

Ocean Garbage

Jeevan(A00464915), Sridhar(A00493807), Zilong(A00458589)

Motivation

We selected this project after witnessing our shoreline being covered with plastic following each storm. Those wash-ups clog drains, flood streets, compel beach closures, and subject families to smoke and tainted seafood. Our inspiration is to address the source, not simply tidy up the mess: prevent leakage on land, capture trash at river mouths and storm drains, and manage difficult-to-recycle plastics responsibly. It brings quick relief while building a healthier, more robust shoreline.

PROBLEM STATEMENT

Coastal communities and environmental groups around the world struggle with the nonstop illegal dumping of plastic into the ocean. Because the high seas don't have strong international rules or monitoring, there is a gap in accountability that lets violators act freely. If this gap isn't fixed, both ocean health and the people who depend on it will continue to be harmed.

Where are the garbage from?

- Land source: Waste travels to the ocean via rivers, coastlines, wastewater, and wind.

- Science | AAAS

- ship: Most bottles floating in the central South Atlantic Ocean come from ships, breaking pollution rules meant to stop this

-Proceedings of the National Academy of Sciences



Target/End users

- Governments
- Non-profit organizations
- Individuals/community concerned in Ocean cleaning
- Organizations involved in recycling



Ocean Cleanup Challenges

Cleaning Our Oceans is Super Complex



High Financial Costs

Cleanup projects require ships, special nets, fuel, and manpower, which are very expensive to maintain

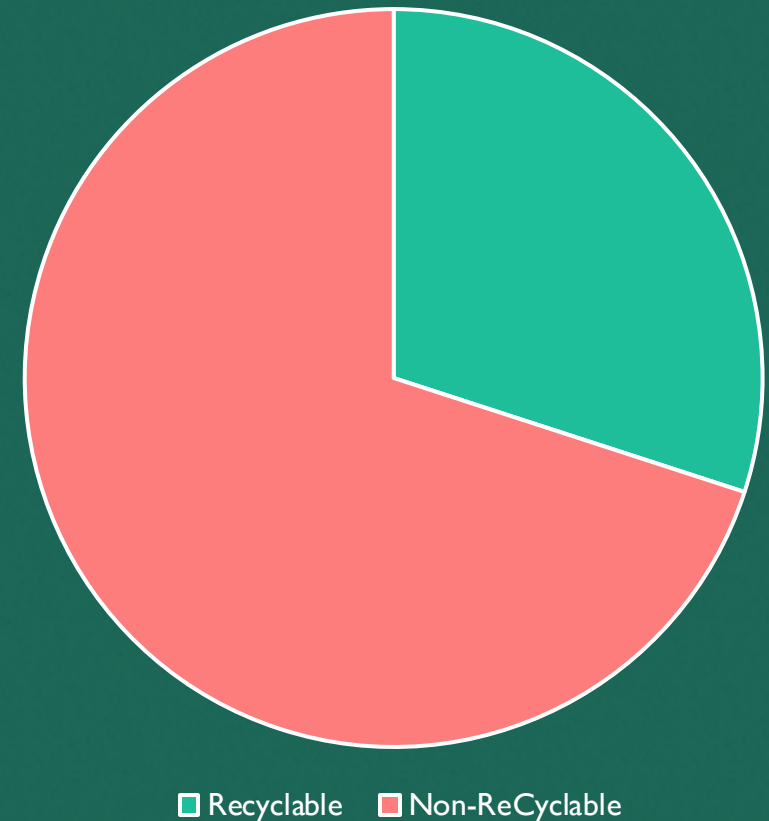


Problematic Collected Waste

Much of the collected waste is non-recyclable, creating a new disposal problem.

For Example: diapers, sanitary pads, and multi-layer packaging

Composition of Collected Waste



Technical Inefficiency

Existing tools cannot capture small plastic particles without harming marine life



The Governance Gap

- Policies Are advancing
- Monitoring is lacking
- Enforcement becomes impossible



CHALLENGES & SOLUTIONS

Based on Official Surveys & Reports



Non-recyclable / low-value plastics (films, sachets, diapers)

- **Challenge** A big share of what lands on beaches is low-value and hard to recycle. In usual, it leaks or be burned. Recent baselines document the prevalence of these items.
- **survey done on challenge** Australia's **national litter-leakage baseline** (1,907 transects; 443 coastal) establishes empirical loads and common items.
- **Existing solution : Basel Convention technical guidelines** for environmentally sound management (ESM) of plastic waste; UNEP also calls for **safe disposal** for non-circular plastics alongside reduction/reuse.
- **What they're lacking** Local capacity and funding to accept and treat low-value fractions safely (ESM) at scale.
- <https://www.dcceew.gov.au/sites/default/files/documents/national-baseline-litter-leakage-environment.pdf> Basel Convention – ESM guidelines (plastic waste): <https://www.basel.int/Portals/4/download.aspx?d=UNEP-CHW.16-CRP.31.English.pdf> UNEP – *Turning off the Tap*: <https://www.unep.org/resources/turning-off-tap-end-plastic-pollution-create-circular-economy>

High costs & unstable funding

➤ **Challenge**

- Solid-waste and cleanup systems are expensive; donation-driven models are hard to sustain (World Bank).

➤ **Survey on the Challenge**

- *What a Waste 2.0* compiles global costs, service gaps, and financing needs (World Bank).

➤ **Existing Solutions (Official Reports)**

Extended Producer Responsibility (EPR) shifts ongoing costs to producers (OECD).

Development-bank funding for coastal projects (Clean Oceans Initiative 2.0).

➤ **What's Still Lacking**

- Stable **O&M funding** at the city level.
- **Consistent, well-enforced EPR** implementation (OECD).