



Public–People–Private Partnerships for Coastal Solid Waste Management: A Case Study from Selected Coastal Sites in Sri Lanka

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Coastal solid waste pollution remains a major environmental and management challenge in Sri Lanka's coastal zone, where beaches support biodiversity, tourism, fisheries, recreation, and local livelihoods. This study examined a public–people–private partnership beach caretaker model as a practical and socially inclusive approach for coastal solid waste management. The project involved public agencies, private-sector partners, local authorities, and coastal communities, with caretakers selected from vulnerable coastal households. Beach stretches were assigned based on pollution severity, accessibility, ecological value, visitor pressure, and management feasibility. Daily cleaning activities conducted over two to three hours included waste segregation, waste quantification and recording, temporary storage, recycling coordination, municipal disposal, and routine monitoring. Twelve pilot sites in four districts (Colombo, Kalutara, Gampaha, and Batticaloa) were managed by 14 caretakers, covering 10.45 km of beach over a combined operational duration of 121 months across all pilot sites and removing 22,077.1 kg of solid waste from 2023 to 2025. The standardised waste collection rate was approximately 224.0 kg per month per kilometre of beach, based on site-specific operational duration and beach length. Collection rates, nevertheless, varied across sites due to seasonal conditions and local waste accumulation patterns. The project also created income opportunities, with women representing 50% of caretakers, while improving beach aesthetics and supporting shared responsibilities and community stewardship among public authorities such as MEPA, private-sector partners, and coastal communities. Findings indicate that caretaker allocation should consider site-specific waste accumulation, seasonal variation, accessibility, and disposal options rather than beach length alone. Challenges included seasonal waste surges, limited disposal infrastructure, storage risks, and monitoring costs. Overall, the model offers a scalable pathway for cleaner beaches and long-term coastal environmental management.

Keywords: *Coastal solid waste management, Community-based coastal stewardship, Plastic pollution, Public–people–private partnership, Beach caretaker model*