

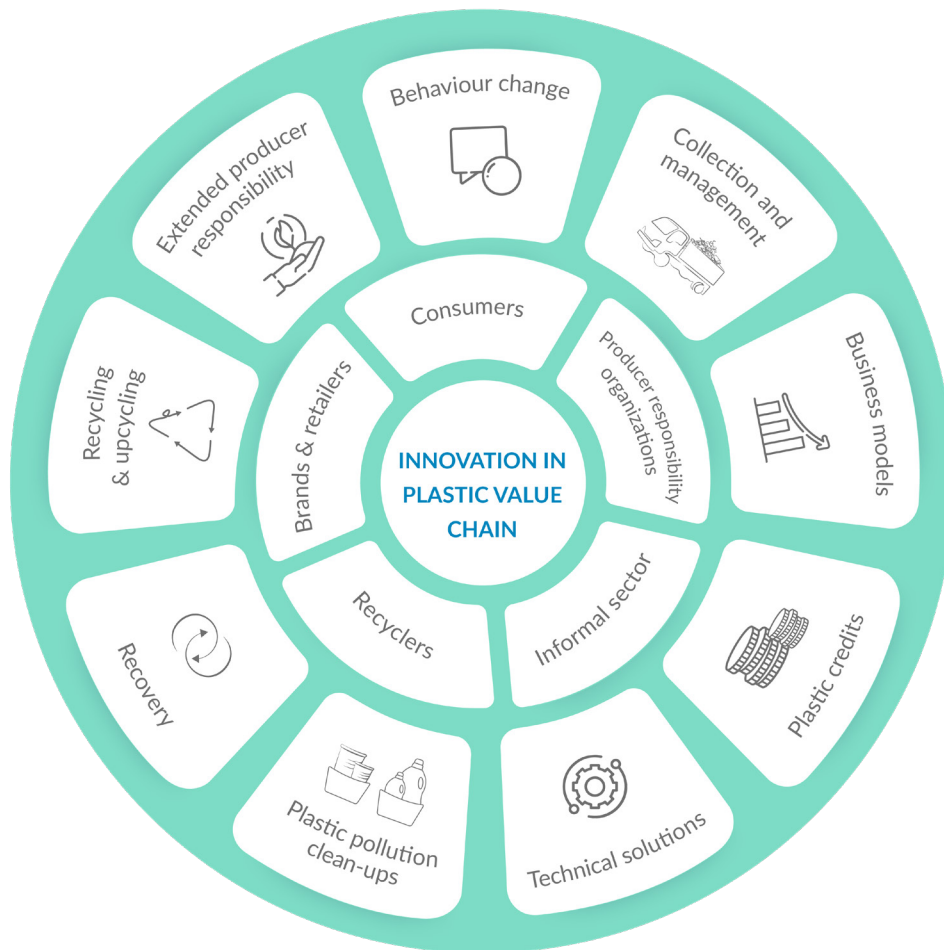
Circular solutions for plastic pollution

City-university collaboration
for plastic-free cities

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 and problem

Mismanaged plastic waste continues to pose a challenge in developing countries such as the Philippines. Globally, the Philippines is the third largest contributor to plastic waste, with an estimated 0.75 million metric tons of plastic waste being produced each year.¹ This mismanaged waste travels to riverine systems and the ocean, where it turns into marine plastic debris. This in turn has a negative effect on the marine ecosystem, human health and the climate.

The rising population in urban areas is contributing to increased generation of plastic waste. In the Philippines, this is due to the type of waste generated shifting from agricultural biomass to mostly pre-packaged ready-to-consume products². The use of plastic packaging is rampant in the country, which has been given the moniker “the sachet economy” as a result. Approximately 164 million sachets are used every day, equivalent to 59.7 billion sachets being generated every year in the Philippines.

The mismanagement of plastic waste is also the result of the limited recycling infrastructure available to support higher levels of plastic waste in the country. One million tons of key resins (polyethylene terephthalate, polypropylene, high-density polyethylene and linear low-density polyethylene) are consumed in the Philippines each year and only 292,000 tons per year (28 per cent) are recycled.⁴

Mismanaged waste travels to riverine systems and the ocean, where it turns into **marine plastic debris.**



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

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



In terms of policy and governance, the country has a solid waste management law, the Ecological Solid Waste Management Act of 2000 (Republic Act (RA) 9003)³, which was crafted by the government. Local government units are mandated to facilitate and operate Materials Recovery Facilities (MRFs). This is specifically mentioned under Section 32 of RA 9003, which requires that MRFs be in use in every barangay or cluster of barangays. The function of MRFs is to receive, sort and process solid waste and store compostable and recyclable materials efficiently and in an environmentally sound manner, with residual waste transferred to a sanitary landfill.

However, implementing this law is challenging. MRFs are not fully utilized; instead of sorting and processing waste, they end up only receiving it. Plastic waste collection and segregation at the source are still heavily influenced by human behaviour. Recycling, in turn, is limited to plastic waste that is easily recyclable, such as plastic bottles. Local governments need support from other stakeholders in making sure that their solid waste management is fully implemented.

One such case is the support provided by the Central Philippine University (CPU), an academic institution located in Iloilo City. CPU used its research and development, training and consulting, and innovation work to create five eco-solutions that support the implementation of Iloilo's plastic waste management initiatives. These models target the four major processes in the plastic value chain: waste generation (from households and establishments), collection (by barangay⁴ eco-aides⁵, the city's waste collection service provider, and private haulers), processing (using the MRFs in the city and private junk shops), and disposal (to sanitary landfills).

Plastic waste collection and segregation at the source are still heavily influenced by human behaviour



3. Available from www.officialgazette.gov.ph/2001/01/26/republic-act-no-9003-s-2001/.

4. In the Philippines, a small territorial and administrative district that forms the most local level of government.

5. Waste collectors in the barangay unit.

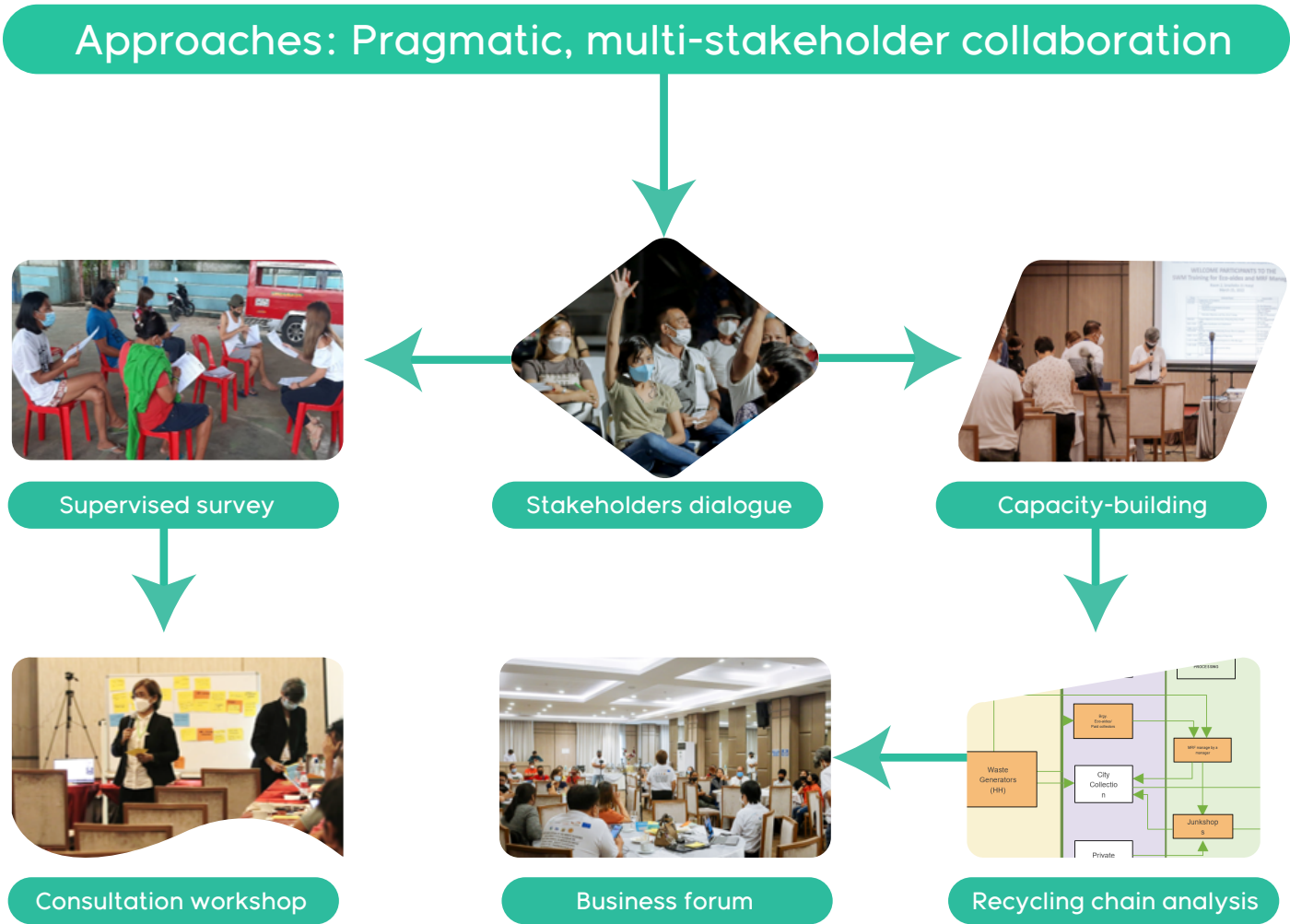


Intervention

Iloilo City is one of the most highly urbanized cities in the Philippines. In 2021, the city had an estimated population of 477,992 and generated an estimated 314.46 tons of waste a day. The city has 180 barangays, about 26 of which are located in riverine and coastal areas. Following RA 9003, the city has created and is implementing its solid waste management plan.

To better understand the current waste management practices in place in the city, CPU conducted a baseline study, which supported the development of solutions to the city's plastic waste problem. There were two notable results: (i) the amount of plastic waste unrecovered totalled 143 tons a day; and (ii) the disposal method consisted of dumping waste at the collection point and draining/throwing it elsewhere.

Based on the findings of this study, CPU developed a series of eco-solution models to address the plastic waste management problems faced in the city. This was a result of several surveys, stakeholder discussions, capacity-building workshops and business forums facilitated across the barangays.



Model 1	A model for barangays with a functioning Materials Recovery Facility (MRF)
Model 2	A model for barangays without an MRF
Model 3	A model specific to the public market solid waste management system
Model 4	A model specific to businesses and extended producer responsibility
Model 5	A model specific to barangays near the Batiano River

A common theme in these models is the inclusion of information and education campaigns for the different stakeholders to increase awareness of the issue and the overall implementation of the interventions. The models also involve engaging the informal sector, especially waste collectors, who form part of the city's plastic waste value chain.

Models 1, 2, and 5 include similar interventions as follows: organizing eco-aides including those from the informal sector, imposing the "No Segregation, No Collection" policy in the barangay, putting the city waste collection service in charge of collecting residual waste to send to sanitary landfills, implementing a barangay clean-up day, and seeking support from the youth council in information campaigns.

The difference between Models 1 and 2 is the presence of a functioning MRF. The Model 2 interventions involve working with eco-aides to supplement the segregation process, and partnering with junk shops to accept recyclable plastic waste. Model 5 has a unique intervention that involves capturing waste at the side of the river.

Models 3 and 4 are specific to raising awareness of two important areas and stakeholders in the city: the public market and the business sector. In addition to improving knowledge of relevant city ordinances, the solid waste management system is also part of the engagement activity directed towards vendors at the public market. For Model 4, the baseline study showed that plastic suppliers are willing to increase their environmental fees to support the city's plastic recovery programmes. This is a great example that demonstrates that the private sector supports resolutions for the city's plastic challenges.



Challenges

The global pandemic affected the implementation of the five eco-solution models in Iloilo City, which suffered major setbacks in the form of limitations on mass gatherings, a ban on in-person activities and community lockdowns. Through the barangays, the local government was the primary implementor of the project activities, but these bodies were focused on the mass vaccination campaign and setting up quarantine facilities.

In parallel, the election period also presented some implementation challenges as the government had limited capacity during this time, which in turn halted implementation for around three months.

Getting the buy-in of the barangay officials was a key challenge during implementation of the pilot, but this was overcome by engaging in regular dialogue, sharing information and building a relationship.



Impact

The programme produced several important results and impacts despite the challenges faced during implementation. The five eco-solution models were developed and prepared for replication, and are now being piloted in 13 barangays in Iloilo City. The programme involved the participation of 48,035 individuals from 7,756 households. Of these individuals, 54 were eco-aides or MRF managers.

The eco-solution models supported the development of solid waste collection, recording and reporting systems. The pilot barangays were able to enhance their waste management system, allowing them to recover a total of 305 tons of plastic each month. Total sales of plastic recyclables were reported to have reached 12,000 Philippine pesos (USD 200) per month.

There was also strengthened dialogue among plastic recycling value chain actors in the city, specifically between informal waste collectors, junk shops, private haulers and the local government. The programme particularly impacted informal waste workers in the city. About 39 individuals were provided with jobs as eco-aides and MRF managers. Around 26 junk shops were linked to barangays as partners and 14 have already applied for a business permit. Eco-aides, managers and junk shops all reported an increase in income.

In addition to the pilot barangays, 24 more barangays joined the clean-up that took place along Jaro River with 1,585 individuals from different sectors.

In terms of government support, the project helped strengthen the partnership between CPU, the Iloilo City Government, the Department of Environment and Natural Resources, and the Department of Trade and Industry. The project also supported the development of the City Environment and Natural Resources Office (CENRO) strategic plan, while enhancing the office's organizational structure. The pilot barangays were also supported in the drafting of solid waste management ordinances.

Green jobs

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Lessons learned

CPU is continuing to learn as it executes the project. In its activities to date, its researchers have discovered the importance of reaching out to different stakeholders to take on the plastic pollution challenge in the city. From its initial activities, CPU also recognized that each barangay is unique and clustering them together made implementing the eco-solution models easier.

As CPU continues to implement the programme, it also aims to reach more barangays and impact more individuals and businesses.



Moving forward

The project has initiated discussions with 20 barangays for possible replication of the models. CENRO has identified 50 barangays that have expressed interest in replicating the eco-solutions. One barangay is being assisted by a private company to replicate the eco-solution with the support of the General Services Office, CENRO and CPU. Two universities in Region 6 have expressed interest in replicating the implementation of the project in their surrounding communities.



We thank Iloilo City 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

