

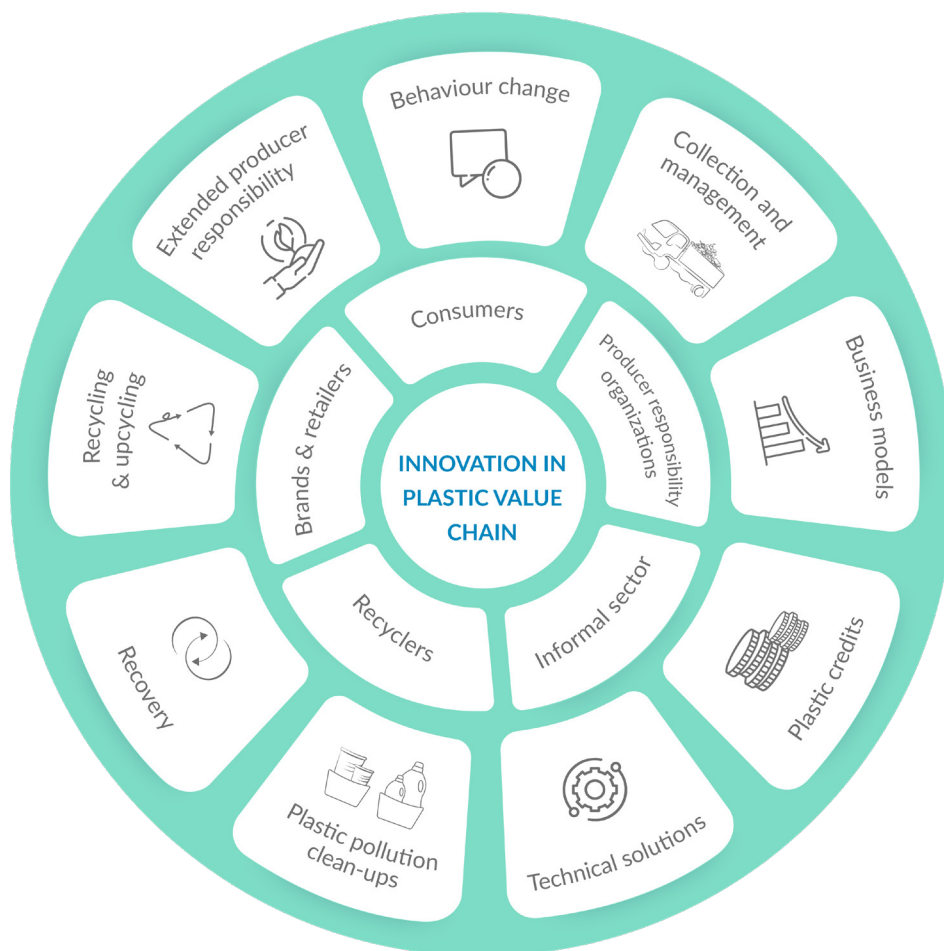
Circular solutions for plastic pollution

Turning plastic trash into treasure

About the case study

This good practice case study is part of a series of knowledge products developed by the SEA circular project to showcase exemplary market-based solutions that bring about transformational changes in the way plastic is managed in the value chain. This series captures circular economy approaches, ranging from innovative business models to behaviour change initiatives, to address plastic pollution. These approaches form part of the SEA circular project's "circularity framework for the plastic value chain".

Circularity framework – plastic value chain



Background

In 2018, the plastic industry accounted for over USD 2.3 billion in the Philippine economy,¹ producing low-cost consumer goods for over 11.3 million poor and middle-income households.² This staggering consumption pattern, coupled with a growing population, equates to over 163 million plastic sachets consumed each day – a major contribution to the estimated 2.7 million tons of plastic waste each year. Such heavy consumption of single-use plastics has led to the Philippines being labelled a “sachet economy”.

With insufficient infrastructure for solid waste management, most of this plastic waste is mismanaged, leaving a large volume of plastic shopping bags, clear plastics, plastic bottles and much more unrecycled. In urban areas, waste collection coverage is as high as 80 per cent, but at the national level, it is far lower at 40 per cent.³ This varying coverage is attributed to structural challenges such as high logistical costs for recycling, high utility costs, a lack of incentives for the local government to invest in a recycling facility, and the lack of a market for recycled products.⁴

To address this, social enterprise The Plastic Flamingo (also known as The Plaf) was set up. It collects and recycles plastic waste of all types and turns it into a range of construction materials. There are already many organizations that tackle the issue of plastic waste but most are not able to fully recycle all plastic waste.

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1. World Bank Group, *Market Study for the Philippines: Plastics Circularity Opportunities and Barriers* (Washington, D.C., World Bank, 2021).

2. Jose Ramon G. Albert and others, *Poverty, the Middle Class, and Income Distribution amid COVID-19* (Quezon City, Philippine Institute for Development Studies, 2020), p. 22.

3. SEA circular, “Philippines”. Available at www.sea-circular.org/country/philippines/.

4. World Bank Group, *Market Study for the Philippines: Plastics Circularity Opportunities and Barriers* (Washington, D.C., World Bank, 2021).



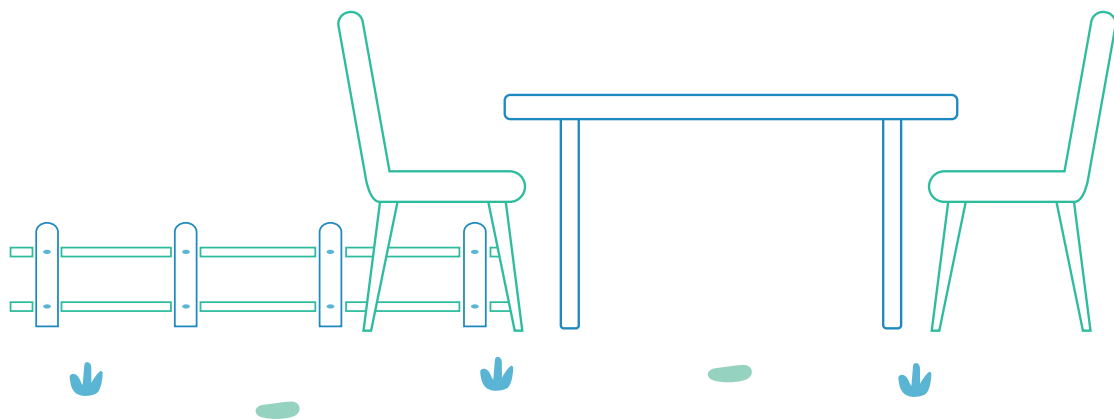
Interventions

The Plaf collects and recycles plastic waste and turns it into durable, low-maintenance, splinter-free, rot- and termite-resistant construction materials. These products are ideally used for decking, fencing, housing and outdoor furniture.

Set up in 2019, The Plaf's initial focus was to build a **waste management network** in which private individuals as well as large companies, schools, universities, malls or entire barangays became Plaf plastic waste collection points. Having built this network, in 2020 The Plaf expanded throughout Metro Manila and now has over 200 collection points for which it handles the logistics, and from which it **takes plastic waste to its recycling factory** in Muntinlupa. This has brought it closer to its goal of reducing plastic pollution. During the pandemic, the volume collected has continued to grow, sadly due to consumption of pandemic-related products such as face masks, and packaging from online shopping.

Once the plastic waste arrives at the warehouse, it gets sorted, cleaned and shredded. The first recycling line was set up through an extrusion process, where various molds are used to create different shapes. The plastic shreds are mixed into a formulation of various types of plastic waste to produce eco-lumber. Currently, this line can produce what The Plaf call posts and planks. Eco-lumber is an ideal construction material for decking, fencing and outdoor furniture. To showcase what can be made with its products, The Plaf has created its own first prototype of a shelter, made with roughly 4 tons of plastic waste.

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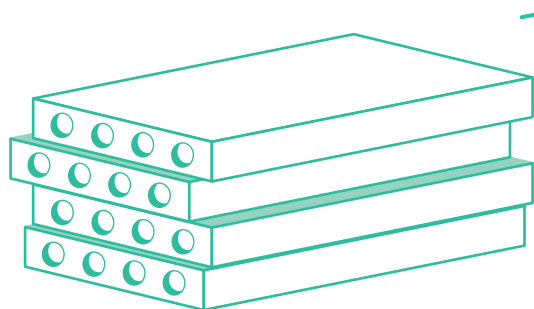
In 2022, another recycling line was added. This line's process is slightly different and uses a compression molding machine to produce boards of varying thicknesses from “very difficult to recycle” plastics, namely sachets that have multi-layered packaging. These eco-boards are less expensive and a 100-per-cent-recyclable alternative to plywood, offering a neat market-product fit.

Having established a mechanism for recovering plastic waste and developed a set of construction products, The Plaf now has a multi-pronged revenue model:

- a. working with companies heavily involved in the plastic packaging industry and accountable for Extended Producer Responsibility (EPR) – given their need to shift to alternative packaging materials and ensuring that their plastic is properly recycled by third parties, The Plaf is able to support them consistently;
- b. working with organizations committed to social responsibility (corporate social responsibility – CSR) programmes that foster the achievement of the UN Sustainable Development Goals (SDGs) and tackling plastic pollution through events, webinars and beach clean-ups;
- c. working with distributors, architects and construction companies to include recycled products in their projects, while expanding product lines based on the increasing interest in the new range of products and inputs for new use cases.

Corporate partnerships have helped cover all operating costs and expenses, while the sale of end products has paved the way for a viable and sustainable business model. In the process, The Plaf prevents plastics from reaching landfills and waterways, produces income opportunities for disadvantaged families from communities in the vicinity of its factory, and provides hope for low-cost construction materials to support various social development interventions.

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alternative to plywood.



Challenges

While built on a proven business model from the European Union and the United States, The Plaf suffered key challenges in its first year owing to lack of interest from the market for eco-lumber as a replacement for hardwood. Despite its longer life and social and environmental value, the market was not yet ready to purchase eco-lumber, just as it remains devoted to sachets.

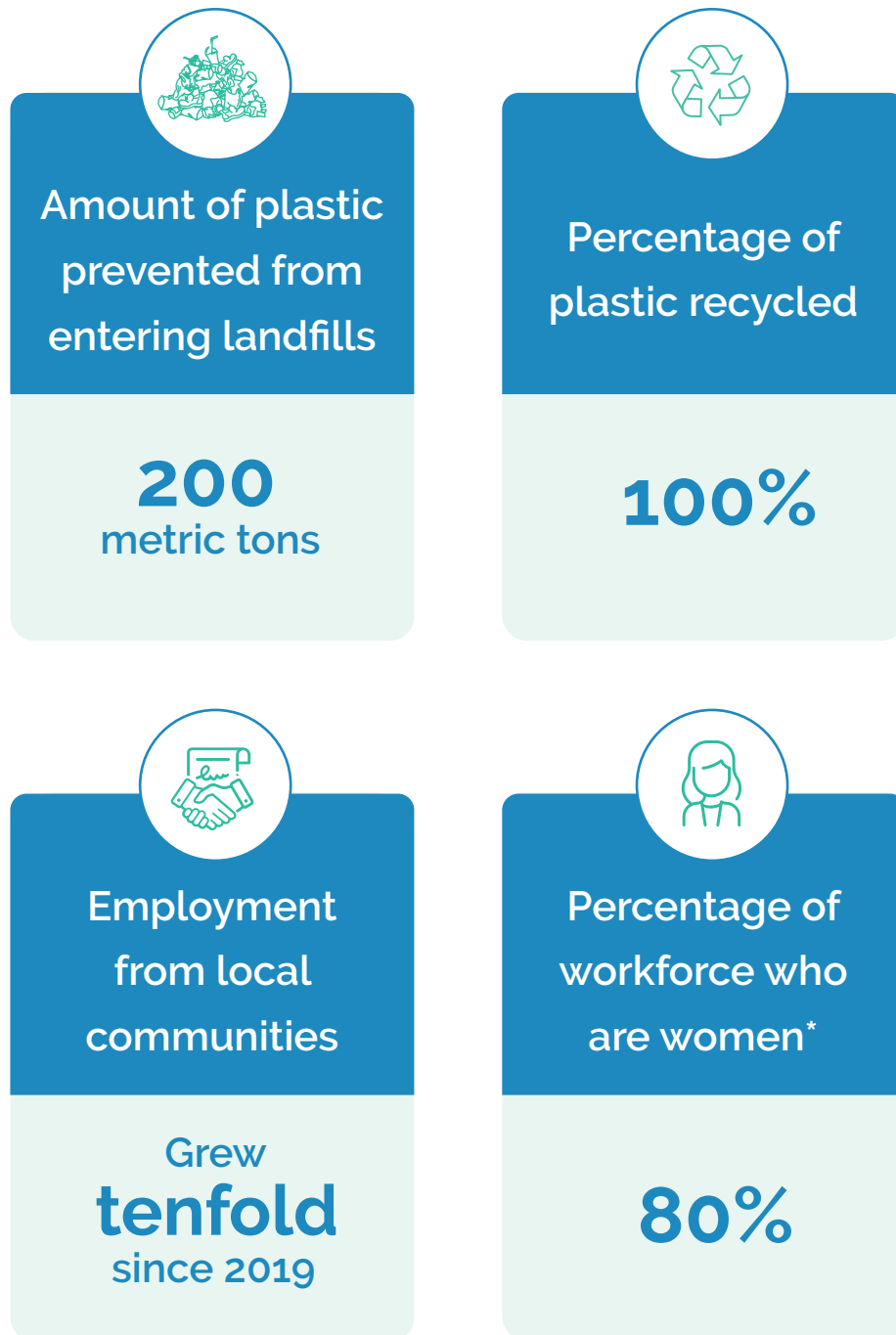
This required significant changes in product design and the target market segment, leading to the development of eco-boards and pellets and the set-up of additional recycling lines.

Uncertainty surrounding volumes of plastic waste due to an irregular supply is a challenge that The Plaf is addressing by establishing partnerships with local junk shops and collaborating with waste collectors.



Impact

The Plaf's mission is to reduce plastic pollution by recycling plastic waste and providing better income opportunities to its nearby communities. The Plaf's factory employees come from low-income households and now have a decent work environment and earning capacity.



* lower and middle management



Lessons learned

While The Plaf has been successful in recycling and competitive in performance with its alternatives such as hardwood or coco lumber (the Philippine name for a hardwood substitute from coconut palm trees), it noticed that its eco-lumber was not as popular as it had hoped. After a thorough market study, it concluded that the eco-lumber was simply too expensive. This led to The Plaf taking a step back and coming up with a different, more affordable product, and ultimately setting up its second recycling line for the production of eco-boards.

Recycling is costly and it is difficult to compete with other, cheaper forms of plastic compensation such as co-processing. As a startup company, The Plaf considered incorporating other materials into its formulation to lower costs. However, it has stuck with 100-per-cent plastic waste, providing products that are 100-per-cent recyclable, in the hope that over time, the market will change and companies will see the added value.

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Moving forward

In the coming years, The Plaf's aim is to reach a capacity of 2,000 metric tons per year. It will add two recycling lines to greatly increase its production capacity, matching market needs, and it will employ and skill over 100 people from nearby communities. Additionally, it aims to gain momentum and reach many more followers to become its own change-maker and spread the word on the plastic crisis, especially here in the Philippines, where it is most needed.

Within the next year, it aims to scale up operations by setting up multiple recycling factories throughout the Philippines. This will remove the need to ship waste to just one or two large recycling centres, and improve local employment and local availability of durable construction materials on each island.



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We thank Plaf for sharing details of their exemplary innovations in the SEA Circular project's series on the plastic value chain.



The SEA circular project Reducing marine litter by addressing the management of the plastic value chain in Southeast Asia is implemented by the UNEP Regional Office for Asia and the Pacific and the Coordinating Body on the Seas of East Asia (COBSEA), with funding support from the Government of Sweden. SEA circular aims to reduce and prevent plastic pollution and its impact by working with governments, businesses, civil society, academia and international partners. The initiative promotes market-based solutions and enabling policies to transform plastic value-chain management, strengthens the science base for informed decision making, creates outreach and raises awareness. The project leverages COBSEA's regional mechanism to tackle the transboundary challenge of marine litter in a harmonized manner.

 www.sea-circular.org

