

CIRCULAR ECONOMY BUSINESS CASE STUDIES IN SOUTHEAST ASIA



Precious Plastics Philippines

- Antipolo Rizal, Philippines
- Plastics Recycling
- preciousplasticph.com
- Butte Ivan Metz, Founder
- Analysis period: 2017

Appropriate Technology for Small Scale Recycling

Business Spotlight

Precious Plastics Philippines is a plastics recycling machinery provider which started as a backyard operation in 2017. Its mission goes beyond selling cutting-edge machinery, to making people appreciate the value of used plastics as a resource that should not be thrown away. It is focused on making recycling waste plastics easier and more accessible for communities, local entrepreneurs and environmental enthusiasts by equipping them with the knowledge and tools to create sustainable businesses which produce and sell upcycled plastic goods and building materials. Moreover, it provides a range of services to support grassroots plastic collection and turnkey plastic recycling centres. In this manner, it continues to help close the loop on plastic waste and achieve plastic recycling at the local level.

The Precious Plastics business model fosters both economic opportunities and awareness of the importance of sustainable plastic waste management in the Philippines. Between 2018–2022, Precious Plastics has sold over 300 shredders and recycling machines of varying sizes with capacities to process up to 150 kg of plastic waste per day. Moreover, it has already created more than 15 collaborative workspaces across the Philippines,

helmed by local governments, communities and non-profit organisations. These spaces shred plastic waste and process into valuable materials and products through extrusion, sheet-pressing and injection moulding. The group has facilitated the establishment of dozens of grassroots plastic recycling hubs that help with plastic collection, spreading the word, and purchasing recycled plastic products. Corporate brands and plastic packaging producers can purchase Extended Producer Responsibility (EPR) credits from these recycling hubs equivalent to PhP8/kg of recycled plastic (~ EUR 0.13) to contribute to their plastic waste mitigation performance. Such credits incentivise longer-term, sustained investments in circular solutions and recycling facilities and infrastructure, and are encouraged by the country's EPR Law.

In its initial years, Precious Plastics estimates to have diverted just at its own facility approximately 750 kg/month of plastic wastes from landfill. The introduction of a tracking app has improved waste tracking and has shown that just in February 2024, Precious Plastics collected nearly 8,000 kg of waste plastics at its own facility, of which over 40% was recycled within the month.

Precious Plastics Philippines currently aims to strengthen its internal organisation to meet increasing demand for its equipment and services, and to scale up operations. By encouraging and assisting local governments and communities to replicate the Precious Plastics model they are able to tackle plastic pollution and promote closing the loop on plastic waste to mitigate environmental harm and foster economic opportunities and awareness of the importance of waste management in the Philippines.

Analysis of Precious Plastics Philippines

Context and baseline

The concept for Precious Plastics was initiated by the pioneering work of Dave Hakkens, a Dutch industrial design graduate student who designed a low-cost plastic recycling machine for his graduation in 2013. He has since launched a movement that is providing technical designs for low-cost plastics recycling equipment that is available free of charge to local equipment manufacturers. Inspired by the adoption of the Precious Plastics model at an eco-resort he visited in 2013, the founder of Precious Plastics Philippines, Mr. Butte Metz, saw the business potential and established a recycling facility in Antipolo City in 2017. He set out to transform the way plastic waste is viewed and handled, and to demonstrate its potential for reuse and recycling, with emphasis on the benefits to the environment, to communities and for improving livelihoods. Since then, operations have gradually expanded to include a plastics waste collection centre, a recycling facility and a machinery production shop. It has also made plastic recycling more accessible to local communities, entrepreneurs and environmental enthusiasts by equipping them with the knowledge and tools to create sustainable businesses from production and sales of upcycled plastic goods and building materials.

Innovation

Plastics recycling minimises plastic waste management and disposal, and recovers a substitute, recycled material that replaces virgin plastics.

Precious Plastics tackles plastic waste management at the end-of-life/waste management phase. It works to collect plastic waste and reprocesses it into secondary plastic lumber, plastic sheets or other plastic material, suitable for manufacturing of diverse items including panels, furniture, etc. Hence Precious Plastics contributes to circular use of plastics, or resource circularity.

Keywords

Plastics upcycling, community recycling, plastic credits

Innovation

End of life management, Resource circularity

This mechanical recycling of single polymer or mixed polymer plastics has rapidly become established technology and business practice and has expanded globally ever since. The unique feature of Precious Plastics, as a global initiative, has been to develop appropriate low-cost plastics recycling machinery for local manufacturing, and thereby enable grassroots plastic waste collection and recycling projects. In the Philippines, this machinery was further tailored by Mr. Metz for each unique local context by using locally available materials, simple industrial design and simple mechanical parts (similar to those used in rice mills) so that it could be easily operated. The machinery includes shredders, extruders and moulding machines packaged as an industrial kit for small or medium-sized businesses and for communities.

In early 2024, Precious Plastics Philippines launched a free app for tracking the collection, segregation and recycling progress of plastics. The app serves as a digital ledger that ensures traceability, transparency and accountability along the value chain of the plastic waste cycle to recycled products.



Circular Economy impact

Precious Plastics has adopted the circular economy strategy of resource circularity by collecting and processing waste plastics, then putting them into a next usage cycle as recycled plastic products. With the introduction of their app, Precious Plastics is improving data collection and transparency. In February 2024 it collected nearly 8000 kg of plastic waste and recycled over 40% of it within the same month.

The collection of plastic waste by Precious Plastics diverts plastics from landfills, incineration and potential indiscriminate disposal and leakage as the source for marine and land-based plastics pollution. The recovered plastic material is a substitute for virgin plastics and thus avoids greenhouse gases and other emissions as well as the waste arising from virgin plastic production.

Business and market impact

Precious Plastics Philippines has been operating on a self-sustaining basis and prioritizing reinvestment in research and equipment and community outreach and livelihood development. While actively engaging in community-oriented activities and network building, Precious Plastics also maintains a stable financial foundation through diverse revenue streams from its machinery products, plastic lumber industrial factory kits and upcycled plastic products like plastic lumber, crates, plant pots, plastic furniture (chairs, tables, benches), trophies, clocks, and soap cases, among others.

Precious Plastics is expanding its revenue streams using the provision for plastic collection and recovery credits created under the 2022 Extended Producer Responsibility (EPR) Act. Brands and packaging producers can procure these credits at a cost of PhP8/kg recovered plastics (~ EUR 0.13) from Precious Plastics to meet their EPR recovery targets. The introduction of the app, serving as digital ledger for plastics in the waste-plastics-to-recycled-plastic-product value chain, is improving transparency and accountability for plastic collection, as an enabler for trading in plastic credits under the EPR Act.

Between 2018–2022, Precious Plastics Philippines sold over 300 small-scale shredders and recycling machines of varying sizes with capacities up to 150 kg plastic waste/day. It has created some 20 collaborative workspaces across the Philippines, helmed by local governments, communities and non-profit organizations, which shred plastic waste and turn it into valuable plastic materials and products through extrusion, sheet-pressing and injection moulding.

Stakeholders

Precious Plastics has facilitated the establishment of numerous grassroots plastic recycling hubs that help with plastic collection, spreading the word, and purchasing recycled plastic products. These include local government-led operations in Manila, Caloocan City, Cotabato City and Cainta City; non-governmental organisation (NGO)/foundation-assisted operations or cooperatives in the provinces of Ilocos Sur, Mindoro and Zambales as well as in the cities of Marikina City, Davao City and Cagayan de Oro; and others such as the Philippine Army base in Palawan Province, the Philippine Military Academy in Baguio City and some corporates.

These grassroots recycling initiatives have made a significant impact on local stakeholders and partners by creating local employment and livelihoods to promote grassroots plastics recycling. They gather plastic from neighbours, organisations and businesses to be processed by local shredder workspaces and machine shops that produce and build parts, machines and moulds for making products from mechanically recycled plastics. Above all, these efforts have fostered a sense of community engagement and environmental responsibility, which are crucial to the success of the endeavour.

The activities of Precious Plastics also raise awareness about plastic pollution and the importance of responsible waste management, encouraging individuals and communities to take action and reduce their plastic consumption.

By addressing key environmental, social and livelihood issues, Precious Plastic Philippines plays a crucial role in promoting sustainable practices and mitigating the environmental impact of plastic waste in the country.

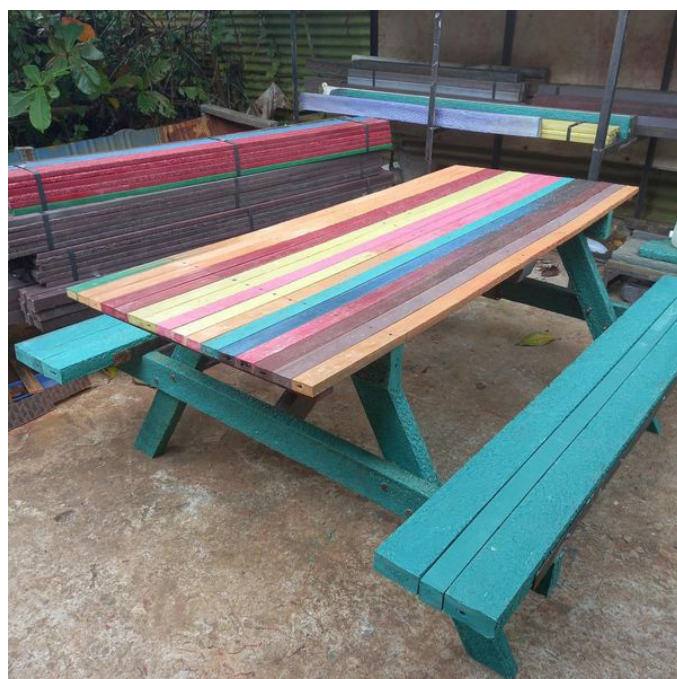
Implementation

Outcomes vary considerably across various communities and regions, and are difficult to fully assess. The at times informal nature of collaborations with NGOs and local government units adds complexity to this assessment. Some initiatives, despite being well-intended, have not fully realised their potential due to various reasons, such as facilities remaining inactive post-setup, or lack of consistent communication from facility operators. These factors make it difficult to measure the full extent of the impact of Precious Plastics in these areas.

Precious Plastic Philippines is committed to expanding its efforts even further. The company will continue its collaborations with stakeholders, entrepreneurs and NGOs to establish recycling hubs across the country. Moreover, it is preparing to set up a large-scale plastic recycling plant to strengthen its organisational structure and to increase the number of its employees. This would significantly scale up its impact and the prospects for sustainable operations, while also serving as a model large-scale plastic recycling centre.

Takeaways

It is necessary to change people's views about wasting plastic so that it will be regarded as a resource instead. Promoting plastics recycling entails continually adapting strategies and operations to local conditions, and focusing on education, community engagement, and technological innovation. By replicating the Precious Plastics model and promoting recycling at the local level, communities are able to tackle plastic pollution and promote closing of the loop on plastic waste to mitigate environmental harm, and fostering economic opportunities and awareness of the importance of waste management in the Philippines.



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Disclaimer

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