenir shops. TONTOTON also proposes several tailored options to companies which are buying plastic credit units, such as financing the building of a classroom with recycled plastic boards. All plastics have a useful application through materials or energy recovery.

TONTOTON collected 2283 tonnes of mismanaged, post-consumer plastic from 2021 to 2023 in Cambodia. A significant portion of the plastic collected is identified as 'Potential Ocean-Bound Plastic' which means the plastic waste was located in an unmanaged, uncontrolled location within a 50 km range from the shore. TONTOTON has a

collection and processing capacity of 50–300 metric tonnes per month. The quantity of processed waste plastic is largely dependent on the market demand for certified plastic credits as the main revenue source for TONTOTON.

Business and market impact

TONTOTON earns revenue from three main sources: 10% from selling recyclable PET plastic bottles to recyclers, another 10% from selling plastic boards and impact products, and a substantial 80% from purchase of Plastic Credits. The newly launched Impact Visitor Centre could help diversify revenue and is expected to represent 30% of future income.

Nonetheless, a key part of the company's financial sustainability is the Plastic Credit system financing mechanism and the sale of Verified Plastic Recovery (VPR) units. One VPR is equivalent to one metric tonne of 'Potential Ocean-Bound Plastic' collected. This outcome-driven financial instrument enables companies to support marine plastic litter prevention efforts, either through their charitable activities or more specifically for compensating and offsetting their usage of plastic in their respective businesses. For example, the sale of VPRs enables production of recycled boards that are used as building materials (plastic boards) and for impact products which are used in community projects (building classrooms, repairing homes and making furniture).

For these plastic credits and classrooms, TONTOTON works with various VPR buying companies in Germany and USA (plastic credit traders, cruise lines) and has established cooperation and agreements with various impact agents, including Sumthing and Climate Partners Impact.

Finally, the Impact Visitor Centre, aimed at tourists, students, and companies, is foreseen to increase TONTOTON's revenue by converting every USD 25 earned through the centre into the collection of 25 kg of plastic waste. The Centre expects to reach 1000 visitors in 2025. TONTOTON has also established cooperation with eco-tourism companies like EXO Travel, Easia Travel, and Alldreams Cambodia to include a visit to this impact visitor centre in their itineraries.

The main growth in the coming years is expected to come through the sales of impact products (keychains, magnets, etc.) carrying an OPB certificate, via cruise lines worldwide and local vendors.

TONTOTON estimates revenues of USD 500,000–700,000 in 2025 from their full range of impact products. Initially, collecting 2,300 tons of plastic generated USD 1.3 million from 2021–2023. After pursuing innovative solutions and partnerships,

TONTOTON is now confident that its new products and collaborations will exceed their past impact in plastic collection.

TONTOTON's activities are not supported by any grant except a USD 18,000 prize from Ending Plastics Pollution Innovation Challenge (EPPIC); the business is self-financed from company profits and owner capital.

Stakeholders

TONTOTON's engagement produces a strong social impact. The initiative involves over 300 households and small businesses segregating waste at the source, and 457 informal waste pickers from local communities registered with TONTOTON, these latter handling daily clean-up of accumulated plastics in their villages, with 45% of the collection done by households and 56% by the community.

In addition, 428 plastic collection bins are located in various environments including homes, temples, hotels, and shops and other businesses, where plastic waste is being collected.

From an economic standpoint, the project has proven beneficial for those involved. In 2022, TONTOTON collected an average of 5–6 metric tonnes of plastic waste per day, reaching 15–20 metric tonnes on some days, which translated into an average daily participant income of USD 14.25 for the full-time waste pickers, with some earning up to USD 708 a month, which represent a significant financial improvement for the waste picker.

Women's empowerment is also part of the TONTOTON approach, as the programme provides a reliable income for these waste collectors (57% of them are female), and fosters financial independence.

TONTOTON works closely with a variety of partners to raise awareness on plastic challenges: international organisations (UNDP), NGOs (Zero Plastic Oceans, childcare NGO M'lop Tapang), governments (Sihanoukville Province, Ministry of Environment), and the private sector (Chip Mong Insee, tour operators.)

Implementation

TONTOTON has received significant international recognition, such as winning the End Plastics Pollution Innovation Challenge 2024, being named a UNESCO Green Citizen project in 2024, receiving accolades from the World Economic Forum (WEF) as top innovator in 2021, and being nominated for the Earthshot Prize in 2024.

While there is vast potential for the TONTOTON model to be applied globally, effectively 'selling the impact' and proving the concept's viability nonetheless remain a significant hurdle, and there is a need for substantial investment to scale the initiative for continued growth and impact. Creating a market and demand for 'orphan plastic' was particularly challenging, because TONTOTON is focused on finding solutions for a problem that is too often ignored.

In the early stages, establishing a responsible supply chain in Cambodia required intensive efforts, including training waste pickers, engaging with villagers, and eventually working with entire villages and their institutions.

Behavioural changes and adjustment had also to be made when TONTOTON realised that areas became re-polluted shortly after collection efforts, leading early on to implementing sorting and waste segregation at the household level. All of this groundwork effort was crucial in building a strong and sustainable collection ecosystem.

Finally, the plastic credit market is characterised by its volatility and concerns over greenwashing. A plastic credit buyers entered the market they demanded greater accountability and credibility. The future of this market, and consequently of TONTOTON's operations, may be significantly influenced by the outcomes of the Plastic Treaty, with the final negotiations expected to take place in November 2024.



Takeaways

Plastic pollution is a systemic issue that requires a comprehensive and multifaceted solution: by introducing the concept of 'Impact as a Service' (IaS), TONTOTON aims to transform the way plastic waste is collected, retrieved and managed, through inclusive and collective action. A single entity cannot combat plastic pollution alone, as it requires a concerted effort from the entire ecosystem, including the informal waste sector and local communities. TONTOTON claims that 'It takes a village to clean a village.'

TONTOTON focuses on creating a sustainable market for 'orphan' plastics, those materials considered non-commercially recyclable and having no value, and by recovering and utilising every single type of plastic. The core philosophy: 'Leave nothing and no one behind' embodies the fully circular solution TONTOTON proposes, where all plastic waste is sorted, treated and utilised for next-life solutions, preventing landfill and putting a stop to polluting the ocean.



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