

Waste as Resource: The Kandy Model for Plastic Recycling

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Due to growing population and urbanization, plastic waste is increasing rapidly and the detrimental impact on health and the environment has become a pressing concern (OECD, 2022; WHO, 2023; Adeniran & Shakantu, 2022). Particularly concerning are the challenges faced by island nations like Sri Lanka, dealing with issues such as marine litter and microplastics (Gunasekara, 2018; GROUNDVIEWS, 2022). Recognizing the urgency of this global issue, various international initiatives, aligned with the Sustainable Development Goals (SDGs) set by organizations like the UN, ADB, and World Bank, have been implemented to address the escalating crisis (Parker, 2022; ADB, 2023; The World Bank, 2018).

In Sri Lanka, there has been a commendable rise in plastic collector and recycling businesses as part of the broader effort to align with SDG targets related to sustainable cities and communities (SDG 11), responsible consumption and production (SDG 12), and life below water (SDG 14) (Singh, 2023). Concurrently, Sri Lanka has also taken a proactive step in addressing plastic pollution by developing the National Action Plan on Plastic Waste Management 2021-2030, demonstrating a commitment to create comprehensive strategies for sustainable plastic waste management (Nihal et al., 2021). However, the sustainability of these initiatives remains a challenge in many developing countries, including Sri Lanka, where most waste management projects, including crucial plastic recycling initiatives, face premature closures once donor agencies complete their support (Gunaratne et al., 2019; Jayasinghe, 2023).

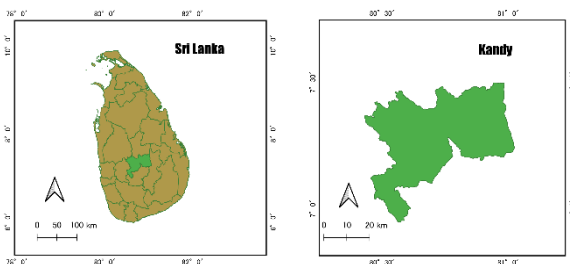


Figure 1: Location of Kandy Municipal Council (KMC) in Sri Lanka. Source: Author

The financial viability of waste management projects, especially recycling businesses, often hinges on government subsidies, making the establishment of profitable recycling centers a rarity in Sri Lanka. Nevertheless, a noteworthy exception exists in Kandy City, Sri Lanka, where a successful recycling project has not only addressed low-value plastic waste but has also demonstrated a profit-making model. The Plastic Recycling Center (PRC) at Kandy Municipal Council (KMC) serves as a compelling example, showcasing that local governments can derive profits from waste management by working efficiently and collaboratively with stakeholders.

Kandy Recycling Centre: Expenses		Kandy Recycling Centre: Income	
• Salary	- Rs. 240,000 per month (USD 730.32)	• PP	- 3,000kg x 100 - Rs. 300,000 (USD 912.90)
• Electricity	- Rs. 16,000 per month (USD 48.69)	• HDPE	- 2,000kg x 130 - Rs. 260,000 (USD 791.18)
• Water & Other Exps.	- Rs. 3,000 per month (USD 9.13)		Total Income - Rs 560,000 (USD 1704.08)
• Blade Maintenance Cost	- Rs. 19,000 per month (USD 57.82)		Profit
• Total Expenses	- Rs. 278,000 per month (USD 845.95)	• Total Income	- Rs. 560,000 (USD 1704.08)
• Plastic Purchasing Exps.	- Rs. 90,000 per month (USD 273.87)	• Total Expenses	- Rs. 336,000 + 275,000 = -Rs. 368,000 (USD 1119.82)
			Profit (per month) - Rs. 192,000 (USD 584.26)

Figure 2: Income and Expense of Kandy Recycling Centre.

Source: KMC, 2023

Figure 2 demonstrates that the PRC is independently generating a profit of approximately USD 580, operating without the need for external subsidies. While the economic profit may seem modest however when evaluated in terms of environment and social benefits, it assumes a more significant role.

The success of the recycling activity in Kandy is attributed to its ability to penetrate the plastic recycling market, particularly in handling low-value plastic waste. By ensuring a stable price throughout the year through collaboration with the private sector and waste generators, the PRC at KMC has become a financially sustainable venture, setting a positive precedent for other municipalities (Karunarathna, et al., 2020).

The effectiveness of KMC's Solid Waste Collection Centers (SPCs), open daily and receiving both high- and low-value recyclables, has encouraged citizen participation in recycling efforts, irrespective of the frequency of municipal waste collection. KMC's stringent monitoring and inspection have led

to a reduction in on-site waste burning and illegal dumping activities, further contributing to the SDG targets on climate action (SDG 13) and life on land (SDG 15). Moreover, the indirect achievements of the Kandy recycling project, such as the reduction in total waste generation and the inclusion of informal waste pickers into formal recycling activities, align with SDGs related to sustainable cities and communities (SDG 11), responsible consumption and production (SDG 12), and decent work and economic growth (SDG 8).

The recycling activities practiced in KMC are perceived as part of an integrated waste management model and have been well acknowledged by many large municipalities and the national government. This recognition is exemplified by KMC receiving the "Swarnapura" (Golden city) national award under the Municipal Council category in the national competition held in 2016 (Karunarathna, et al., 2020). This prestigious accolade underscores the success of KMC's approach in waste management, serving as a noteworthy benchmark for other municipalities to adopt sustainable practices and contribute positively to both local environments and national goals.

Recognizing the importance of waste management in achieving SDGs, local governments, and leaders should draw inspiration from Kandy's success. The contractual agreement employed by KMC, obligating them to supply specific amounts of plastics to selected buyers, serves as a motivating factor for continuous improvement in waste collection and recycling processes. The role of key individuals, such as Mr. Namal Dissanayake, head of the Engineering department at KMC, highlights the significance of strong leadership in driving the success of recycling initiatives.



Figure 3: Mr. Namal Dissanayake, Mechanical Engineer at Plastic Recycling Center (PRC) in Kandy Municipal Council (KMC), Sri Lanka. Source: Author

In conclusion, the Kandy recycling project not only contributes to local environmental sustainability but also serves as a beacon for local governments aiming to align with SDGs. Its profitability, efficient waste management practices, and recognition in national

awards underscore the potential impact of well-executed recycling initiatives in addressing broader global goals. The implementation of a national action plan further exemplifies Sri Lanka's commitment to combat plastic pollution comprehensively.

References:

- ADB, 2023. ASIAN DEVELOPMENT BANK. <https://www.adb.org/what-we-do/topics/sdg>
- Adeniran, A.A., Shakantu, W., 2022. "The Health and Environmental Impact of Plastic Waste Disposal in South African Townships: A Review". *International Journal of Environmental Research and Public Health*. 19 (2), 779; <https://doi.org/10.3390/ijerph19020779>
- GROUNDVIEWS, 2022. Conserving and Protecting Sri Lanka's Threatened Marine Resources.
- Gunaratne, A.D.N., Tennakoon, T.P.Y.C., Weragoda, J.R., 2019. "Challenges and opportunities for the recycling industry in developing countries: the case of Sri Lanka". *Journal of Material Cycles and Waste Management*.
- Gunasekara, A.J.M., 2018. *Marine Litter in South Asian Seas (SAS) Region*. Report to the South Asian Cooperative Environment Programme.
- Jayasinghe, A., 2023. Jumbo Problem: Sri Lanka's battle with plastic pollution. PHYS.ORG. <https://phys.org/news/2023-06-jumbo-problem-sri-lanka-plastic.html>
- Kandy Municipal Council (KMC), 2023. Income and Expense of Kandy Recycling Centre. Mr. Namal Dissanayake, Mechanical Engineer, Kady Municipal Council (KMC), Sri Lanka.
- Karunarathna, A., Rajapaksha, T., Gamagedara, Y., Kaldera, S., Vidanage, N., Onogawa, K., Premakumara, J.D.G., Hayashi, M., Singh, R.K., 2020. *Effective Plastic Waste Management in Sri Lanka*. IGES Center Collaborating with UNEP on Environmental Technologies (CCET).
- Nihal, C., Peiris, V.R., Rasaputra, K., Singh, R.K., Premakumara, D.G.J., Onogawa, K., 2021. *National Action Plan on Plastic Waste Management 2021-2030*. Ministry of Environment, Sri Lanka.
- OECD, 2022. Plastic pollution is growing relentlessly as waste management and recycling fall short, says OECD. <https://www.oecd.org/environment/plastic-pollution-is-growing-relentlessly-as-waste-management-and-recycling-fall-short.htm>
- Parker, L., 2022. The world's nations agree to fix the plastic waste crisis. National Geographic. <https://www.nationalgeographic.com/environment/article/world-nations-agree-to-fix-the-plastic-waste-crisis>
- Singh, T., 2023. Top Recycling companies in Sri Lanka List 2023 Updated. <https://digitalmarketingdeal.com/blog/recycling-companies-in-sri-lanka/>
- The World Bank, 2018. UN-WBG Strategic Partnership Framework. <https://www.worldbank.org/en/programs/sdgs-2030-agenda/brief/strategic-partnership-framework-for-the-2030-agenda>
- WHO, 2023. Tackling health impacts of plastic pollution in Africa. World Health Organization. <https://www.afro.who.int/news/tackling-health-impacts-plastic-pollution-africa>