



Education to empower

Citizen science and education to empower communities for safer and cleaner environments

This case study demonstrates market-based solutions towards “**less plastic wasted**”, exemplary solutions for transformational changes in the way plastic is managed in the value supply chain. Circular Economy approaches, including business incentives for plastic reduction and recycling, are used, leading to increases in plastic re-use and recycling, and to the reduction of single-use plastic packaging.

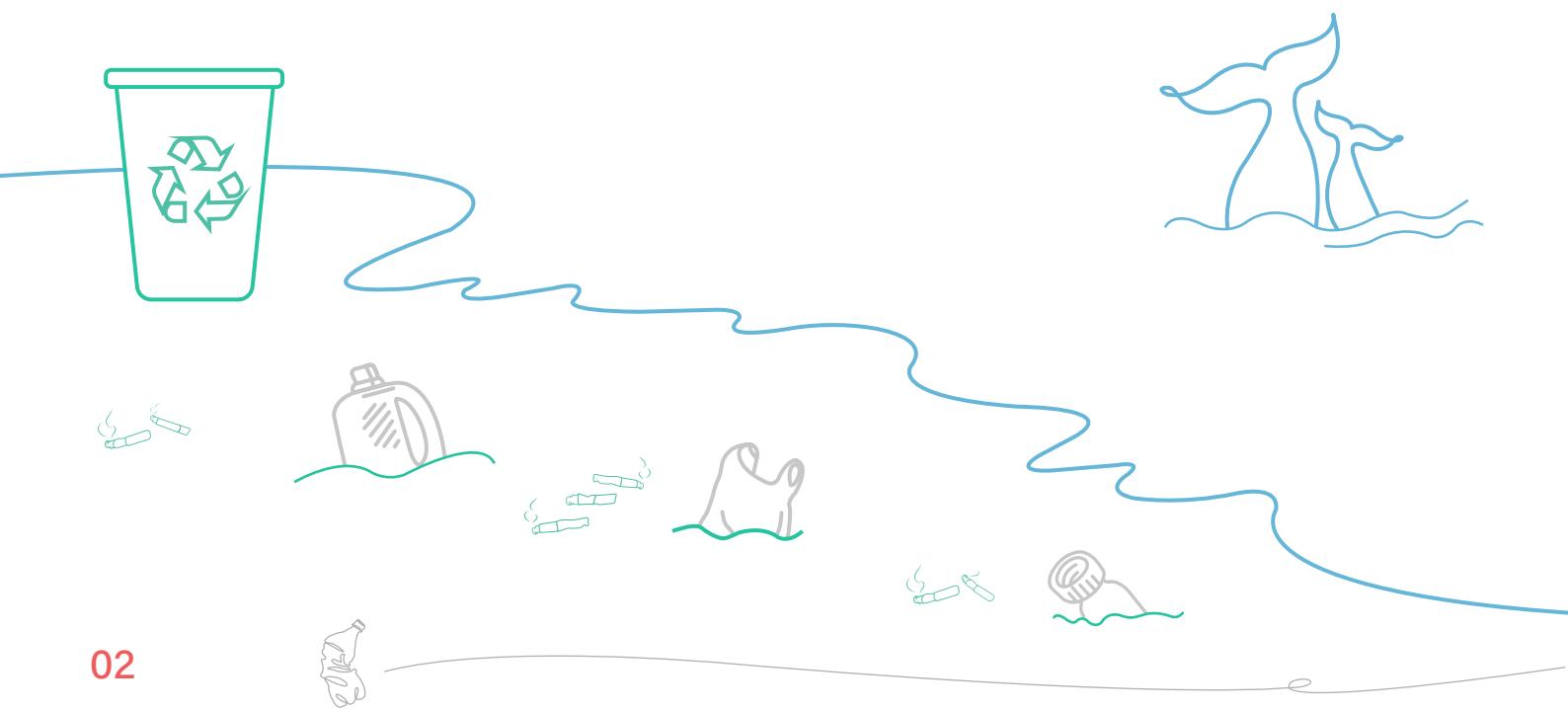
Background

Although smoking rates are declining, **20 billion cigarettes** are still consumed annually in Australia, resulting in an estimated **7 billion cigarette butts** being discarded into the environment each year (Scollon and Winstanley 2015). Even without knowing these figures, Alison Foley saw lots of these lightweight items **floating in the sea** in her neighbourhood on the Sunshine Coast.

The inspiration for the beginnings of a solution came on one hot summer day, when two tired children clamoured for ice cream to finish off their day on the beach. As their mum, Foley challenged them to **gather 10 little pieces of rubbish** before they could claim their reward. The children, aged two and six, came back not long after with their arms full of rubbish! What's more, when they finally got their ice cream, the six-year-old wanted his ice cream in a cone because he simply didn't want the little plastic spoon that came with the cup.

With Foley sharing this experience with friends on **social media**, the message of Ten Little Pieces spread quickly. People around the world began posting their own children taking part in the challenge, highlighting the opportunity it offered to open certain conversations with children and talk about how they could make a difference. The simple act of everyone in the community collecting litter started discussions around **conscious consumerism, environmental stewardship, and a rethinking of our concept of waste**. Ten Little Pieces was born.

Gather 10 little pieces of rubbish



Matching small with small

Seeing that people's propensity to litter mindlessly (whether a water bottle or a small cigarette butt) could be addressed with education, Ten Little Pieces emphasized the power that it could have in uplifting and empowering the community, especially children and young people, to make change.

As such, Ten Little Pieces delivers inspiring and empowering educational programmes for early years to leaver-level ages by putting environmental awareness into action. The organization's curricula include courses in ocean literacy, the water cycle, the origins and impacts of plastic pollution, personal autonomy, circular economy thinking, regenerative concepts, and solutions-based thinking to promote action towards the achievement of the United Nations Sustainable Development Goals, with Goal 14 (Life below Water) as a core objective.

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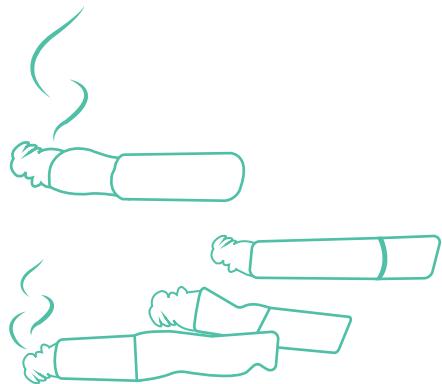
Ten Little Pieces is a movement that **stems from simplicity**. The approach is one that parents can connect with and that facilitates early value formation and awareness in children in a way that's not overwhelming. Picking up 10 pieces of litter is, after all, something they can do that can have a **ripple effect** into homes, schools, and communities in general, giving them a sense of ownership and belonging in the places they care for.



The problem

During every beach walk or visit to a local playground, the prevalence of **littered cigarette butts** became clear; they are the world's most commonly discarded single-use plastic item, with an estimated **4.5 trillion of them littered every year**. This served as motivation for the focus of an intervention strategy implemented as part of Alison's completion of the Expert Track of the Massive Open Online Course on Marine Litter developed by the United Nations Environment Programme and the Open University of the Netherlands under the Global Partnership on Marine Litter.

**Just one cigarette butt
can contain over 4,000 toxic
and leachable chemicals**



Cigarette filters contain **cellulose acetate**, a form of plastic that is not readily biodegradable and can persist in the environment for a very long time. It has been found that even just one cigarette butt can contain over 4,000 toxic and leachable chemicals (Register 2000). They have been documented to **negatively impact biodiversity**, ecosystems, human health, and the economy. Due to their small size and light weight, they are easily carried in stormwater run-off through drainage systems, eventually ending up in local streams, rivers, and waterways. Cigarette butts can therefore be considered a **toxic form of marine debris**, and, for those living in coastal areas in particular, a matter of grave concern. At the same time, there seems to be inertia in addressing littering in seaside communities.

Interventions

The approach adopted by Ten Little Pieces to address **plastic litter and reduce the amount of cigarette butts** found on beaches on Australia's Sunshine Coast entails working with data and insights that communities can understand and that can empower them to make decisions. Through gamification, education, litter patrols to remove debris, and the **enforcement of anti-littering laws**, the Ten Little Pieces Cigarette Butt Litter Reduction Initiative demonstrated a 40 per cent drop in cigarette butt litter at the trial location. Building the database guided by citizen science

Even with a plethora of regulations, the anti-littering laws applicable to Australia's beaches were not being strictly implemented and a method of conveying the urgency of the situation had to be found to encourage lawmakers and regulators to step up. Although the motivators and influences behind the inappropriate disposal of cigarette butts are complex, Ten Little Pieces gathered prevailing research and compiled information to secure a local government commitment to conduct a **12-week social experiment of cigarette butt-littering** behaviour modification using a cigarette butt voting ballot box. The activity used game theory to encourage participation around the highly visible ballot box and eventually provided information on public perceptions of cigarette butt litter and its impact on the region. Ten Little Pieces committed to developing the project proposal, presented the management and service plan, maintained the ballot box for cleanliness and data capture, liaised with all stakeholders, and reported the findings of the trial under the guidance of the Honolulu Strategy and marine debris source reduction best practices.

With the baseline data from the experiment, **the problem of littering became more evident**. As coast councils, non-governmental organizations, communities, and schools participated in the programme, they each became invested in the issue and wanted to learn what they could do to help. The final report was used to get more people on board, reaching out and communicating with relevant stakeholders in the area and eventually expanding to a broader base of people.

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Resource from freepik

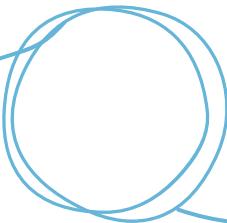
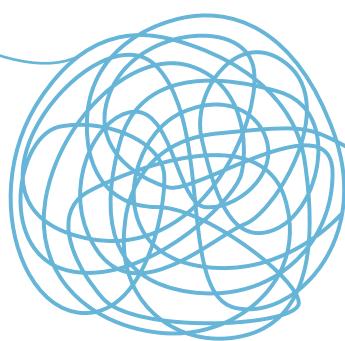


Challenges

- Law enforcement

Unless there is a **strong voice and demand from citizens**, local government regulations are not consistently being applied and government regulation mechanisms and the hierarchy of responsibility for the issue can be confusing. There is still need for **constant communication** with city leaders, which can be challenging for small organizations given the limited time and human resources available. This highlights the need for collaborative approaches across organizations and community sectors to address the complex interconnected aspects of reducing marine debris.

Data reported is lower than what is actually polluting the environment.



- Limited Data

Data is limited. Despite incredible data-capture services from sources like Tangaroa Blue's Australian Marine Debris Database, there is a gross underestimation of the amount of debris leaked into the wider environment, with factors like the timing of the tides not accounted for. Nevertheless, **scientific and factual data** is key when explaining to policymakers and lawmakers that the data reported is lower than what is actually polluting the environment.



• Problem solving

Solutions need to be focused so that instead of highlighting deficiencies in infrastructure and the enforcement of laws and policies, they are framed as opportunities for improvement. The Sunshine Coast region hosts nesting beaches for turtles and is listed by the United Nations Educational, Scientific and Cultural Organization (UNESCO) as a place of **special ecological importance**. The message has to transcend litter and point to the economic, aesthetic, health, hygiene, and environmental consequences of the issue to garner the problem-solving capital required to develop widespread solutions.

• Platform

The many brilliant and knowledgeable stakeholders wishing to address the issue of marine debris need to have a place in **developing solutions**. Ten Little Pieces successfully included non-governmental organizations, the local government, citizen scientists, volunteers, regional bodies, and international regulators in the Cigarette Butt Litter Reduction Initiative, which required high-level diplomacy and collaborative skills.

• Sensitivity

The issue can be emotional one as smoking is a very personal preference. Clear, factual, and unemotional language is critical; **littering, not smoking**, is the issue here. • Limited Data



Resource from freepik

Results - the impacts

- Increased data

In the preceding two years of this initiative, marine debris collected during the Sunshine Coast Council beach clean-up programmes recorded the incidence of cigarette butts at 18 per cent (2016–17) and 15 per cent (2017–18).

- Reduced litter

The 12-week ballot box trial was successful in preventing **1,999 cigarette butts** from potentially entering the environment. At the same time, an incidental count from the trial area recorded 1,041 littered cigarette butts, while data from gross pollutant traps installed in surrounding stormwater drains captured 143. Extrapolating from the time intervals these clean-ups were conducted at, this data represents a **40 per cent reduction** in the cigarette butt litter recovered from the trial location at the end of the trial.

- Increased reach of report

The cigarette butt voting ballot box report has been **downloaded almost 900 times** by interested organizations and communities and has been accepted for a presentation at a 2020 micro conference. The report is available for download at: www.tenlittlepieces.com/resources.

- Incorporated feedback

Through **education**, the demonstration of clear environmental consequences, appropriate receptacles, and the knowledge that fines will be enforced, neighbouring councils have incorporated the lessons learned from the ballot box trial in 2019.

- Partnership

The ballot box project also provided an opportunity to demonstrate collaborative partnerships between government agencies, non-profit organizations, local citizens, and private-sector organizations in response to the prevalence of this form of waste through the employment of a behaviour-modification initiative to achieve a significant measurable **change in littering behaviour**.

Moving forward

Ten Little Pieces has set its sights on moving forward with the following:

- Enforcing existing fines and/or cautions issued by law enforcement officers with regards to littering cigarette butts and smoking in **prohibited areas**, including Sunshine Coast beaches.
- Enforcing the **10-metre smoking exclusion zone** around the Alex Skate Park (Tobacco and Other Smoking Products Act 1998).
- Retrofitting existing cigarette butt disposal units to enhance their visibility to the smoking public.
- Expanding the trial to **10 more sites** in the local regional council area, extending it along the beachfront and to the high traffic areas of the Sunshine Coast.
- Developing an **education and awareness-raising campaign** for an international audience to inform the public of the environmental consequences of the inappropriate and illegal disposal of cigarette butts.
- Ten Little Pieces have advised larger organizations in the implementation of its recommendations for the expansion of this trial and will continue to share learnings from this programme. The main focus is now on the **delivery of the educational programme** to bring plastic pollution awareness of all kinds into classrooms across Australia to inspire action towards the achievement of the Sustainable Development Goals. The organization is also developing online resources and programmes for the international community.



We thank Ten Little Pieces 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 awareness. The project leverages COBSEA's regional mechanism to tackle the transboundary challenge of marine litter in a harmonized manner.

www.sea-circular.org

