GRID ARENDAL

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Integrating and strengthening policies and actions

Addressing biodiversity conservation and plastic pollution in Sri Lanka



Context

The plastics life cycle is intrinsically linked to the triple planetary crisis and suggested to be a key driver of biodiversity loss (IPBES, 2019; IRP, 2019). This link is increasingly recognised by international initiatives (Figure 1). The Kunming-Montreal Global Biodiversity Framework (GBF), adopted in December 2022, sets ambitious biodiversity targets for 2050, with specific goals addressing pollution. Concurrently, negotiations for a legally binding Global Plastics Treaty (GPT) aim to tackle plastic pollution and align with the UN's Sustainable Development Goals. The draft treaty emphasises cooperation to prioritise sectors impacted by plastic pollution, considering plastics' full life cycle. Proposals include adding a specific article on biodiversity to improve coherence between frameworks (IUCN and WCEL, 2024). This issue brief examines the potential for such cohesion, using a country-specific case study that explores baseline data regarding Key Biodiversity Areas (KBAs) and the plastic life cycle in Sri Lanka.

Sri Lanka is a biodiversity hotspot, home to many unique species found nowhere else.[1] Its ecosystems support livelihoods, food security, and essential services like water purification and climate regulation. Protecting this biodiversity is also vital for maintaining genetic diversity and global ecological balance. Conservation is deeply rooted in Sri Lanka's cultural and religious values, reflected in policies that designate nearly 30% of its land designated as Protected Areas.[2]

To better understand the plastic life cycle, data encompassing production, trade, consumption estimates, waste management, and leakage were systematically collated using a material flow analysis approach (Figure 2). Additionally, spatial data at national, regional, and district levels were integrated with other relevant datasets related to the plastic life cycle and Key Biodiversity Areas (KBAs). These data sources provided the foundation for this brief and a subsequent scoping study.

Trade data highlights significant domestic plastic production in Sri Lanka, with >750 companies (CEA, direct comms.) processing >450,000 metric tonnes of precursors, additives, primary and/or intermediate forms that are imported annually.[3] Trade data also shows that plastic products, including textiles, rubber, and teabags, are significant exports.[4] Review of available data suggests Sri Lanka produces between 0.02-0.04 kg per capita per day of plastic waste. National reports and research indicate that most plastic waste ends up openly dumped or burned, with a small amount processed for recycling (Figure 2). These quantities do not account for transboundary sources of plastics. This study's analysis also identified several registered waste sites near or within KBAs (Figure 3), many of which are known to be inadequately managed. Some of these sites were subsequently visited as part of a scoping study.

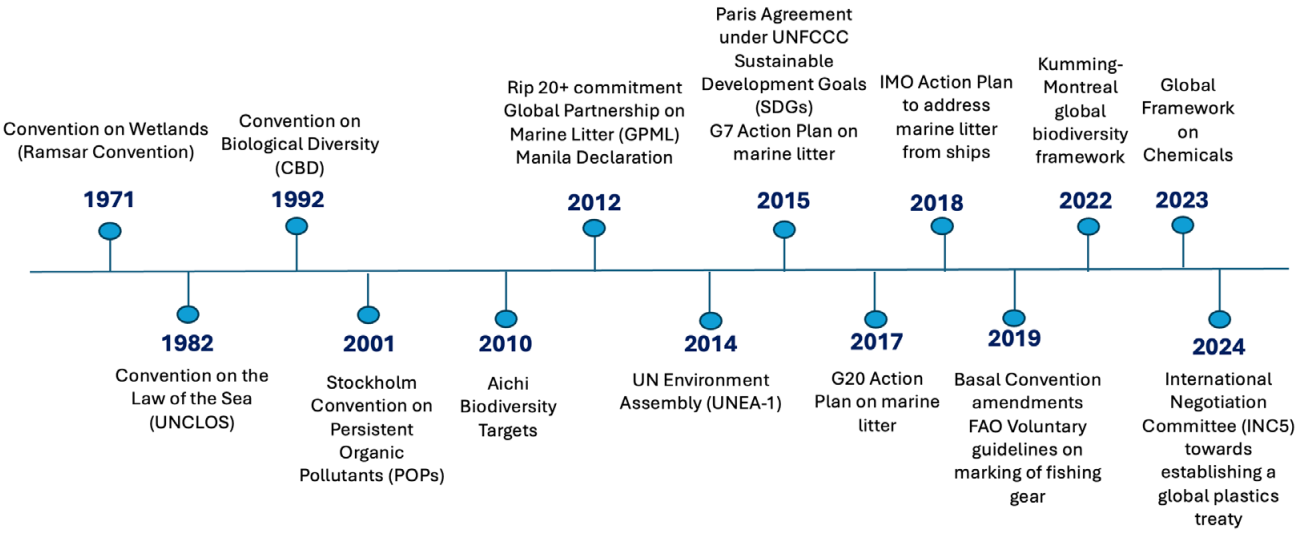


Figure 1: Timeline of relevant international and national policies, laws, regulations and guidelines/targets concerning plastic pollution and biodiversity loss.

1. MOE 2012. The National Red List 2012 of Sri Lanka; Conservation Status of the Fauna and Flora. Ministry of Environment, Colombo, Sri Lanka. viii + 476pp
2. MoMD&E 2019 Biodiversity Profile - Sri Lanka, Sixth National Report to the Convention on Biological Diversity, Biodiversity Secretariat, Ministry of Mahaweli Development and Environment, Sri Lanka. pp.20
3. https://unctadstat.unctad.org/datacentre/dataviewer/US.PlasticsTradebyPartner
4. https://oec.world/en/profile/country/lka

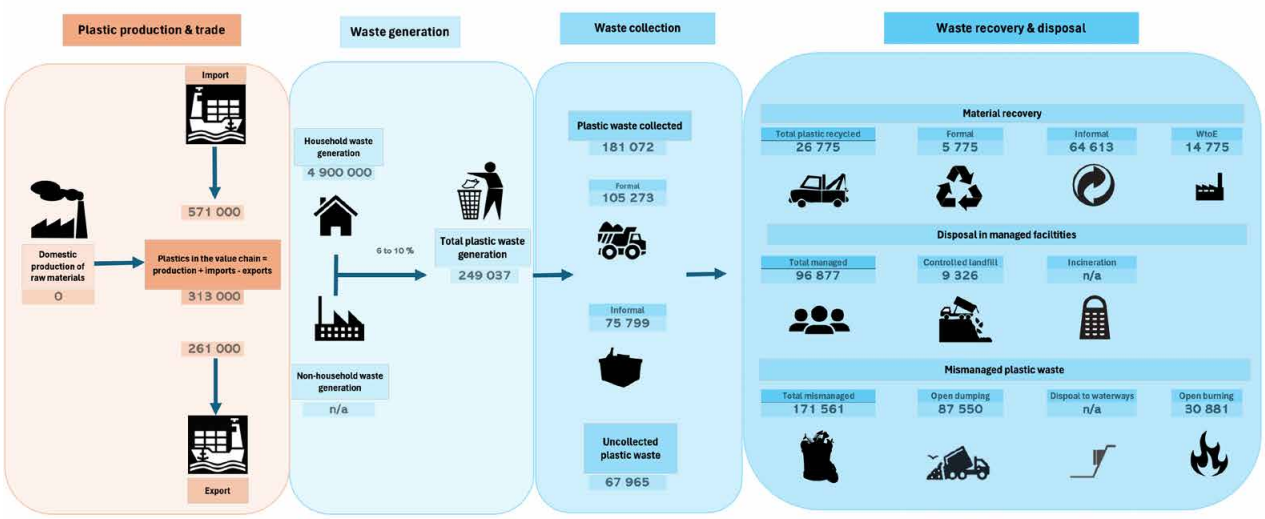


Figure 2: Plastics life cycle in Sri Lanka utilising data from UNCTAD (2020) and the National plastic waste inventory for Sri Lanka: a material flow approach.[5]

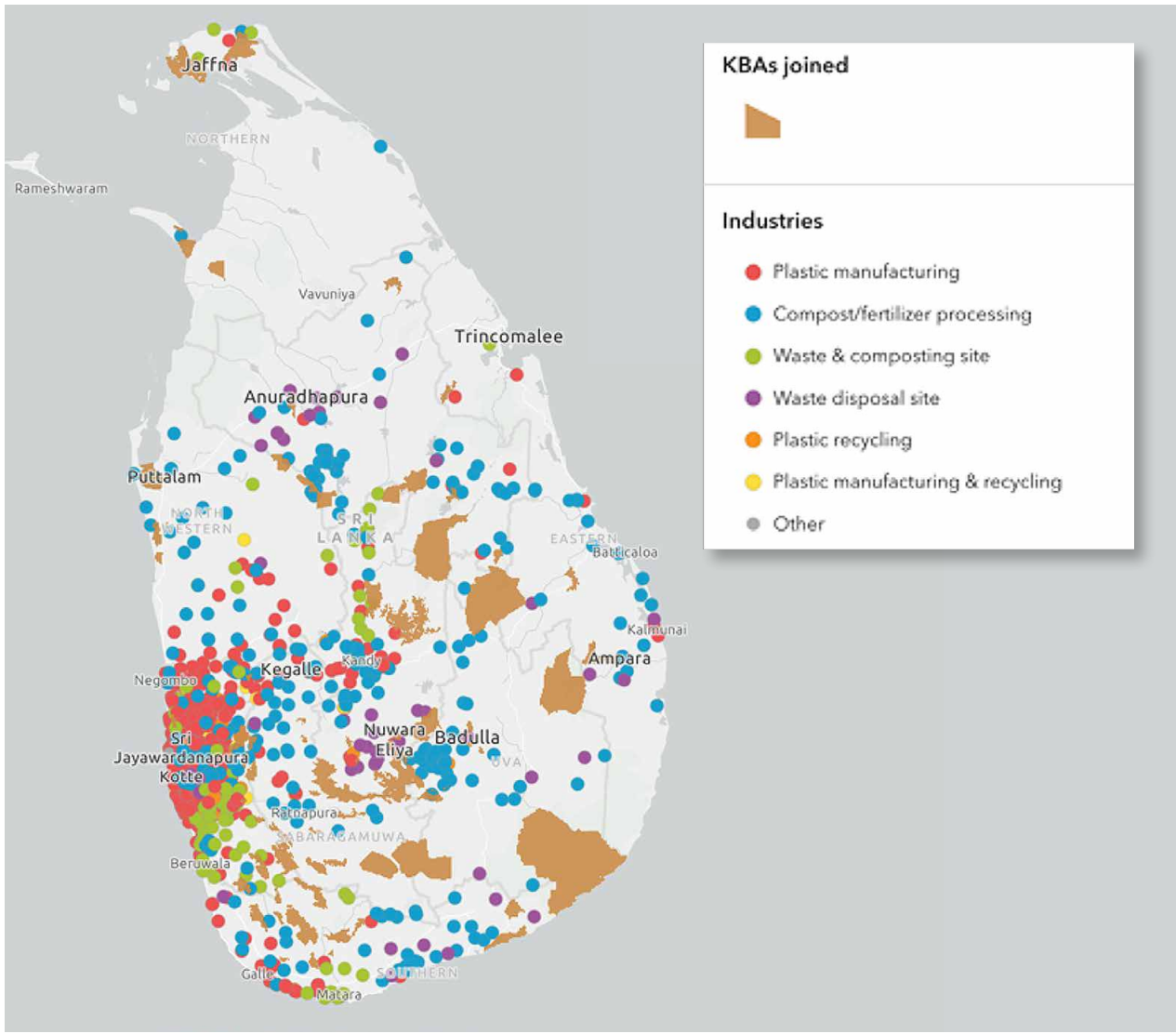


Figure 3: Map highlighting plastic related industries and waste sites (CEA direct comms.) and Key Biodiveristy Areas (KBAs) in Sri Lanka.[6]

5. National plastic waste inventory for Sri Lanka: A material flow approach (Ministry of Environment, 2024)
6. To explore the findings in greater detail, an interactive data map and story map have been developed and are available for further analysis.

Observations during field visit

Sites visited covered a range of climatic zones; Karadiyana Resource Management Centre and Kerawalapitiya, Western Province, Moon plains, Nuwara Eliya, Solid Waste Management Centre (open dumpsite) Bibile town, Buddangla landfill site, Galapitagalayaya (Kataranga) composting site and Waste Resource Centre.

- Only some waste sites have basic infrastructure facilities and technical competencies, lack of maintenance and mismanagement are issues due to lack of funding and capacity.
- Local authorities (LAs) should plan and implement their open dump sites and waste management operations within most appropriate sites after a strategic assessment involving experts. However, they should not be within or encroaching on KBAs or protected areas.
- Where the open dump sites are under the jurisdiction of the Forest Department with their consent, the relevant authorities should work with the Forest Department to conduct regular monitoring and intervene where management is necessary.
- Even though any impact of waste reported on charismatic species (e.g. large mammals like elephants), are of greater public concern, little is known about the effects on other vulnerable biodiversity, including ecosystem services.
- Leachate infrastructure at dumpsites is sometimes available but lacks maintenance. There is also a lack of sewage and grey water treatment. Simple studies could help prioritise problematic sites, but regular monitoring of the impact on environment and analysis of direct threats to the biodiversity need streamlining.
- LAs have been informed to comply with the National Environmental Regulations. However, additional support and/or legal enforcement may be required in bringing some agencies to act accordingly.
- Poor waste sorting mixes biodegradable, plastic, and medical waste, contaminating the entire waste stream. This reduces recycling and composting potential, leading to low-quality compost that lacks market trust due to concerns about nutrient composition and hazardous contamination. Low prices for mixed plastics also hinder effective recycling efforts.
- Centralised waste management creates challenges for segregating waste streams. Industries fail to share waste management strategies, while LAs struggle with mismanagement. Performance varies by region, requiring tailored solutions for each case.
- Lack of effective Occupational Health and Safety (OHS) measures for workers in waste management sites.

Sri Lanka's National Waste Management Policy was established by the MoE in 2007 (revised in 2018 and 2020) to encourage zero waste and circular economy principles: the application of market-based tools, legal provisions, waste tracking, accountability, and the prohibition of importing post-consumer waste. Sri Lanka has potential policy level support to reduce plastic waste generation and protect biodiversity through a range of direct and indirect instruments (Table 1), however, there is little coordination in place and enforcement issues are tied to economic and political challenges. There are also a lack of mechanisms to impose liability on producers for collecting the plastic waste produced by their own products, and a lack of incentives for good practises.



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Recommendations

Short-term (1–2 years)

- Strengthen waste site infrastructure and barriers to prevent wildlife from accessing waste, collaborating with conservation authorities, while prioritising sites that threaten biodiversity, using evidence-based data and stakeholder engagement to guide decisions.
- Conduct regular audits to assess financial requirements and efficient resource use.
- Mainstream standards to improve compost quality and rebuild market trust.
- Establish an award system to incentivise sustainable practises among LAs.
- Encourage private sector to share data and participate in waste reduction and recycling efforts.
- Strengthen education on sorting and recycling benefits, considering both rural and urban areas, to build on the success of current initiatives.
- Strengthen bylaws to mandate segregation of hazardous, biodegradable, and recyclable wastes.
- Enforce existing plastic and polythene bans through inspections and fines.
- Conduct a policy gap analysis to identify missing policies.

Medium-term (3–5 years)

- Ensure adequate protocols and infrastructure for disposal of biomedical and hazardous wastes.
- Develop specific guidelines, establish effective monitoring and compliance mechanisms, and engage stakeholders in policy development to address OHS issues in the waste management sector.
- Shift from centralised waste management models to more localised systems that promote waste segregation, recycling, and energy recovery that is climate appropriate.
- Strengthen the extended producer responsibility (EPR) programmes with yearly targets, holding manufacturers accountable for managing post-consumer waste or charging producers based on the waste generated.
- Develop a centralised database for municipal solid waste and a plastics inventory to establish a system for monitoring polymer material flows and applications.
- Ensure LAs have clear roles and responsibilities in sustainable waste and conservation management, supported by provincial and central governments.
- Bridge data gaps on the impacts of plastic waste on species and ecosystem services thtough enhanced environmental assessments.
- Establish sustainable financing mechanisms for practical, action-orientated solutions to improve waste and conservation management, prioritising nature-based solutions. Funding sources could include revenue from national park fees, EPR, and PPP programs.
- Establish public-private partnerships to share the cost of maintaining critical equipment like bailing machines, conveyor belts, sorting machines, and compost sieves.



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Long-term (5–10 years)

- Implement policies that incentivise businesses to adopt circular economy principles, promoting sustainable resource use, product life extension, and waste minimisation.
- Implement policies that standardise and simplify plastics, electronics, and glass to allow for circularity and improve the market for repaired and recycled products.
- Encourage innovation in sustainable packaging, biodegradable alternatives, and plastic waste reduction technologies.
- Invest in advanced waste-to-energy technologies to handle high calorific value non-recyclable waste and reduce landfill dependency, ensuring responsible disposal of waste, ash and sludge.
- Align waste management strategies with national biodiversity and climate goals by reducing pollution emissions through improved waste diversion, recycling, and composting practises.
- Promote sustainable production and consumption through national policies, fostering a cultural shift towards waste reduction at all levels of society.



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When planning and budgeting for such initiatives, it is crucial to allocate sufficient resources for performance-based maintenance to ensure long-term success. Strengthening institutional capacity, enhancing enforcement mechanisms, fostering stakeholder involvement, and public awareness and education programmes are key steps towards achieving the intended environmental outcomes. Ultimately, a mechanism is required to effectively improve resource-use, conservation and waste management, focusing on:

- Mainstreaming existing policies for integrated and inclusive implementation.
- Expanding education, awareness, and stakeholder engagement efforts.
- Ensuring sustainable financing mechanisms (including EPR, PPP, and Payment for Ecosystem Services (PES)).
- Conducting regular monitoring with clear, achievable indicators.
- Strengthening data management systems in collaboration with relevant groups e.g., CEA, MoE, waste, forest and wildlife departments.



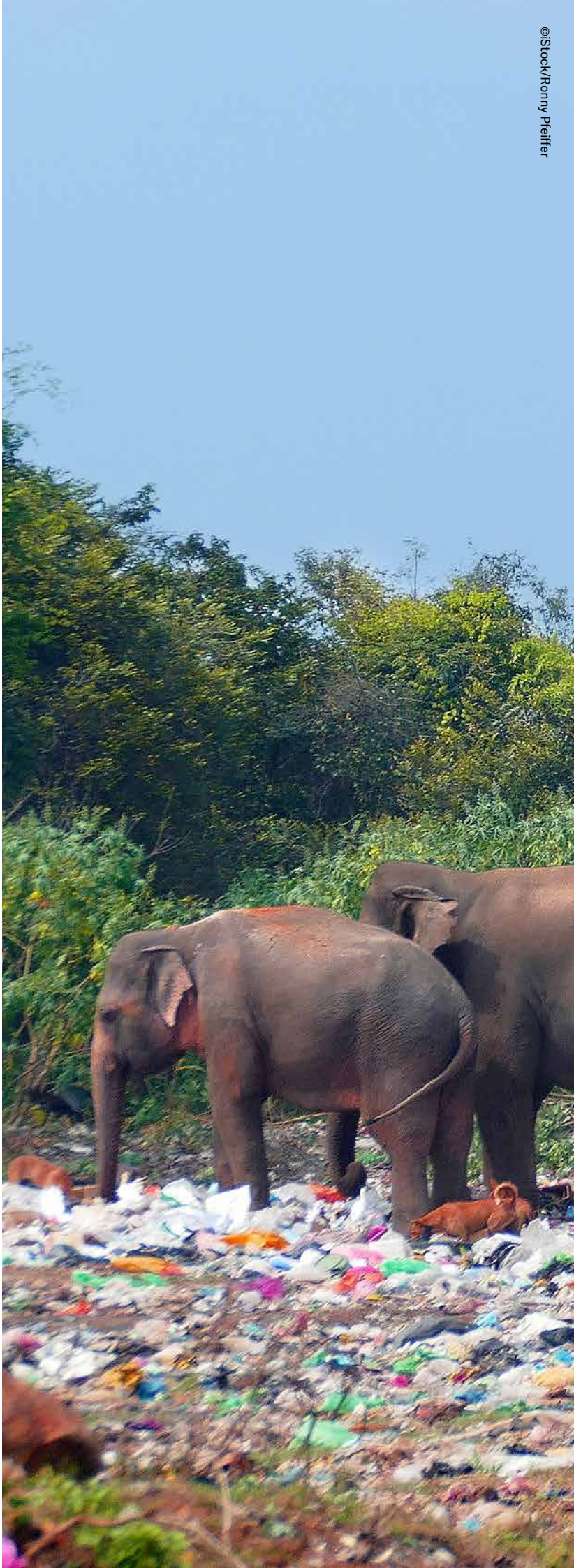
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Table 1: Relevant national policies and regulations considering biodiversity and the plastics life cycle:.

Policy	Year	Objective	Key Features
National Environment Policy	2003	Manage environment sustainably, balancing development needs	Promotes environmental accountability; links stakeholders in environmental management; focuses on land, water, atmosphere, and biodiversity.
National Policy on Solid Waste Management	2007	Ensure integrated and sustainable solid waste management	Encourages resource recovery; minimizes environmental impacts; introduced "Pilisaru" national solid waste program.
National Policy on Waste Management	2020	Establish integrated waste management system	Focuses on MSW, packaging, industrial wast, e-waste, healthcare waste, marine waste, construction waste, and hazardous waste; aims for policy implementation by 2030.
National Air Quality Management Policy	2000	Maintain good air quality and reduce health impacts from air pollution	Focuses on reducing national health expenditures related to air pollution.
National Policy on Disaster Management	2010	Provide guidelines for disaster risk reduction	Encourages regular hazard updates, risk assessments, and incorporation of poverty-development interlinkages.
Cleaner Production Policy	2004	Integrate cleaner production practices across development sectors	Initially focused on health and tourism sectors in collaboration with respective ministries.
National Biosafety Policy	2005	Ensure safety in biotechnology use	Establishes framework for minimizing risks to health and environment from biotechnology.
National Forestry Policy	1995	Protect natural forests and increase tree cover	Focuses on biodiversity, soil, water conservation, and rural welfare; emphasises community participation.
National Policy on Wildlife Conservation	2000	Conserve wildlife and ensure equitable benefits from biodiversity	Promotes conservation with local community participation; supports biodiversity action plan.
National Policy on Elephant Conservation	2006	Ensure long-term survival of wild elephants	Addresses human-elephant conflict and promotes research-based elephant management.
National Invasive Alien Species Policy	2016	Prevent and manage risks from invasive alien species	Establishes legal framework for managing invasive species; promotes stakeholder participation.
National Policy on Wetlands	2005	Conserve and sustainably use wetlands	Aligns with Ramsar Convention; prevents illegal wetland use and promotes restoration.
National Climate Change Policy	2012	Address climate change through adaptation and mitigation	Promotes sustainable consumption, greenhouse gas reduction, and integration of climate change in national development.
Fauna and Flora Protection Ordinance (FFPO)		Provide for the protection and conservation of the Fauna and Flora of Sri Lanka and their habitats	Restricts development activities within one mile of National Reserves. However, no buffer zone has been declared so far in Sri Lanka.

Gazettes issued under National Environment Act to control Plastics

Policy	Year	Objective
Prohibition of polyethylene products ≤ 20 µm	2006, updated 2017 (Gazette No. 1466/5 and 2034/34)	Ban on manufacturing, sale, or use of polyethylene products (≤ 20 µm) including bags and other materials made from polyethylene, polypropylene, polystyrene, PVC, and PET. Exceptions allowed for certain materials (e.g., PET, nylon) used in laminating and medical purposes.
Prohibition of polyethylene food wrappers (lunch sheets)	2017 (Gazette No. 2034/34)	Ban on the manufacture and sale of food wrappers made from polyethylene for use within Sri Lanka.
Prohibition of high-density polyethylene bags (HDPE)	2017 (Gazette No. 2034/35)	Ban on the manufacture, sale, or use of high-density polyethylene bags for in-country use.
Prohibition of polythene in decorations	2017 (Gazette No. 2034/37)	Ban on using all forms of polyethylene and polypropylene products for decorations in political, social, religious, national, or cultural events.
Prohibition of polystyrene products	2017 (Gazette No. 2034/38)	Ban on manufacturing and selling food containers, plates, cups, and spoons made from expanded polystyrene for in-country use.
Prohibition of open burning	2017 (Gazette No. 2034/36)	Ban on open burning of refuse, including plastics, with penalties of fines or imprisonment.
Ban on selected single-use plastic items	2021	Ban on sachets (≤ 20 ml/20g) except for food and medicines, inflatable toys (except for sports gear, balloons), and cotton buds with plastic stems (except for medical use).
Conservation Levy on HDPE bags	2008	Levy imposed on HDPE plastic bags, later abandoned due to legal challenges and improper fund utilisation.
Basel Convention on plastic waste control		Sri Lanka, as a signatory to the Basel Convention, controls transboundary movements of hazardous waste, including plastic waste.
Prohibition on importing waste materials		National Environment Act prohibits the import of waste materials, including post-consumer plastic waste, without prior approval from the CEA.


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