Report on Recommendations for Plastic Policies in Grenada

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Common Seas

UK International Development

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Authorship note

This report was developed by Common Seas under a partnership agreement with Grenada's Ministry of Climate Resilience, the Environment and Renewable Energy.

It supports the ministry's efforts to tackle plastic pollution on the island, and its overall objective to enhance environmental sustainability.

Common Seas

Common Seas is a social enterprise that drives systemic change, creating partnerships to design and deliver resources and solutions that stop the flow of plastic pollution.

Our programmes are centred on:

- Leading policy changes through partnerships with governments, providing technical expertise and convening the right stakeholders for action.
- Commissioning research and raising awareness of the human health impacts of plastics to inspire and motivate change.
- Empowering and equipping children, through their schools, to stop the flow of plastic pollution.

We work with countries that are most affected by plastic, particularly SIDS and developing coastal economies, supporting a just transition to a future freed from plastic pollution.

For more information, please visit: commonseas.com

UK International Development

This work was supported by funding from the UK Government through UK International Development.

Common Seas is partnering with five Small Island Developing States (SIDS) to develop National Action Plans to tackle plastic pollution. This critical funding allows us to develop and scale an approach tailored to the unique challenges and needs of SIDS, which are disproportionately affected by the plastic crisis.

The project supports partner governments to radically reduce ocean plastic in their countries over the course of ten years and contribute to a sustainable blue economy.

For more information, please visit: https://sbe-platform.org.uk/about#sbe-programme

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Contents

Key messages

Grenada generates 4,790 tonnes of total plastic waste per year.

This is expected to increase by an estimated 30% in ten years' time.

Almost half of this waste is made up of avoidable and unnecessary plastic items

such as single-use plastic beverage bottles, tableware and bags. These can all be radically reduced if we act now.

On the current trajectory,

Grenada's landfills will have a third more waste in 2033, as compared to 2021.

As the last remaining cell in Perseverance landfill is expected to reach capacity within four to five years, urgent action is required to handle projected increase in waste generation.

Grenada must build upon its recent policy initiatives, such as restricting some single-use plastic items and improvements in waste management, to stop plastic waste leaking into the environment.

Simultaneously, ambitious new policies that will stop plastic pollution at source should be developed, alongside identifying quick wins to radically and rapidly reduce plastic pollution.

Key messages

The time to act is now. This document outlines five strategies that

will reduce Grenada's plastic pollution by 79% over ten years.

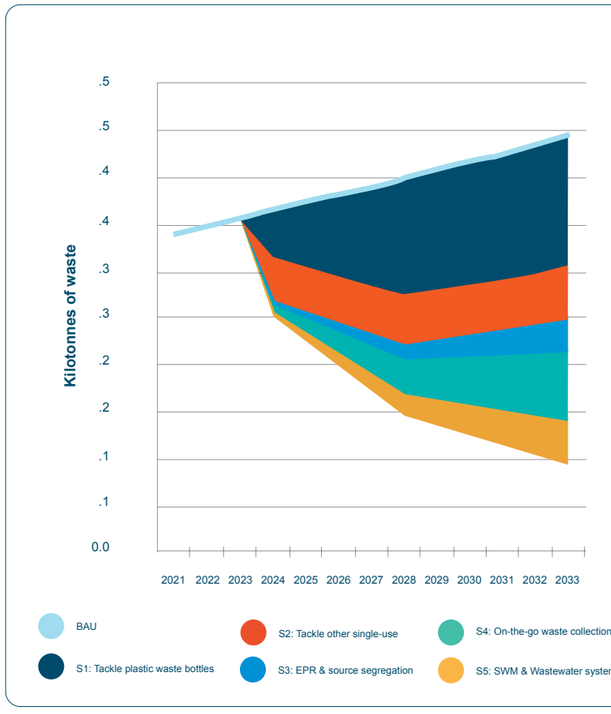


FIGURE 1

These strategies and policies have been developed through consultation with key stakeholders including government, business and civil society. The strategies and policies were refined and broadly agreed at a workshop facilitated by Common Seas to be included as recommendations in this report.

This report is designed as an analysis of the plastic pollution problem in Grenada, with recommended key actions for the Government of Grenada to embed into its programme of work to lead the charge on tackling plastic pollution in the country. Crucially, the tourism sector will be a key partner in piloting and implementing these measures. This programme could become a global exemplar, demonstrating how a tourism-focused economy can address plastic pollution.

Go to page 40 to see the five strategies

Executive summary

By 2040, ocean plastic pollution is predicted to quadruple. From production to disposal, plastic threatens the climate, human health, and sustainable blue economies.

Addressing plastic pollution is a key priority in order to safeguard biodiversity, protect communities and deliver the UN Sustainable Development Goals.

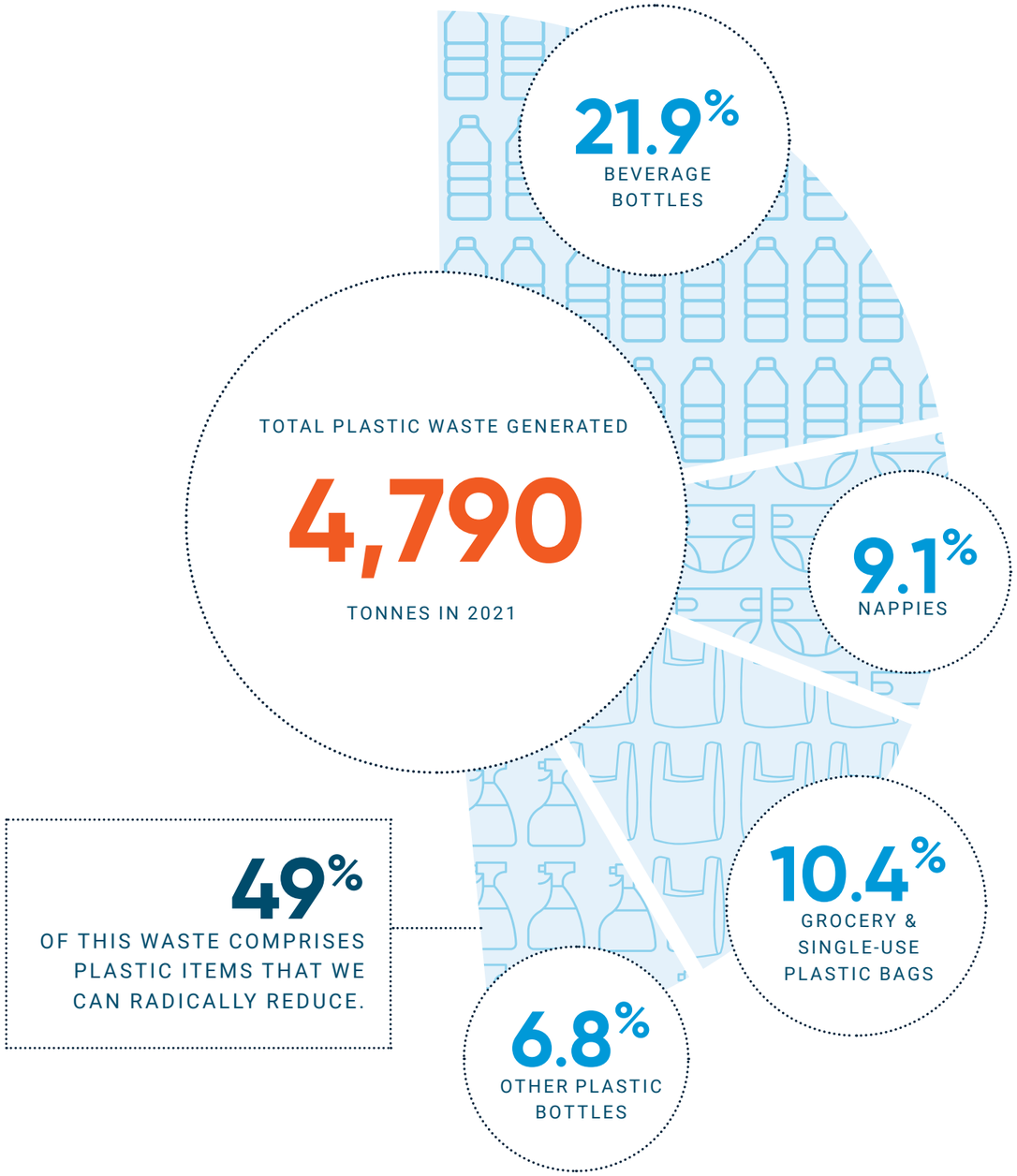
This report sets out the results of an analysis of Grenada's plastic pollution problem and goes on to suggest a suite of policies that can be implemented to address this profound challenge.

The report has been developed in consultation with key government partners and a wider expert group of stakeholders to ensure that the analysis is fully informed by the knowledge and expertise of those organisations and people most closely involved in Grenada.

Grenada: report development

Co-design workshop to establish key strategies and actions.

How much plastic waste is Grenada generating?



49% OF THIS WASTE COMPRISES PLASTIC ITEMS THAT WE CAN RADICALLY REDUCE.

Executive summary

What happens to Grenada's plastic waste?

APPROX
90%
INTO SOLID WASTE MANAGEMENT SYSTEM

5,800
TONNES TO LANDFILL BY 2033

↑ 1/3
COMPARED TO 2021

The majority of plastic waste generated in Grenada enters the solid waste management system.

However, these systems have limited capacity and increasing plastic waste generation means that Grenada will have to send around 5,800 tonnes of plastic waste to landfill in 2033 – approximately a third more than in 2021.

According to national stakeholders, Grenada's landfill at Perseverance has only a few years of capacity remaining under current trajectories.

Time is running out

Grenada's landfill at Perseverance has only a few years of capacity remaining.

How much plastic is entering our oceans?

THROUGHOUT 2021 NEARLY
420 tonnes
OF MIS-MANAGED PLASTIC WASTE ENTERED THE ENVIRONMENT IN GRENADA.

OF THIS, AN ESTIMATED

338 tonnes
OF PLASTIC POLLUTION ENTERED THE OCEAN

81 tonnes
REMAINED ON LAND

The most common items polluting the ocean are single-use plastics, including bottles and bags.

Top 5 plastic items polluting the ocean

- Beverage bottles (plastic)
- Other plastic waste
- Grocery bags
- Other plastic bottles (oil, bleach, etc)
- Tyre wear
- Other

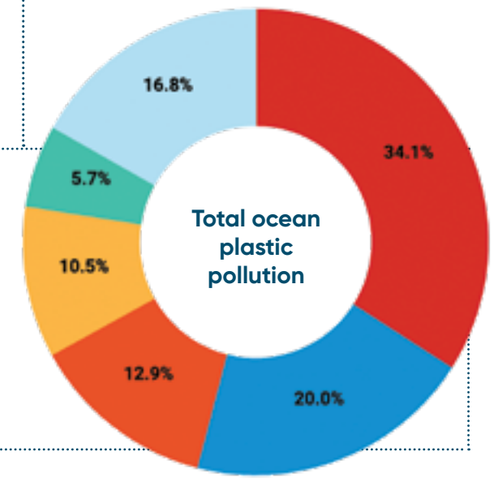


FIGURE 2

Executive summary

What is the trajectory to 2033?

Plastic waste generation is expected to increase by 32% between 2021 and 2033 (Figure 2).

Over this period, plastic pollution will increase by 31%, demonstrating the urgent need to improve or bring in additional policy measures to reduce plastic pollution.

Under this Business as Usual trajectory, in which no action is taken, it is expected that 5,000 tonnes of plastic pollution will enter the ocean in Grenada over the next 10 years.

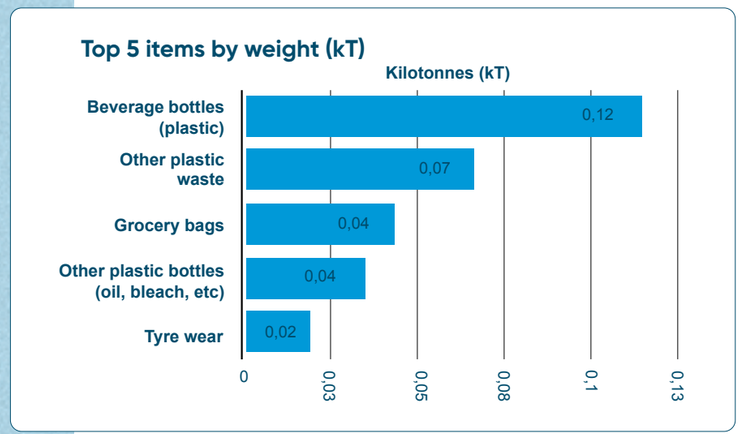


FIGURE 3

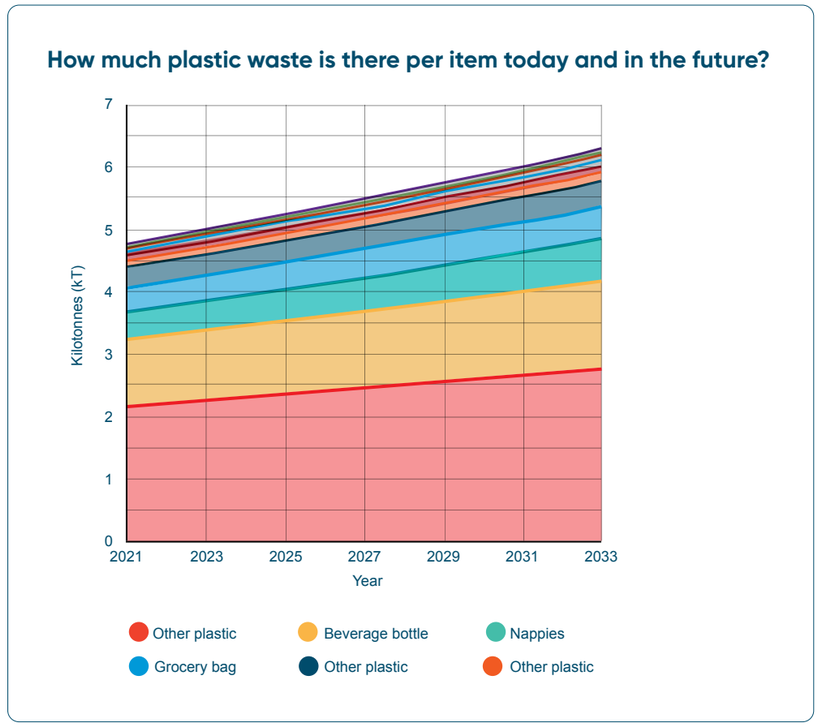


FIGURE 4

Analysis using the Plastic Drawdown tool suggests that by 2033 these strategies have the combined potential to reduce annual plastic pollution in Grenada by 79%.

Image: © Hugh Whyte

Executive summary

Summary of the key strategies, policies, and their impact

Modelling using Common Seas' Plastic Drawdown tool indicates that implementing five key strategies has the potential to reduce plastic pollution in Grenada by 79% over the next decade. Each strategy is presented in accordance with the waste hierarchy overleaf.

Impact of strategies to tackle plastic pollution

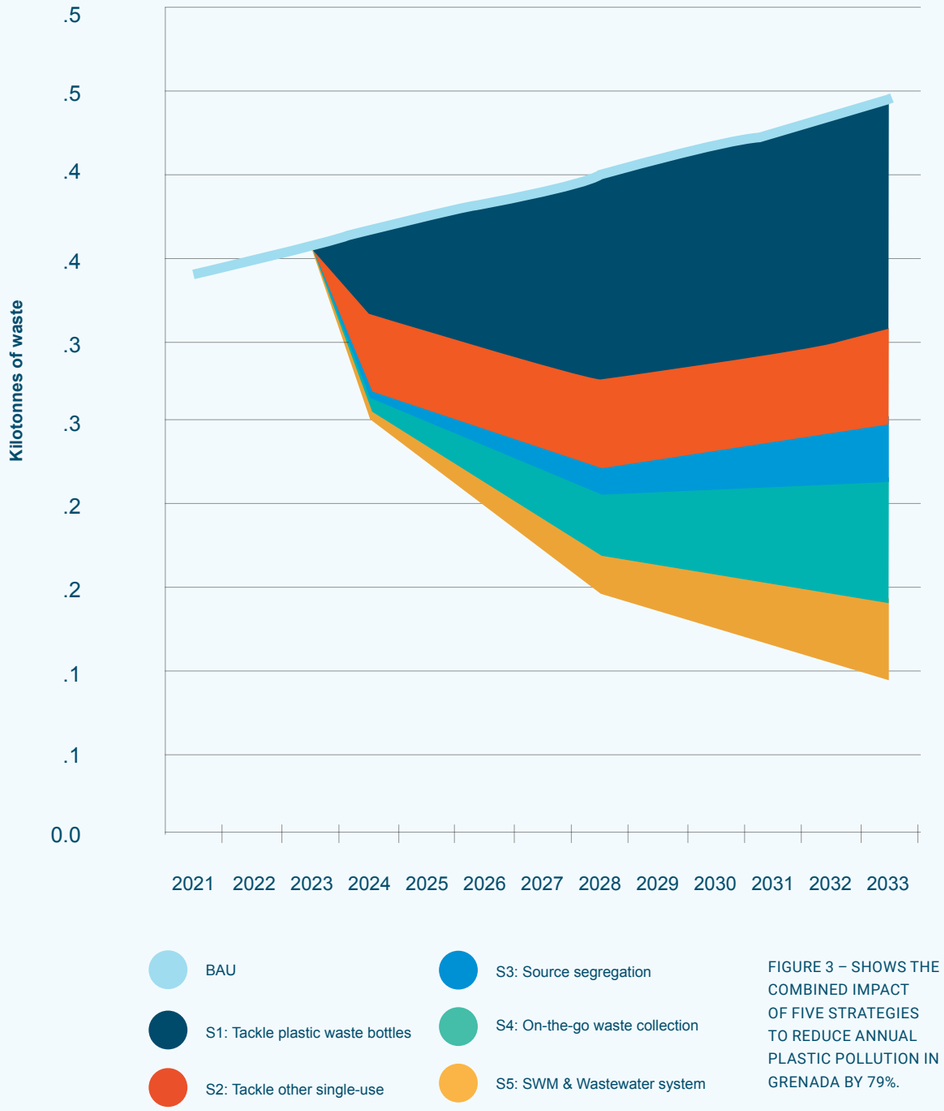


FIGURE 3 – SHOWS THE COMBINED IMPACT OF FIVE STRATEGIES TO REDUCE ANNUAL PLASTIC POLLUTION IN GRENADA BY 79%.

FIGURE 1

Strategy 1: Tackle plastic water bottles.

This strategy includes the following actions:
- Enhancing DRS to include plastic beverage bottles.
- Extending the Environment Levy (tax) to include pre-forms.
- Providing water refill points.
- Phased ban on single-use plastic bottles.

Reduce plastic pollution by **31%**

Combined plastic pollution reduction potential: **1,087 tonnes**

Strategy 2: Tackle single-use plastics and establish circular delivery models

This strategy includes the following actions:
- Tax single-use food packaging, including biodegradable.
- Tax single-use plastic bags not covered in the ban.
- Introduce a refill system for food takeaway containers.
- Promoting reusable nappies and period products.

Reduce plastic pollution by **13%**

Combined plastic pollution reduction potential: **526 tonnes**

Strategy 3: Source segregation

This strategy includes the following actions:
- A drive for source separation of plastics waste.

Reduce plastic pollution by **8%**

Combined plastic pollution reduction potential: **190 tonnes**

Strategy 4: Improve on-the-go waste collection and tackle littering

This strategy includes the following actions:
- Increase enforcement against littering and fly-tipping to encourage behaviour change.
- Implement an enhanced 'on-the-go' waste collection and recycling scheme to tackle littering.

Reduce plastic pollution by **16%**

Combined plastic pollution reduction potential: **402 tonnes**

Strategy 5: Improve solid waste management and wastewater systems

This strategy includes the following actions:
- Improve household waste collections.
- Enhance standards for waste transportation, storage and handling.
- Improved screening of items flushed into wastewater systems.

Reduce plastic pollution by **11%**

Combined plastic pollution reduction potential: **269 tonnes**

Introduction

Plastic pollution is a global environmental and health problem – and it is getting worse. Today, eleven million tonnes of plastic flows into the ocean every year.

By 2040, this is predicted to quadruple, and is expected to account for 19% of the global carbon budget by that date. Plastic pollution is destroying our ocean, threatening the marine creatures and ecosystems that support a thriving blue economy. A recent study found that microplastic pollution on coral reefs becomes more concentrated at greater depths.

As well as threatening livelihoods, plastic is a threat to our health – and now plastic particles have been discovered in nearly 80% of the human blood samples tested.

Despite this urgency, many countries still lack any policies targeted to address plastic pollution. An analysis in 2020 found that 14 of the world's top 20 countries for plastic pollution generation have either no plastic policies at all, or their policies only address plastic bags.

As a fossil fuel-derived material, plastic is intrinsically linked to climate change. Greenhouse gases are emitted at each of each stage of the plastic lifecycle: 1) fossil fuel extraction and transport, 2) plastic refining and manufacture, 3) managing plastic waste, and 4) plastic's ongoing impact once it reaches our oceans, waterways, and terrestrial landscapes.

Plastic is one of the most greenhouse gas-intensive industries in the manufacturing sector – and the fastest growing. Plastic production accounts for approximately 10% of the global annual usage of fossil fuels.

The need for governments to address this problem is clearly laid out within their commitment to the Sustainable Development Goals (SDGs), with plastic consumption and related pollution associated with the following seven SDGs:

- **SDG 3:** Good health and well-being.
- **SDG 6:** Clean water and sanitation.
- **SDG 11:** Sustainable cities and communities.
- **SDG 12**: Responsible consumption and production.
- **SDG 13:** Climate action.
- **SDG 14:** Protection of seas and oceans.
- **SDG 15:** Repair ecosystems and retain biodiversity .

With plastic being a particular focus for:

- **SDG target 14.1,** to prevent and significantly reduce marine pollution of all kinds, particularly from land-based activities, including marine debris and nutrient pollution, by 2025.
- **SDG target 12.5,** to substantially reduce waste generation through prevention, reduction, recycling, and reuse, by 2030.

In response to this growing threat, the Caribbean Community (CARICOM) has adopted a regional strategy for the management of marine litter and microplastics. This was articulated by Heads of Government in 2019 by the St. John's Declaration. It is the first regional declaration of its kind as it acknowledges the potential adverse impacts of increasing levels of plastics and microplastics within the Caribbean Sea and Atlantic Ocean. The declaration challenges governments to support a holistic approach to solid waste and plastic management (IUCN, 2022).

Eleven million tonnes of plastic flows into the ocean every year. By 2040 this is predicted to quadruple.

Plastic stats

↑19%
By 2040, plastic will account for 19% of the global carbon budget.

↑80%
Plastic particles have been discovered in nearly 80% of human blood samples tested.

↑14 out of 20
An analysis in 2020 found that 14 of the world's top 20 countries for plastic pollution generation have limited plastic policies.

↑10%
Plastic production accounts for approximately 10% of the global annual usage of fossil fuels.

1. Background

This report sets out the results of an analysis to understand the scale of Grenada's plastic pollution problem.

It builds on work conducted by the **International Union for Conservation of Nature's Plastic Waste Free Islands** PWFI initiative, and supports the Draft **National Sustainable Waste Management** policy, Building Resilience in the Eastern Caribbean through Reduction in Marine Litter (ReMLit).

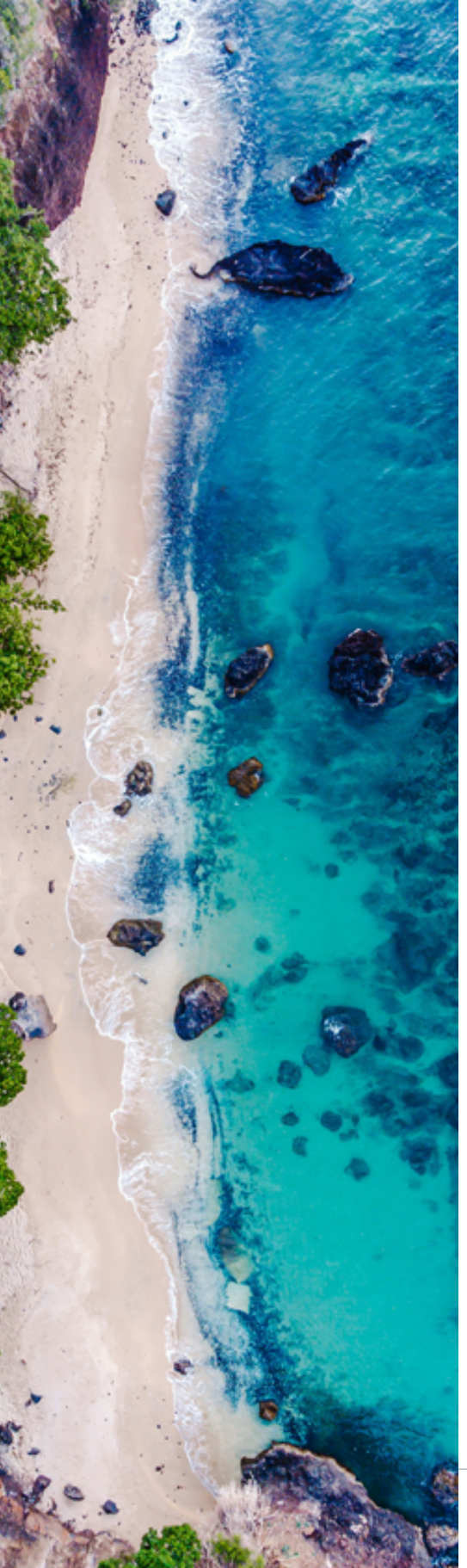
The IUCN's PWFI initiative was focused on identifying opportunities for reducing plastic pollution and creating plastic waste value chains for local businesses. This was done through baseline data collection, assessment of the existing policy environment in Grenada, and engagement with government and business.

This study builds on this excellent foundation established by IUCN, and uses the data collected through the PWFI initiative to build a baseline model of plastic waste generation now and into the future. The model then measures the impact of different policies and suggests the most impactful policies to tackle the problem. This report is in line with the IUCN's recommendation to "develop and implement a long-term plastic management strategy as part of its integrated waste management operations", and can be used to inform wider government policy to tackle plastic pollution.

This wider government policy is outlined in the Draft National Sustainable Waste Management Policy. Following initial consultations with a broad cross-section of stakeholders in Grenada to assess the state of waste management, an OECS Model Sustainable Waste Management Policy was prepared and circulated for review. After a subsequent Validation Meeting, a draft Sustainable Waste Management Policy was prepared for Grenada and submitted for approval in April 2022.

The goal of the policy is to formulate and implement an integrated waste management programme for Grenada that incorporates the Zero Waste Principle, focusing on waste minimisation, harnessing waste as a resource to create wealth and employment, promoting awareness and involvement, facilitating partnerships, and reducing pollution through sound waste management practices.

The policies included in this report directly support this integrated waste management programme by providing estimates of how much each policy can impact a reduction in marine plastic pollution. This is directly in line with ReMLit's main objective "to contribute to building resilience in marine ecosystems through a reduction in marine litter in the Eastern Caribbean". These policies are presented as part of a holistic plan to inform future government policy in this space.



Country Profile: Grenada

Grenada is an island country in the southeastern Caribbean, covering a total area of approximately 348.5 km2. It comprises the main island of Grenada itself, the smaller islands of Carriacou and Petite Martinique, and several smaller islets that lie to the north of the main island and form part of the Grenadines chain.

Grenada lies between the Caribbean Sea to the west and the Atlantic Ocean to the east, with a coastline of approximately 121km. According to the World Bank's most recent estimate (2024), Grenada has a population of 117,210 people (World Bank, 2024a), with approximately 37% (≈ 43,367 people) living in urban areas and the remaining 63% in rural areas (World Bank, 2024b).

Grenada's Exclusive Economic Zone (EEZ) is 75 times larger than its land area and extends across approximately 26,000 km², providing significant marine resources, including coral reefs, seagrass beds, and fisheries that support local livelihoods and tourism (UNCTAD, 2022). In recent years, Grenada has strengthened marine conservation initiatives, including expanding its Marine Protected Areas (MPA) network to promote the sustainable use of coastal and ocean resources (CANARI, 2024).

Classified as an upper middle-income country, Grenada's economy is primarily driven by tourism, which is its main source of foreign exchange, and by agriculture, particularly the production of spices such as nutmeg, cocoa, cinnamon, and cloves, earning Grenada its nickname, the 'Spice Isle'. The island is the world's second-largest producer of nutmeg after Indonesia (Doughorty, 2025). Between 2019-2024, the tourism sector saw significant growth: visitor numbers rose by 17% year-on-year and in early 2024, the country reached at least 26 consecutive months of positive tourist arrival growth (Now Grenada, 2024).

As a Small Island Developing State (SIDS), Grenada faces multiple environmental and development challenges, including vulnerability to natural disasters and climate change, and challenges with solid waste management due to high costs, limited land, and low economies of scale. These make infrastructure and transportation difficult and expensive. Sustainable solid waste management is therefore a critical issue to Grenada's economy and development, particularly given the country's strong dependence on tourism – an industry that both significantly contributes to waste generation and is highly sensitive to the impacts of plastic pollution.

Grenada has already implemented ambitious policies that restrict the import, sale and consumption of certain single-use plastic items under its Non-Biodegradable Waste Control Legislation (2018). It has also executed several projects to raise awareness of the impacts of plastic pollution and recovery of some plastic waste items (see page 29). Continued action will be important to drive reductions in plastic consumption and strengthen circular economy practices.

2. Approach

Stakeholders

Common Seas, with the support of the Ministry of Climate Resilience, the Environment and Renewable Energy, established a core group of stakeholders to be involved in the creation and development of the recommendations outlined in this report. The group comprised representatives from the key ministries responsible for developing policy, as well as municipal government, private sector and civil society groups.

Organisations included:

- Ministry of Climate Resilience, The Environment and Renewable Energy
- Solid Waste Management Authority
- National Water and Sewerage Authority
- Customs and Excise Division
- The International Union for Conservation of Nature

A wider expert group of stakeholders was also consulted. This was to further enable the robust, inclusive collection of country-specific data and information, and to understand the potential impacts of the policy options under consideration.

Crucially, the consultation of these groups ensured the analysis is fully informed through the knowledge and expertise of those organisations and people most closely involved in the use and disposal of plastics in that country. This means the recommendations outlined in this report have been co-created by those who will ultimately play a key role in their effective implementation.

Data gathering and baseline modelling

A baseline study brought together the best available information on plastic waste generation to model waste flows in Grenada and subsequently quantify the proportion of plastic waste that is captured by waste management infrastructure. The study also assessed the quantities of plastic pollution leaking into the marine environment. This included a review of country-specific and region-specific literature sources related to plastic waste generation and leakage to support understanding of the national plastic waste flow system. See page 43 for the list of projects consulted in developing the baseline model presented in this report.

Stakeholder consultation involved interviews with individuals and organisations from across the plastics value chain. This provided invaluable contextual insights and expert knowledge to complete data gaps and allow a holistic understanding of Grenada's plastic waste system.

Plastic Drawdown tool

The analysis, figures and findings presented throughout this report were produced using the Plastic Drawdown tool.

Plastic Drawdown models how macroplastic and microplastic material flows through waste pathways in low-data contexts. It quantifies plastic waste flows through municipal waste management systems and leakages into the terrestrial and marine environments.

Plastic Drawdown was developed by Common Seas in consultation with 24 governments, more than half of which are SIDS, and has been published in the journal Global Environmental Change (Royle et al., 2022).

Common Seas used Plastic Drawdown to:

- Describe the composition of Grenada's plastic waste.
- Understand how much waste becomes plastic pollution.
- Explore how the problem will change over time.
- Analyse plastic-related policy.

1. **Describe the composition of Grenada's plastic waste**

   The tool quantifies the total plastic waste generated by imported products and categorises it into the 29 plastic item types that most commonly pollute the ocean. This includes single-use plastics, sanitary items, fishing gear and construction plastics. It also estimates micro-plastic emissions from tyre-wear, brake-wear, clothing fibres, pellets and microbeads.

2. **Understand how much waste becomes plastic pollution**

   Plastic Drawdown delivers a material flow analysis that measures the amount of plastic waste flowing into the ocean from Grenada and what remains on land. It quantifies plastic waste that is recycled, incinerated, sent to landfill and exported.

3. **Explore how the problem will change over time**

   The tool forecasts a Business as Usual (BaU) scenario projected over the next ten years, for waste generation and plastic pollution. It assumes no further action is taken to address plastic pollution and current policy, infrastructure, and behaviours remain the same.

4. **Analyse plastic-related policy**

   The tool analyses the total and yearly reductions in plastic pollution that could be achieved by 20 policies. This is used to visualise the combined reductions achievable by different policy strategies and predict the remaining plastic pollution after policy interventions.

Policy analysis

Policy analysis and visualisation drew on a global literature review of the effectiveness of different plastic policies, alongside stakeholder insights and a review of existing policies in Grenada. The analysis explored the potential for 20 different policies to tackle the country's plastic problem. This highlighted the instruments that could have the greatest potential impact on reducing plastic waste and pollution in Grenada – taking into account the plastic waste composition and leakage characteristics identified in the baseline study.

Development of the policy recommendations in this report included a stakeholder workshop and follow-up consultations to build understanding of the different policies under consideration and enable the prioritisation of key strategies and actions for inclusion within this report.

This process included:

- Eliminating policies that were undeliverable for practical, economic or political reasons.
- Confirming a shortlist of policies with broad stakeholder support.
- Understanding which of these policies can be implemented in the short, medium or long term.
- Suggesting amendments to the design of each policy to fit the Grenadian context.
- Identifying the stakeholders that would be involved in the design and implementation of each policy.

3. Understanding plastic pollution in Grenada

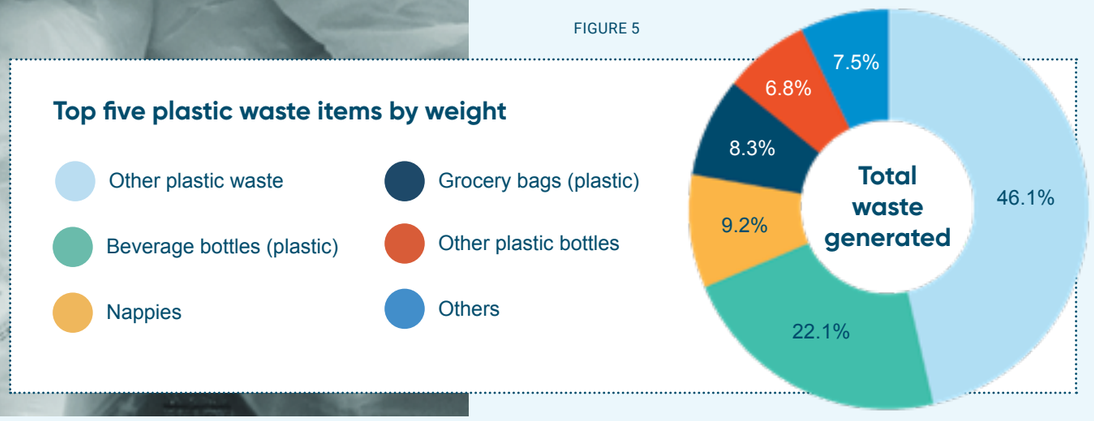
Summary

This section presents estimates of the quantities and types of plastic waste generated in Grenada.

- Grenada generated an estimated 4,790 tonnes of plastic waste in 2021, which is equivalent to 0.10 kg per person per day.
- The total quantity is expected to rise to 6,333 tonnes in 2033 (+32%), due to increases in consumption and population (see Figure 8 on page 29).
- The most common individual items generated are:
  - Beverage bottles and other plastic bottles
  - Grocery bags and other single-use plastic bags
  - Nappies
- Total microplastic generation was estimated at 47 tonnes in 2021 and comprised tyre-wear and brake-wear particles (39 tonnes), clothing fibres (8 tonnes) and plastic pellets (0.5 tonnes).
- The top five single-use items comprise an estimated 2,310 tonnes of waste, which is 90% of the overall plastic identifiable waste (and 49% of total plastic waste generation). See Figure 6.

Note: plastic waste generation does not cover plastic pollution (waste leakage). Only a certain proportion of plastic waste escapes into the environment and becomes plastic pollution, which is described on page 30.

FIGURE 5



3.1 Plastic waste generation

Grenada produced an estimated 4,742 tonnes (macro) and 47 tonnes (micro) plastic waste in 2021.

Average per capita plastic waste generation in Grenada is estimated at 0.104 kg per person per day. This is similar to other countries in the region such as Antigua and Barbuda (0.11kg/person/day) and Saint Lucia (0.08kg/ person/day).

'Other plastic waste' is a relatively large fraction (45.6%). This relates to materials that are not currently identifiable using available data. This fraction comprises a diverse range of plastic items, including:

- **Other rigid packaging** (pots, tubs and trays)
- **Household packaging films** (including wrappers and pouches)
- **Household items** (including electronics, homeware, furniture)
- **Commercial waste** (including film stretch wrap and strapping used in distribution).

As these items are not generally consumed away from the home or a commercial facility, the potential for littering is lower than other macroplastics.

FIGURE 6 – MACROPLASTIC WASTE GENERATION IN GRENADA (TONNES/%).

Macroplastics

The most common identifiable plastic items generated as waste in 2021 are:

- **Beverage bottles**
  1,049 tonnes
- **Nappies**
  438 tonnes
- **Grocery bags and other single-use plastic bags**
  499 tonnes
  combined
- **Other plastic bottles**
  324 tonnes
  combined

Item	Weight (Tonnes)	%
Other plastic waste	2,188	46.1
Beverage bottles (plastic)	1,049	22.1
Nappies	438	9.2
Grocery bags (plastic)	396	8.4
Other plastic bottles (including oil and bleach)	324	6.8
Other plastic bags	103	2.2
Construction plastics	62	1.3
Bottle caps (plastic)	48	1.0
Cups, plates (plastic)	24	0.5
Forks, knives, spoons	19	.4
Wet wipes	19	0.4
Take out/away containers (plastic)	17	0.4
Period products	16	0.3
Cups, plates (foam)	9	0.2
Food wrappers (including sweets and crisps)	8	0.2
Single-serve sachets (non-food)	7	0.1
Take out/away containers (foam)	4	0.1
Straws, stirrers	3	0.1
Single-serve sachets (food)	2	0.04
Fishing gear	1.5	0.003
Cigarette butts	1	.3
Balloons	1	0.03
Lids (plastic)	1	0.02
Condoms	1	0.02
Totals	**4,742**	**100%**

Single-use packaging

The most common single-use items are thought to comprise approximately a third of plastic waste generated in Grenada. These include:

- **Beverage bottles.**
- **Plastic bags.**
- **Take-away containers.**
- **Disposable cups.**
- **Plates and cutlery.**
- **Lids.**
- **Bottle caps and Food wrappers.**

These items pose a high risk to the environment as they are generated in high numbers and are commonly littered. Their relatively lightweight nature, particularly bags and wrappers, presents challenges for solid waste management. : They are more likely to leak into the environment, for example through being moved by wind or rain, and have a higher risk of blocking drains, leading to flooding.This in turn can contribute to increased levels of plastic pollution. These items are at higher risk of being littered.

Stakeholder consultations confirmed that plastic beverage bottles are recognised as a problem source of plastic. They are commonly littered and are used in high quantities due to a preference for drinking bottled water, despite water across the islands being potable and clean. Some stakeholder feedback suggested this is due to bottled water being more easily marketable, and some reported concerns persisting amongst the population that tap water is not clean. Others suggested there was a move to a majority drinking tap water.

Despite the ban on single-use bags with handles having been effective, stakeholders reported that single-use plastic bags without handles (grocery bags) pose a key litter problem.

Microplastic

Total microplastic generation in 2021 was estimated at 47 tonnes. This consisted of:

- **Tyre and brake-wear particles**

39 tonnes

- **Clothing fibres**

8 tonnes

- **Pellets**

0.5 tonnes

Market research data obtained during this study indicated that approximately 50 tonnes of microbeads – typically used in cosmetics and cleaning products – are imported into Grenada each year. However, further research and stakeholder discussion found no evidence that microbeads are used as an input for the manufacture of these items in Grenada. Some items containing microbeads are likely to be imported; however, no clear data could be obtained. As a result, microbeads were excluded from further analysis.

Projection of future waste generation

If Grenada continues without any new policies, plastic waste is estimated to increase by 32% between 2021 and 2033.

This is the Business as Usual scenario in the modelling process. It will represent an increase from 4,790 tonnes per year in 2021 to 6,333 tonnes per year in 2033. In total, 71,880 tonnes of plastic waste will be generated. This is due to several factors, including:

1. Population growth rates until 2033, based on historical population figures from the last five years (World Bank, 2022) and projected population figures from the United Nations.
2. Projected growth of relevant product and packaging markets over the modelled timeframe from market research (PMR, 2023). Population growth is expected to taper off, but the data suggest that waste generation is still expected to grow considerably (see Figure 7).

How much plastic waste is there per item, today and in the future?

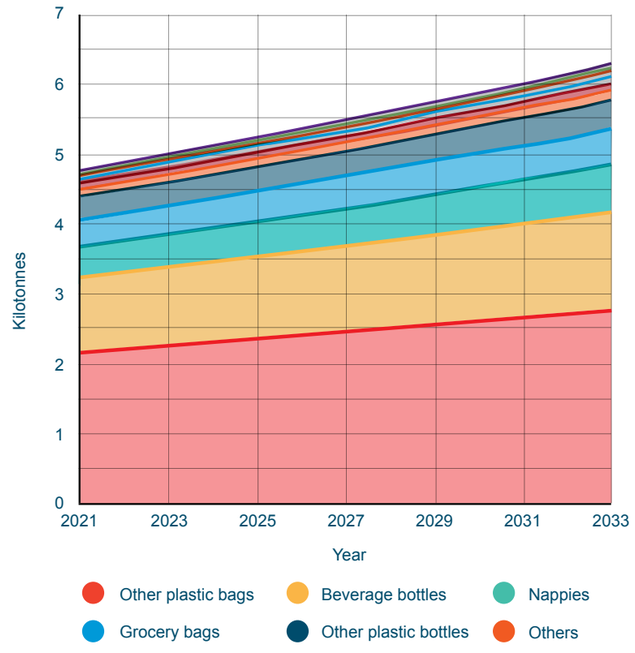


FIGURE 7 – GRAPH SHOWING THE GROWTH IN PLASTIC WASTE GENERATION UNDER A BUSINESS AS USUAL SCENARIO BETWEEN 2021 AND 2033.

3.2 Plastic flows

Summary

This section describes the flows – or pathways – that plastic waste in Grenada takes on its journey to being either recycled or disposed of ('managed waste') or leaked into the environment ('mismanaged waste').

Plastic waste

(89.8%) of plastic waste in Grenada is collected and enters the waste management system. Some of these materials subsequently leak and become plastic pollution.

4,304

tonnes

Littering or and fly-tipping

433 (9.86%) tonnes of plastic waste enters the environment directly through littering and fly-tipping. Only 83 tonnes is intercepted by street cleaning.

433

tonnes (9.86%)

an increase of

↑30%

5,699 tonnes

Without action, Grenada will need to landfill 5,699 more tonnes of plastic waste by 2033 (an increase 30% from 2021).

Waste water

13 tonnes (0.27%) of plastic waste enters the wastewater system

13

tonnes

Managing the flow

Plastic Drawdown uses a material flow approach to consider how plastic waste moves through the country, from the point of generation as waste to its potential release into the environment. This allows the plastic pollution problem to be illustrated as a simple flow diagram, with the flows of different types of plastic along each part assessed quantitatively.

Grenada's waste flow can be considered in terms of three interlinked parts:

1. Waste that is collected and flows through the solid waste management system, in which there are different points of potential leakage, e.g. plastic that escapes from landfill.
2. The release of plastics directly into the environment, e.g. littering of plastic items in the environment.
3. Discharge of plastics into drainage and wastewater systems, e.g. flushing of macroplastic items or microplastics in wastewater.

Solid waste management in Grenada

In total, the Grenada solid waste management system manages 4,304 tonnes of plastic waste per year.

The Grenada Solid Waste Management Agency (GSWMA) is responsible for the collection, transportation and disposal of all household municipal solid waste, and street sweeping. It also manages the two landfill disposal sites (Perseverance on Grenada and Dumfries on Carriacou).

With no disposal facility on Petite Martinique, waste is transported via small boats in large, specially-strapped canvas bags to prevent spillage. While constructed as sanitary landfills, these sites are currently being used as dumpsites. Stakeholder feedback stated that landfill capacity is under significant pressure. A new cell was opened at Perseverance landfill in July 2023. After this, there are no further plans (or current capacity) for additional cells.

Modelling indicates that, under a Business as Usual scenario, Grenada will be landfilling approximately 5,800 tonnes of plastic waste per year in 2033. This is around a third more than in 2021.

Published sources suggest that 56-98% of all households are offered kerbside collection for solid waste. This broad range is likely because of differences in road access within Grenada so modelling assumptions reflect urban and rural road coverage. GSWMA reported that waste collection frequency depends on the area's population density and ranges from twice per week in rural locations to twice daily in large towns.

There is currently no systematic waste segregation or recycling for plastic in Grenada. There is anecdotal evidence to suggest some levels of reuse of single-use plastic items, notably reuse of one-litre plastic bottles to store water or other cooking items. A recent pilot programme has been launched by the GSWMA (June 2023, as part of the ReMLit programme) to segregate on-the-go waste into general waste, organic waste, and plastic (PET) waste streams. PET is a particular focus of the pilot, as stakeholder feedback confirmed that PET bottles are the consistent 'problem' plastic item being littered in the environment. Stakeholder feedback also confirmed that the pilots are not yet implemented across the island, and that despite awareness campaigns there is clear contamination of the waste streams.

Material collected through this pilot is currently being stockpiled. SWMA is exploring options to export such waste to Trinidad because of the recycling and subsequent manufacturing that takes place there. However, discussions revealed that exporting the current volumes of plastic waste is not cost-effective, due to the high cost of exportation. The No to Single-Use Association (NSUPA) project in Carriacou was identified as the only (very small-scale) plastic recycler in Grenada.

Commercial businesses are responsible for disposing of waste at their own cost. However, many small businesses put their waste on the street next to household waste. This means they benefit from waste collection services without paying for them. Waste at ports and marinas is collected and transported by private waste collectors contracted by the marina.

The GSWMA is responsible for fisheries' waste collection from ports on the west side of the island. Commercial fisheries and factories on the north side are responsible for their own waste, which is either collected by private contractors or self-hauled to landfills. Only a small proportion (3%) of plastic waste from commercial businesses is reported to be recycled.

4,304

tonnes (89.8%)

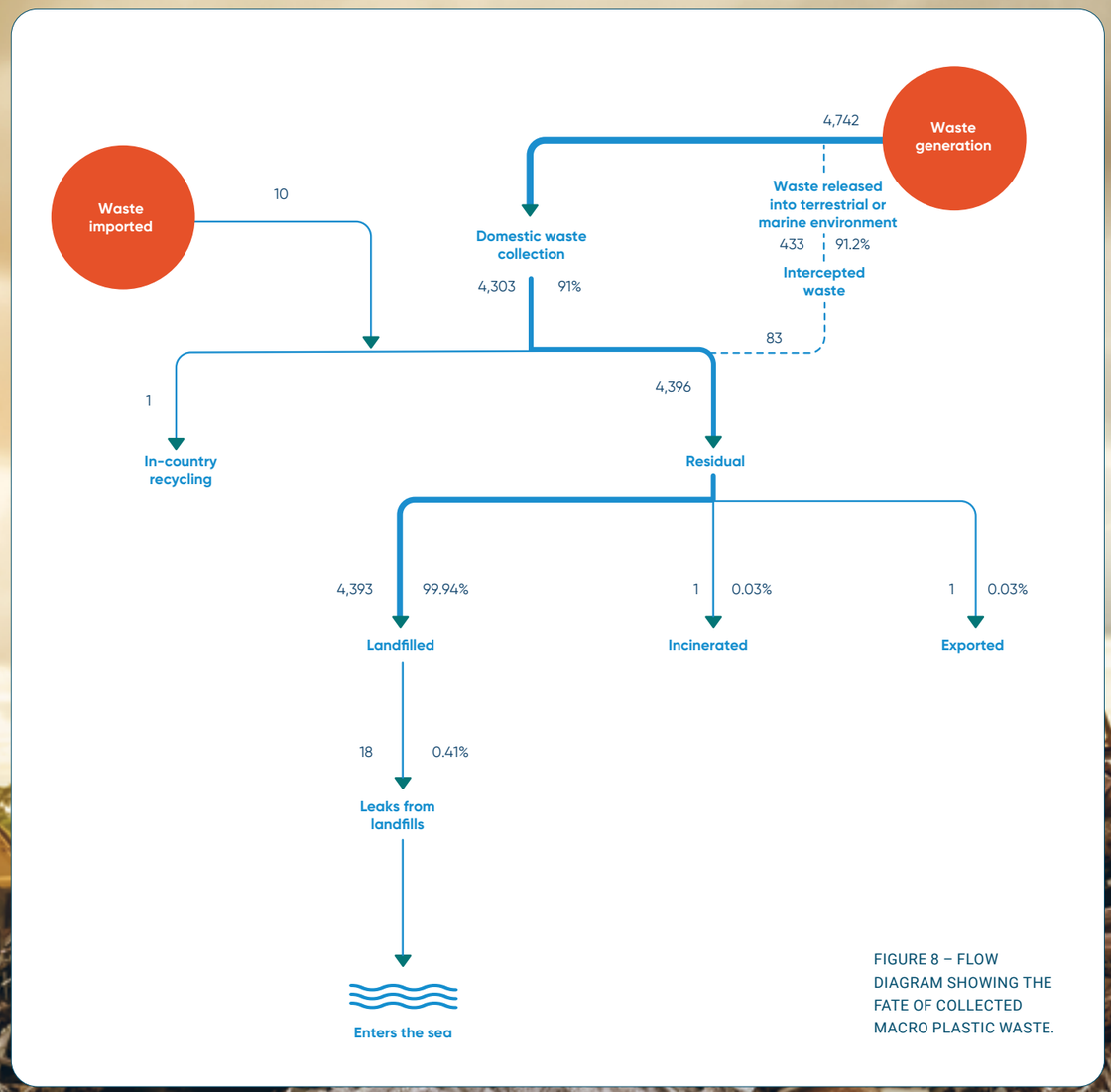


FIGURE 8 – FLOW DIAGRAM SHOWING THE FATE OF COLLECTED MACRO PLASTIC WASTE.

Image: © Vecteezy

Initial release directly into the environment

It is estimated that a total of 431 tonnes of all plastic waste is released directly into the environment annually, through littering or fly-tipping and the wear of products that emit microplastics.

Macroplastics make up 431 tonnes of the waste released directly into the environment (Figure 10). Most of this (79%) is littered or dumped on land. Litter collections or fly-tipping clean-ups may intercept a small proportion of this waste before it enters the ocean, diverting it into the formal waste management system. The rest is washed into a surface water drain, or remains in the environment.

Fly-tipping is recognised as a significant challenge. Feedback suggests this may be due to residents not wanting to adhere to the waste collection schedule, with the result that waste is dumped on non-collection days. While awareness around this issue is increasing with ongoing education, dumping is allowed with impunity. Stakeholders are aware of 24 major dumping sites.

Open-burning and burying are not reported to be common disposal methods, and have declined since the collection service has improved. Fines for burning waste have been effective in reducing the practice across Grenada.

Littering of on-the-go-items (plastic bags, beverage bottles and caps, straws and stirrers, food wrappers, single-serve food sachets, takeaway containers, cups, plates and cutlery) is relatively common, and constitutes a large proportion of the plastic waste that is released into the environment. In addition, fly-tipped household waste of various types (including other plastic packaging) is blown or washed into watercourses and then into the sea.

There is regular street cleaning in Grenada's urban areas, which helps to intercept litter before it enters drains. It is understood that streets are cleaned daily but only in towns, with an estimated 83 tonnes of this material intercepted and so joining the materials in the waste management system (Figure 9).

GSWMA will soon get enforcement powers to enforce the Abatement of Litter Act. Feedback suggests it is hoped this will help to decrease littering.

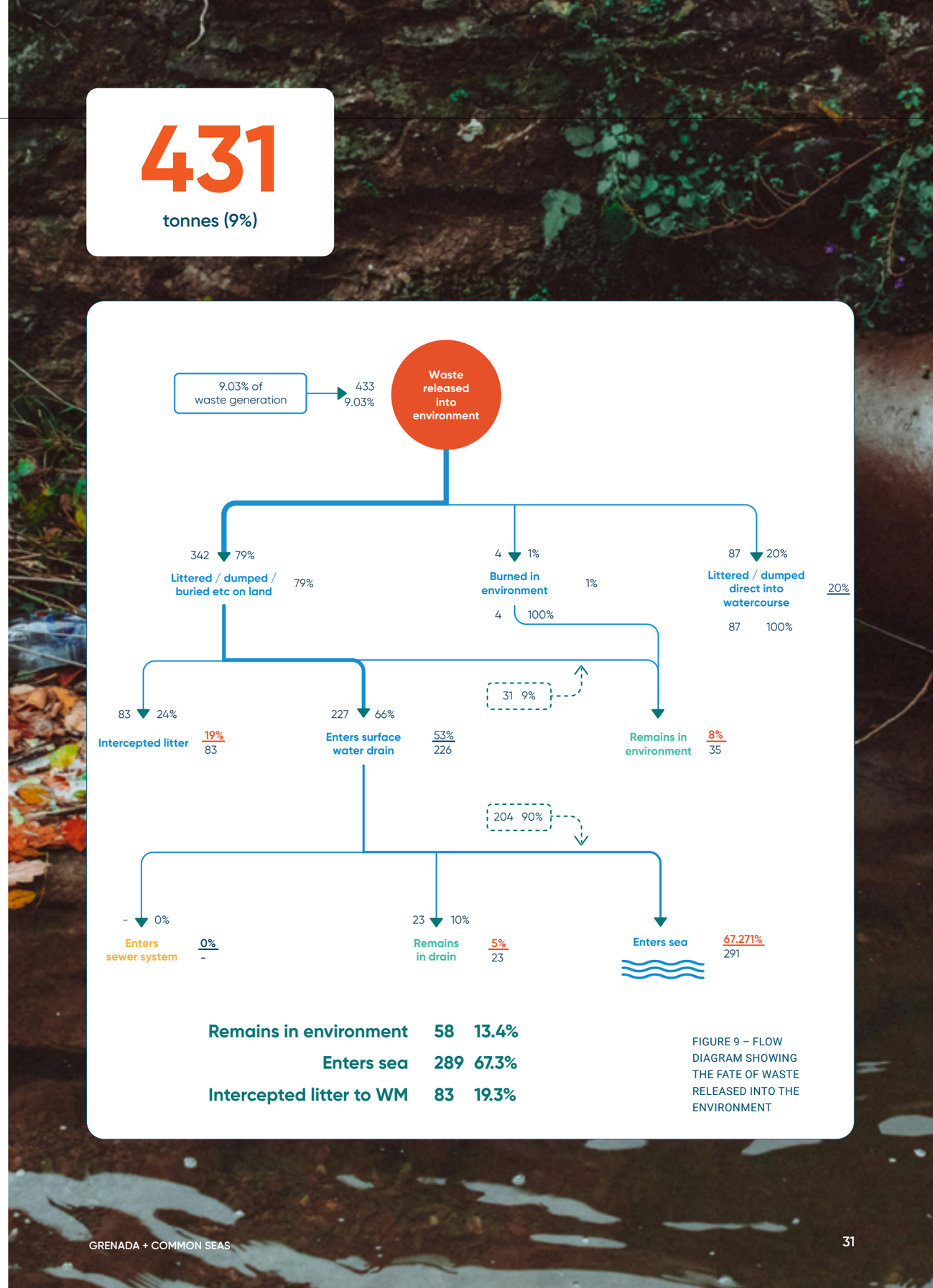


FIGURE 9 – FLOW DIAGRAM SHOWING THE FATE OF WASTE RELEASED INTO THE ENVIRONMENT

Wastewater

Approximately 14.6 tonnes of plastic waste is estimated to enter domestic wastewater systems each year.

Approximately half of these materials are made up of macroplastic items (e.g. flushable items such as period products, wet wipes, and condoms), and the other half is microplastics (predominantly microplastic clothing fibres released in the washing of synthetic textiles).

Most properties in Grenada are not connected to a municipal sewerage system. The two sewer systems (the Grand Anse System and St George's System) serve approximately 3% of Grenada's population (Figure 10). The National Water and Sewerage Authority estimates 80% of the population uses septic tanks. Septic tanks are pumped out by National Water and Sewerage Authority trucks, which collect much of the plastic waste and discharge it into the municipal sewerage system. The remaining 17% of the population are thought to use latrines, which are managed by the residents themselves.

Stakeholder discussions suggest that householders are unlikely to dispose of larger plastic items down the toilet, so the quantity of these materials entering into the wastewater system is estimated to be quite low, although it may be higher in tourist areas. However, information is limited on this issue so it should be considered as a potential pollution route, at least for some flushable items as well as microplastics from the washing of clothes.

Surface water drainage systems

Grenada does not have any treatment facilities for surface wastewater. This means that any littered items or microplastics that enter surface water drainage systems (e.g. pipes or channels that collect and divert rainwater from roads, pavements, and other surfaces) enter surface water courses and the sea.

14.6
tonnes

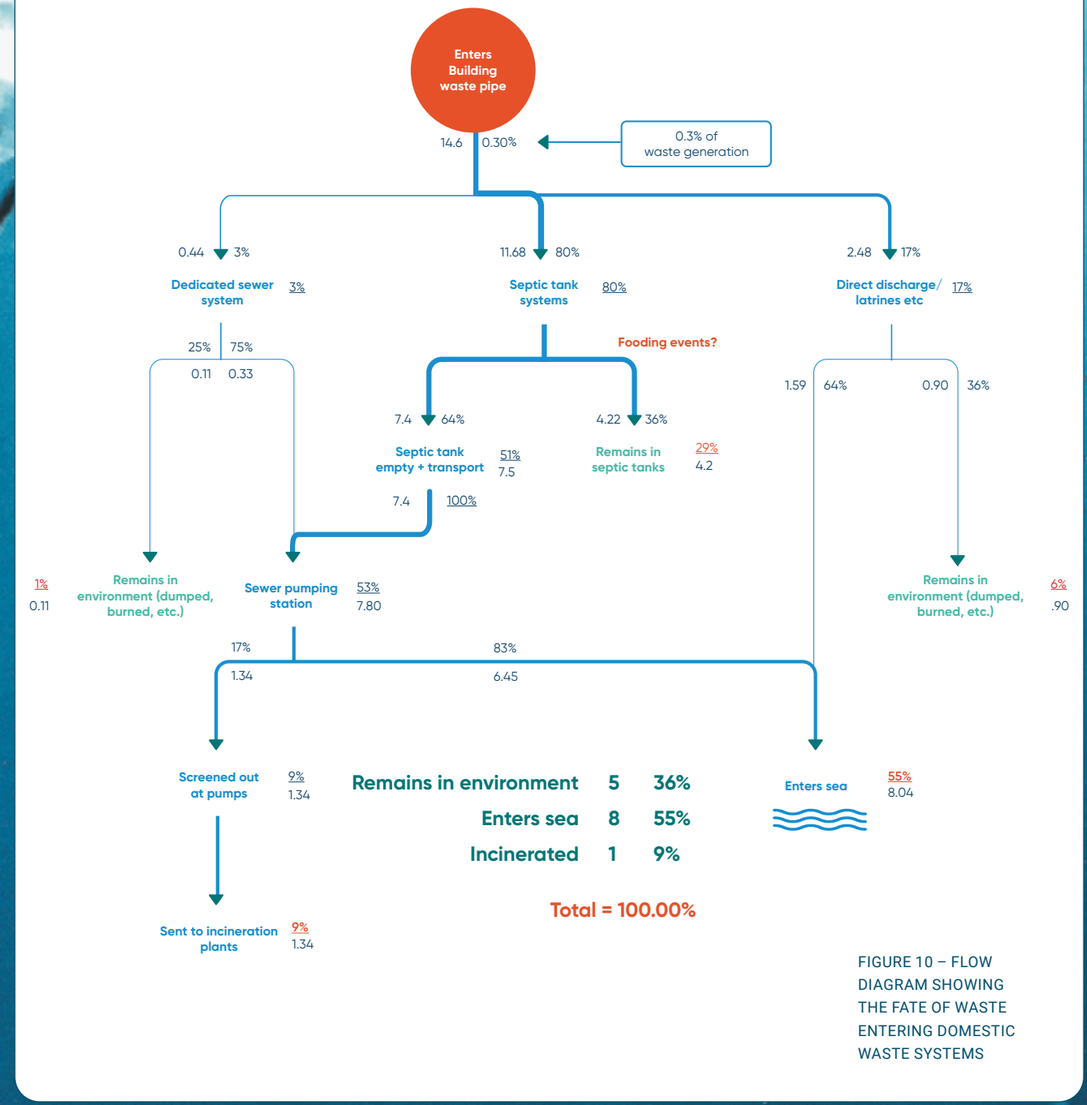


FIGURE 10 – FLOW DIAGRAM SHOWING THE FATE OF WASTE ENTERING DOMESTIC WASTE SYSTEMS

3.3 Plastic pollution in Grenada

Summary

This section discusses the estimated level and nature of plastic pollution leakage into the environment in Grenada.

How much plastic waste leaks into and stays in the environment?

Leakage from mismanaged waste

The leading route plastic waste takes into the ocean is via the littering or dumping of plastic items on land which then enters the sea (311 tonnes, Figure 12). This includes all waste that is directly or indirectly littered, or illegally dumped on land, which is subsequently transported to the sea through flooding, heavy rainfall, or being blown by the wind. This pathway also encompasses plastic pollution arising from high rates of littering of on-the-go items, and notably bottles and non-handled bags, especially on beaches or in coastal and river areas.

Although regular street cleaning in Grenada's urban areas helps to intercept litter before it enters drains, stakeholder feedback indicated littering remains a significant challenge. The problem is especially acute during major events. Littering may have worsened as a result of the perception that the alternatives to single-use plastics are fully biodegradable and can therefore be disposed of directly into the environment.

The stats

419 tonnes

Grenada produced approximately 419 tonnes of plastic pollution in 2021.

338 tonnes

Of this, an estimated 338 tonnes of plastic pollution entered the ocean.

81 tonnes

A further 81 tonnes entered and remained on land.

↑ 31%

Without action, ocean plastic pollution will increase by 31% over the next ten years.

Leakage from surface water drainage and wastewater flows

Where stormwater drainage is concerned, stakeholders report that many drains do not have litter traps so the litter that enters drains is expected to enter watercourses and the ocean. They are cleaned if residents identify a problem or in the aftermath of flooding or storm surges.

Some plastic waste also escapes into the environment via the domestic wastewater system (9 tonnes, Figure 11). Plastic waste transported this way includes both macroplastics (flushed items such as sanitary items) and microplastics (clothing fibres from washing textiles).

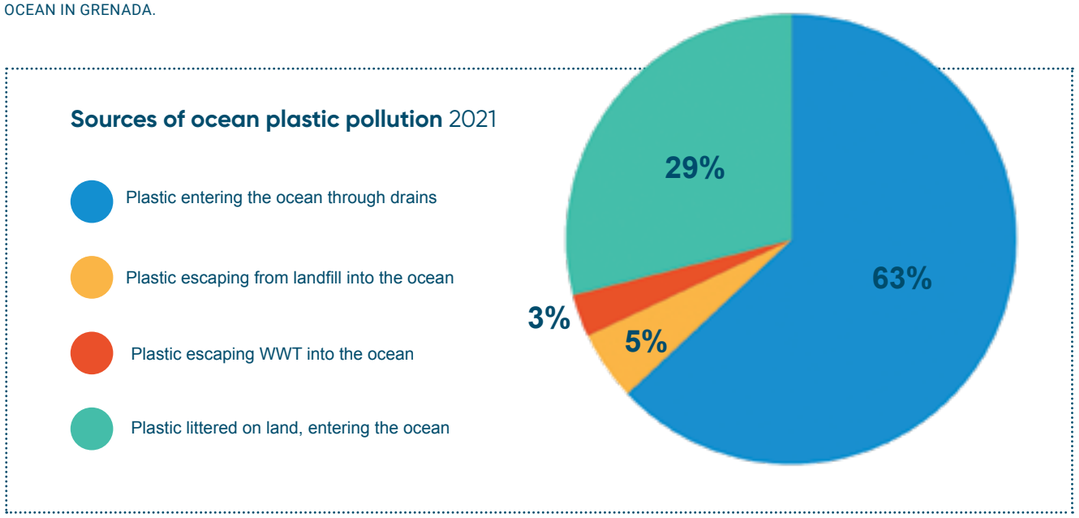
Available data suggests that the two sewer systems in Grenada (serving 3% of the population) pump waste into St George's Bay through an outfall that extends 350 metres out to sea to discharge at an approximate depth of 25m.

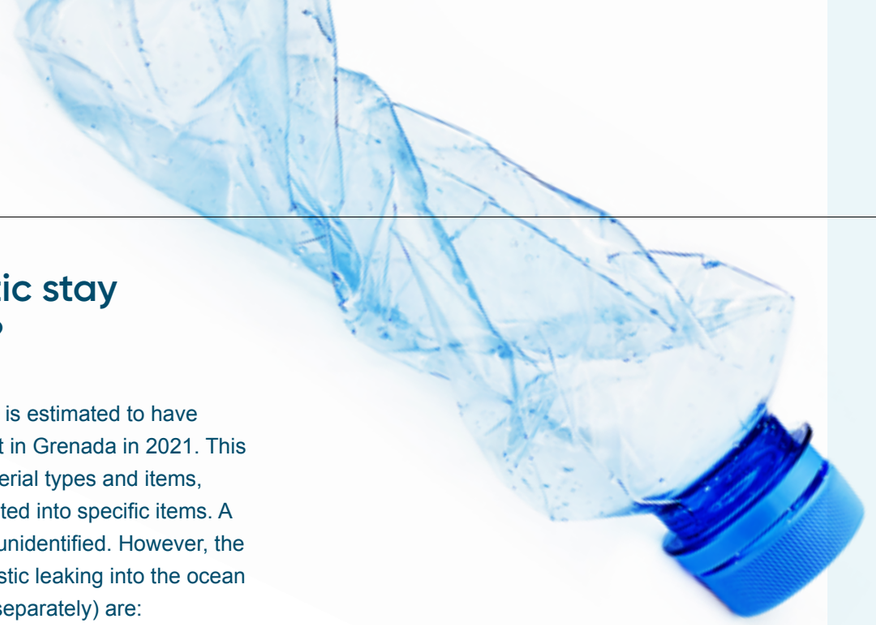
Waste from septic tank systems (serving 80% of the population, p42) is professionally collected and then discharged into the sea along with this sewage. The remaining 17% of the population use basic latrines which are emptied by residents themselves (with emptied waste likely burnt, buried, or disposed of in the surrounding environment, or in the sea).

Leakage from the managed waste system

Leakage from the waste management system is also a key source of plastic pollution (18 tonnes, Figure 9). It is likely that waste leaks from both of Grenada's landfills, given their available infrastructure. Waste is not covered at either Perseverance or Dumfries landfills, meaning it is exposed to wind, rain, and surface runoff. Perseverance has perimeter fencing whereas Carriacou does not. Perseverance, additionally, is located within 200m of the ocean and so has very close proximity to the sea. Moreover, feedback from stakeholders also suggests waste falls from garbage trucks on the way to landfill sites. In addition to the 338 tonnes of plastic that enters the marine environment from Grenada, a further 81 tonnes of plastic waste is expected to remain on land as terrestrial pollution.

FIGURE 11 – KEY POINTS AT WHICH PLASTIC POLLUTION IS RELEASED INTO THE OCEAN IN GRENADA.





What types of plastic stay in the environment?

A total of 338 tonnes of plastic waste is estimated to have escaped into the marine environment in Grenada in 2021. This total comprises a wide variety of material types and items, much of which cannot be disaggregated into specific items. A total of 68 tonnes of plastic waste is unidentified. However, the most common individual types of plastic leaking into the ocean (that it has been possible to assess separately) are:

115 tonnes
Plastic beverage bottles and caps

55 tonnes
Grocery bags and other single-use plastic bags

36 tonnes
Other plastic bottles

14 tonnes
Nappies

19 tonnes
Tyre wear microplastics

Plastic bottles, as noted by several stakeholders, are a major source of marine plastic pollution in Grenada and the largest identifiable macroplastic that leaks into the environment (115 tonnes).

Despite the Non-Biodegradable Waste Control Act (NBWCA 2018) banning plastic bags with handles, plastic bags are still a huge source of pollution, with the market now being dominated by non-handled single-use plastic bags (55 tonnes).

Nappies also form a large component of plastic pollution in Grenada (14 tonnes).

What is the future projection for plastic leakage in Grenada?

5,000 tonnes

In the absence of policy interventions, it is estimated that a cumulative total of around 5,000 tonnes of plastic waste will enter Grenada's environment over the 12-year period between 2021 and 2033.

442 tonnes

Plastic pollution leakage is expected to grow from 338 tonnes per year in 2021 to 442 tonnes per year in 2033 (Figure 12).

This increase is due to several factors including:

1. Population growth rates until 2033, based on historical population figures from the last five years (World Bank, 2022);
2. The projected growth of relevant product and packaging markets over the modelled timeframe from market research (PMR, 2022). Population growth is expected to taper off, but the data suggests that waste generation is expected to grow.

The increase in plastic waste generation over time, and lack of clear, effective and robust policy or control mechanisms under the Business as Usual (BAU) scenario, lead to a significantly increased amount of plastic pollution entering the sea by 2033. This demonstrates the urgent need to improve or bring in additional policy measures to reduce plastic pollution.

Total ocean plastic pollution from 2021 to 2033.

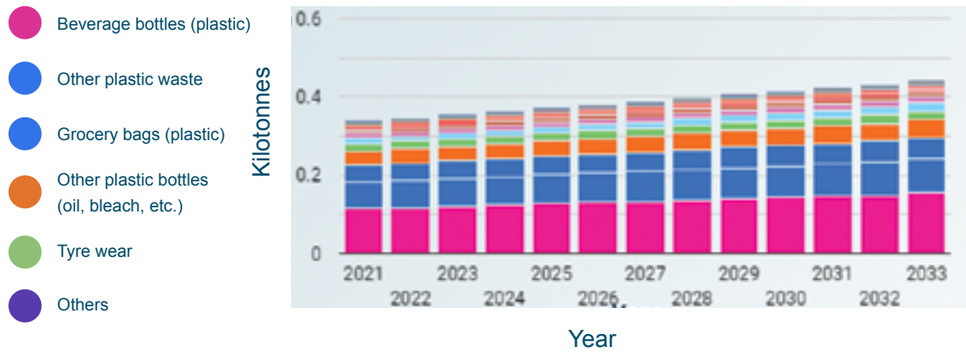


FIGURE 12
PROTECTION OF TOTAL OCEAN PLASTIC POLLUTION FROM 2021 TO 2033.'

3.4 Existing plastic policies and regulations

The Government of Grenada has not yet created a dedicated national strategy to address plastic pollution. However, there are currently five key pieces of legislation that govern different aspects of solid waste management and the wider management of litter. These provide a solid foundation to build the action required to reduce plastic waste and litter.

1. The Solid Waste Management Act (1995) defines the governance structure and authority for waste management (including plastic) in Grenada. It establishes the Grenada Solid Waste Management Authority (GSWMA) as the implementing body of the Act.

2. The Waste Management Act (2001) provides the structure for solid waste management implementation, including requirements for waste management service providers.

3. The Environment Levy (2007) provides the main vehicle by which to finance the GSWMA's operations. Fees are collected from households whose electricity usage exceeds 100 Kwh per month. It is collected by the Grenada Electricity Services Co. and disbursed to GSWMA.

   Fees are also collected from the importers of certain plastic products to limit their importation and offers a refund of the levy to importers who can demonstrate the re-exportation of their plastic products, or proper waste disposal. The levy thus establishes financial mechanisms to incentivise proper waste disposal and to limit the importation of plastic.

4. The Abatement of Litter Act (2015) establishes anti-littering regulation and enforcement approaches.

5. The Non-Biodegradable Waste Control Act (2018) establishes a ban on certain single-use items, including expanded polystyrene (e.g. styrofoam) food packaging products, single-use handled plastic bags, and single-use plastic utensils.

Together, these policies provide strong foundations for plastic waste management, covering the key areas of governance, financing, regulation, and enforcement. However, their efficacy to date has been limited by a raft of challenges with implementation and enforcement.

A full list of policies related to solid waste management is provided elsewhere, including the relevant regional and international conventions and governing bodies (IUCN, 2021; IUCN, 2022).

Summary of initiatives and projects

Below is a brief summary of completed and ongoing initiatives relating to plastic and solid waste management. It is important to consider learnings from previous projects, as well as activities occurring under current and upcoming projects, to maximise efficiencies and ensure priorities are aligned with existing commitments.

Projects:

- IUCN's **Plastic Waste Free Islands initiative (2019-2023)**, which focused on identifying opportunities for reducing plastic pollution and creating plastic waste value chains for local businesses across six islands in the Caribbean and Pacific. The initiative included extensive baseline data collection, an assessment of the existing policy environment in Grenada, and engagement with government and business.
- **Replast project (piloted in 2022 and 2023)** tested the acceptance of waste separation, and the removal of plastic in the environment (i.e. clean-up) through a sponsored incentive programme.
- **OECS ReMLit project (2021)** aimed to address the issue of plastic in the marine environment across six OECS Member States. In Grenada this consisted of a legislative and policy review, including recommendations for changes to existing legislation to curb marine pollution. These recommendations have fed into GSWMA strategic planning, namely on outlining the required modifications required to the Waste Management Regulations. The project also undertook concrete interventions to reduce and control marine litter; this was through the provision of colour-coded bins to trial waste separation in the community and a related public education campaign.
- **Recycle OECS (2022-2024)** was a collaboration between the OECS, Grenada and Dominica to implement a model system for introducing recycling, with a focus on plastic. Recycle OECS was a continuation of the ReMLit project, and focused on designing a sustainable waste separation, collection and recycling model, including the required infrastructure, with demonstrations in Grenada and Dominica.
- **Closing the Caribbean Plastic Tap (2024-ongoing)**: the second phase of the Plastic Waste Free Islands Initiative, this project aims to reduce plastic waste generation and leakage by implementing effective, socially inclusive solutions to advance the circular economy in five Caribbean SIDS, including Grenada.
- Environmentally Friendly School initiative is a programme run by the GSWMA which focuses on projects that investigate many different aspects of solid waste management. Projects can cover public education, litter management, waste minimisation, and the nexus between waste management and tourism.

Recyclers:

- **No To Single-Use (NTSU)**: Small-scale recycler based in Carriacou considering expanding current operations to include other plastics (HDPE, PVC).
- **ReCreate**: Company aiming to convert plastic to polyester, and considering the manufacture of plastic boards for park benches.

4. Policy recommendations for action on plastic pollution

We propose the following five system change strategies to help address the key sources of Grenada's plastic pollution. Analysis using the Plastic Drawdown tool suggests that by 2033 these strategies have the combined potential to reduce annual plastic pollution in Grenada by 79%:

1. **Tackle plastic water bottles to reduce plastic pollution by 31%:**
   Promote water refill systems, enhance the existing deposit return system to include plastic bottles, and expand the environmental levy to include the import of pre-forms and bans on imported plastic bottles smaller than 500ml.

2. **Tackle single-use plastics and establish circular delivery models to reduce plastic pollution by 13%:**
   Introduce a charge on single-use biodegradable food service items to encourage a switch to more sustainable or reusable alternatives, as well as taxes on other items such as single-use bags (not covered by the current ban), and incentivise reusable nappies and sanitary items.

3. **Implement source separation to reduce plastic pollution by 8%:**
   An integrated policy on plastics could drive source separation (e.g. household or curbside) and reduce the landfilling of plastic waste alongside a system-wide reduction in plastic consumption and pollution.

4. **Improve on-the-go waste collection and tackle littering to reduce pollution by 16%:**
   Improved bin infrastructure and increased enforcement, alongside a national public engagement campaign and targeted support for the hospitality sector, will raise awareness of plastic pollution and drive behaviour change.

5. **Improve solid waste management and wastewater systems to reduce pollution by 11%:**
   Cross-cutting measures will improve household waste collections, raise standards for storing and handling collected waste, and improve the screening of plastic items entering the waste water system to prevent leakage.

The combined impact of these five strategies can reduce plastic pollution in Grenada by

79%

The potential impacts of these five strategies in tackling the plastic problem are explored in the following section, which combines 15 key policies and key enabling initiatives to support implementation and deliver widespread benefits in tackling plastic pollution.

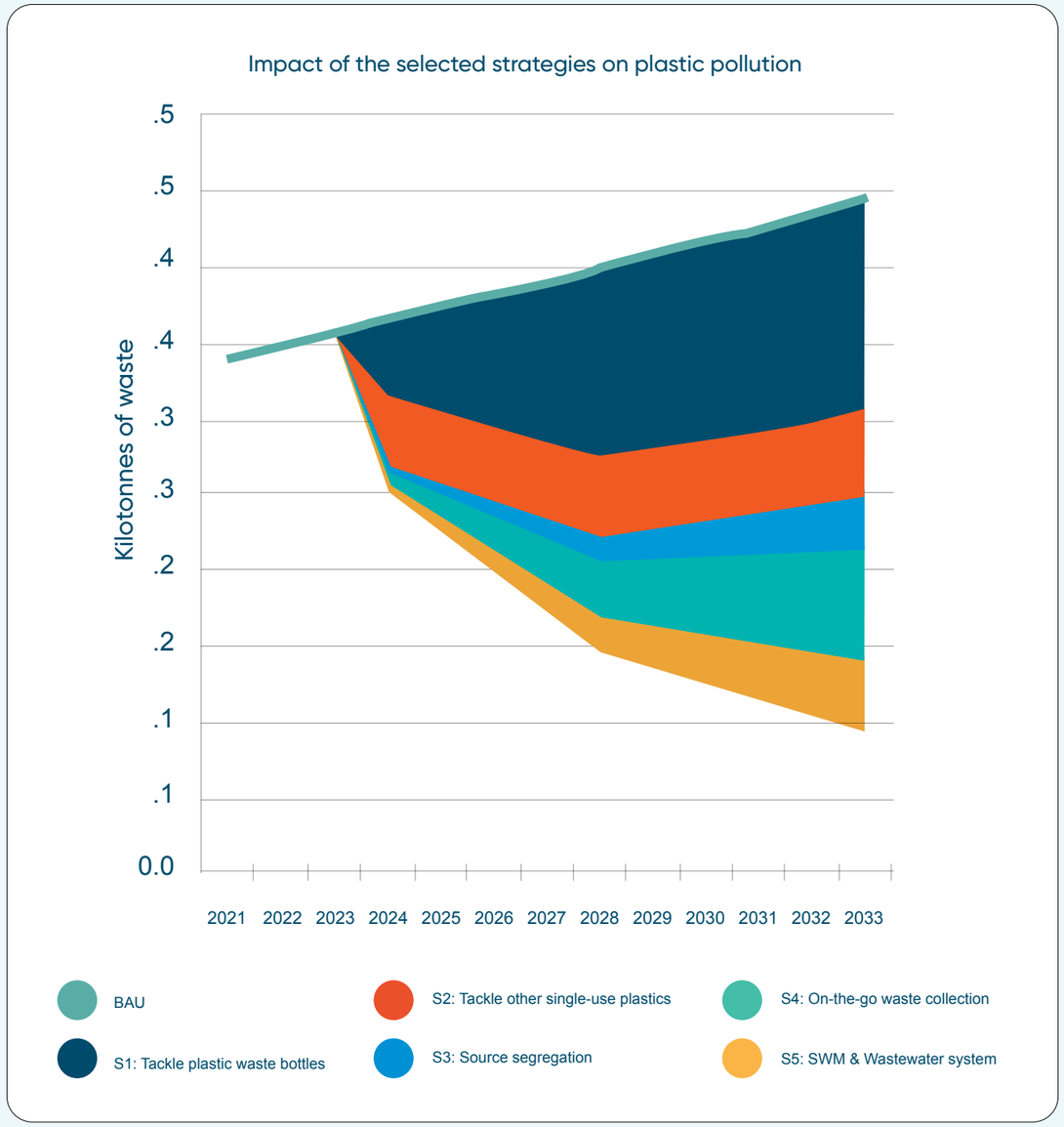


FIGURE 1 - THE COMBINED IMPACT OF 5 STRATEGIES TO REDUCE ANNUAL PLASTIC POLLUTION IN GRENADA BY 80%.

Action to tackle microplastics is excluded due to current policy measures being nascent and requiring policy changes at the global level. However, several policies are presented for future consideration and to inform international dialogue.

Similarly, analysis on the impact of action to reduce lost and abandoned fishing gear is presented. This includes the implementation of collection systems, track and trace systems for gear, gear zoning and removing special fees.

Strategy 1:
Reduce and recover beverage bottles

Disposable plastic bottles form a major component of plastic pollution in Grenada – making up 22% of plastic waste generated. Grenada has existing policy structures in place that can be expanded or adapted to capture this waste stream more effectively. Additional policy measures have also been designed to complement these.

Strategy 1: Policies

- **Policy 1.1:** Enhanced DRS to include plastic beverage bottles
- **Policy 1.2:** Extending the Environment Levy (tax) to include pre-fomed bottles
- **Policy 1.3:** Phased ban on single-use plastic bottles
- **Policy 1.4:** Providing water refill points
- BAU

The impacts of policies modelled within Strategy 1.

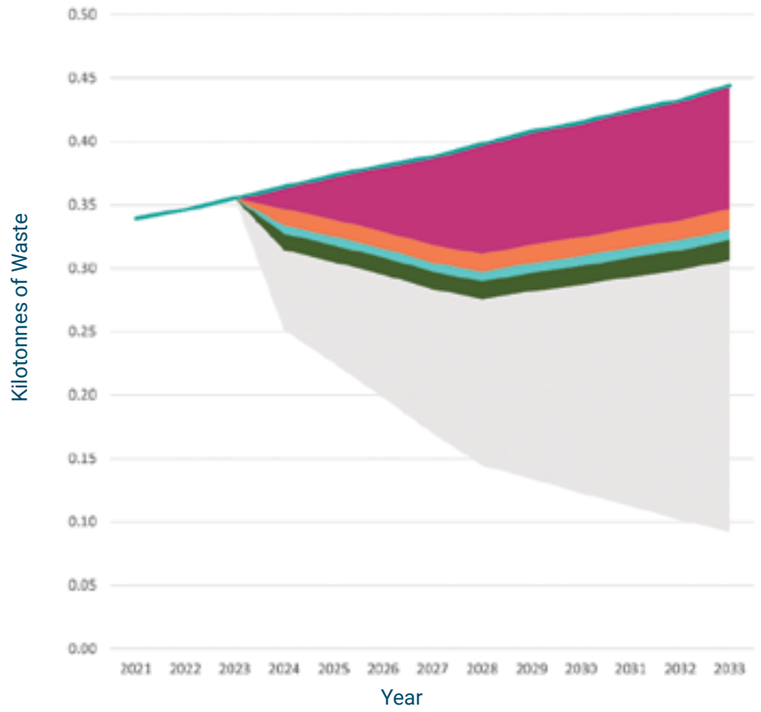


FIGURE 13

Policy 1.1:
Enhanced DRS to include plastic beverage bottles

Key considerations

A Deposit Return Scheme for glass bottles has been in place in Grenada since the early 1970s. The scheme has reported high levels of success. A similar scheme for single-use plastic bottles has therefore been identified as a key policy. Due to Grenadians' familiarity with the glass DRS and how it functions, many of the experiences and behaviours gained will be useful for learning and replicating with PET plastic bottles.

The scheme's scope will focus initially on PET beverage bottles, with an inclusion of a broader range of suitable packaging formats included over time.

A Producer Responsibility Organisation (PRO) could be set up to run the scheme. As a non-profit entity, all performance and financial information should be shared and made public in annual reports, so any third party can check the performance against the targets specified in the legislation. A network of collection points could be established to ensure that return facilities are available in all areas, providing equity of access to the system.

A performance target would specify the percentage of all beverage containers placed on the market to be collected and recycled, incentivising the organisation running the scheme to maximise return rates. The value of the deposit should be defined by the scheme but not set in the legislation. This will enable operational flexibility.

The scheme could be governed by a board made up of a range of stakeholders from industry, government, sector experts and NGOs.

Plastic pollution reduction potential:
725 tonnes
by 2033.

PET

Implementation

Having an existing glass DRS in the country is a favourable starting point, as there will be widespread familiarity with the concept. However, as a complex policy, this will require a significant lead time to ensure that the policy design is considerate of the numerous factors involved (such as scope, deposit level, recovery targets and a penalty mechanism) and that more practical elements can be researched, planned and implemented (with collection infrastructure being key here, alongside other aspects such as packaging labelling, reporting and training).

Establishing an end market (or recycling infrastructure) for the products in scope will be crucial. Additionally, ongoing formal and informal stakeholder consultation, particularly with producers/importers, GSWMA, Carriacou Ministry and retailers, will be central to obtaining buy-in to the policy.

Case Study:
Industry-led DRS for plastic bottles:

Norway is known internationally for its world-leading DRS, which has been in operation since the early 1970s. Up to 97% of all plastic bottles are returned and less than 1% of all plastic bottles sold in Norway end up in the environment (Global Plastics Policy Centre, 2022). This is because customers have an economic incentive to return the containers. Even if a bottle is abandoned, the deposit means that someone else will be likely to find and return the container to reclaim the deposit, resulting in low levels of DRS containers littered in the environment.

This success is underpinned by Infinitum, a not-for-profit organisation that runs the scheme, which is owned by the retailers and producers. All beverage producers or importers must join Infinitum when selling in Norway. The DRS legislation itself is contained within a single page, as Infinitum is entrusted to decide how best to operate the scheme to be as efficient as possible. It is incentivised to do so by an environmental tax placed on all producers of plastic bottles, which is lifted if the scheme achieves a 95% return rate on the single-use plastic bottles (The Knowledge Exchange, 2019). By leaving the design of the DRS in the hands of industry, backed by a tax reduction on successful implementation, the Norwegian government has been able to avoid extensive legislative duties, which has proven very successful in Norway.

UP TO
97%
OF ALL PLASTIC BOTTLES ARE RETURNED

Image: © Vmenkov / Wikimedia Commons

Policy 1.2: Extending the Environment Levy (tax) to include pre-formed bottles

Key considerations

In Grenada, plastic beverage bottles are included as one of the imported items subject to the Environment Levy. However, only finished bottles are currently subject to this levy. Pre-formed bottles, which in 2013 made up 85.5% of the plastic bottles consumed on Grenada, are not subject to the Environment Levy (GIZ, 2015).

Discussions with stakeholders in June 2023 confirmed that this was still the case. The majority of plastic bottles consumed in Grenada continue to be imported as pre-formed bottles. Expanding the levy to include pre-formed bottles will provide much wider coverage to address the main objectives of charges on single-use items. These include discouraging consumption, using the funds to support the collection and recycling of used bottles which become waste, and cleaning up litter. To this end, it is important that the level of the levy is sufficient to drive behaviour change. This could be reinforced through the setting of consumption reduction targets for the scheme.

Note that this recommendation was also included as part of IUCN's Plastic Waste Free Islands initiative.

The setting of the levy will reflect the indirect and external costs associated with the consumption of single-use items. These include litter clean-up costs and the environmental costs caused by littering (see Strategy 4). From a practical perspective, enforcement will be key so training for customs officials, both in Grenada and Carriacou, will be needed.

Implementation

As indicated by the GSWMA, the Environment Levy is amended regularly. It is expected that extending this legislation to include pre-forms would not be difficult from a legal perspective. The main challenge to progressing this policy is ensuring stakeholder buy-in. Early consultation with both businesses and suppliers should be planned, informed by in-depth market research to gather more detailed and comprehensive data on pre-form use and the potential impact on the supply chain. Careful consideration will be needed in terms of the potential impact of a charge on consumers, particularly poorer households. From a practical point of view, it will also be important to develop bespoke guidelines and training materials (e.g. for producers, guidelines on reporting; for consumers, guidelines on participating; for retailers, guidelines on operating collection points) as well as ensuring enforcement responsibilities are clear, capacity is available and individuals upskilled if required.

Plastic pollution reduction potential:

146 tonnes

by 2033.

Policy 1.3: Phased ban on single-use plastic bottles

Key considerations

Small plastic beverage bottles make up a small proportion of the total number of bottles consumed in Grenada. Targeting these small containers thus represents a 'low-hanging fruit' – allowing the government to make a statement against single-use plastic bottles and supporting general messaging around discouraging unnecessary single-use plastic.

A phased ban for single-use plastic bottles is therefore identified as a key policy, starting with the smallest packaging format (e.g. plastic bottles under 500ml). The ban will take effect on the finished product, irrespective of whether it originated as a pre-formed or fully formed bottle. To this end, the ban would cover the import, manufacture, and sale of the bottles in scope.

This policy will lay the foundations for potentially increasing the scope of the ban to other formats in the future.

Implementation

Single-use plastic bottle market research will feed through from Policy 1.2 (Extending the Environment Levy to pre-forms), and be equally relevant here – particularly in defining the scope and phases of this ban. Proposed phases would see 500ml PET bottles banned, followed by a demonstration project for larger format bottles (which could sit alongside a refill pilot). Stakeholder consultation will ensure businesses receive early notice of plans and have the opportunity to feed into these, e.g. the timing of the ban.

Enforcement will be the biggest challenge to a ban on single-use plastic bottles. A penalty mechanism for not adhering to the ban will support compliance, alongside a public awareness-raising programme. Training for customs officials, both in Grenada and Carriacou, could be rolled out, as well as assigning responsibility and training officials working at point-of-sale. It is important that the timing of this policy is coordinated to occur alongside other policy instruments which encourage and support the use of alternatives (e.g. reusable bottles and water refill points), to help consumers adapt to the ban and receive the changes in a positive way.

Plastic pollution reduction potential:

73 tonnes

by 2033.

Policy 1.4:
Providing water refill points

Key considerations

Water refill schemes, coupled with campaigns, can be a powerful awareness-raising approach. They sensitise the public on the issue of plastic pollution and encourage behaviour change towards reusable systems based on using refillable containers and public water fountains.

The provision of water refill points will encourage consumers to refill bottles at home, work, in hotels, as well as via a network of public water fountains. Refill infrastructure should be established, and this may be supported by digital solutions (for example, an app to show refill points and provide rewards to users). Public awareness-raising activities will be important, and should form part of a wider, long-term education and engagement programme. The awareness-raising campaign should be supported by outreach to enable key stakeholders to become informed and understand the benefits associated with refill schemes. This will build on existing refill initiatives.

Currently, bottling companies offer five-gallon bottles to customers (for a $25 deposit) to facilitate the refill of mineral water. In addition, some hotels already provide free water refill points, such as the True Blue Bay Hotel. These existing initiatives provide an excellent foundation for establishing refill points more widely and making refill the norm.

Plastic pollution reduction potential:
143 tonnes
by 2033.

Implementation

Providing water refill points is likely to be a quick win, given the systems are in place and it fits well with Grenada's efforts on tackling plastics to date. Rolling this out ahead of other policies under Strategy 1 provides an effective alternative to plastic bottles, before introducing approaches to reduce the availability of single-use bottles in the country, such as the bottle ban.

Research will be required to understand consumer water preferences in more detail. We know that currently, bottling companies are providing five-gallon bottles to customers to facilitate the refill of mineral water. We also understand Grenada has good quality tap water. Gaining insight into consumer usage of both these single-use water bottle alternatives will help to ensure the policy is implemented in the most effective way.

A demonstration pilot, alongside increasing awareness around existing refill points, would be a good introduction to water refill points for those currently unaware of such schemes.

The scheme will initially be deployed in highly accessible areas, such as closed environments (hotels, offices, workplaces, and schools) and urban areas with heavy footfall. Longer term, ensuring equity of accessibility is important.

Case Study:
Water refill campaign

On the Greek island of Paros, Common Seas has worked with the local water company, DEYAP, to encourage more people to drink tap water.

Activities have included:

- Rebranding water refill machines to promote their use;
- An island-wide communications campaign, targeted at locals, tourists, and the hospitality sector, to explain the benefits of switching to tap water;
- A guide to water filters for locals who prefer to drink filtered tap water.

The project engaged 270,000 people and led to a drop of two-thirds in the number of residents who believed that the tap water on Paros was not safe to drink (Common Seas, 2021).

In the Maldives, analysis by Common Seas showed that over half of identifiable plastic pollution was single-use plastic water bottles. As part of the government's National Phase Out Plan to address this issue, the Ministry of Youth, Sports and Community Empowerment coordinated with Common Seas and the NGO "Zero Waste Maldives" to install water refill stations, targeting areas of high consumption such as sporting complex in the capital of Male and promoting behaviour change though public communications. Each water station is metered to allow the use and number of avoided plastic bottles to be calculated (Common Seas, 2023).

campaign led to a drop of
two-thirds
in the number of residents who believed that the tap water was not safe to drink

Strategy 2: Tackle single-use plastics and establish circular delivery models

There is a wide range of other single-use items that cause plastic pollution in Grenada, including single-use takeaway food containers and disposable food service items.

The existing ban on single-use plastic items of this nature, introduced by the Nonbiodegradable Waste Control Act 2018, appears to have had mixed success in reducing these items.

While expanded polystyrene (styrofoam) packaging has been reduced, there appears to have been a switch to biodegradable plastic disposable food takeaway packaging. Littering of these items still occurs, as with single-use plastic bags. While these materials are labelled as biodegradable, they are likely to require industrial composting conditions to ensure the degradation can occur. They are also unlikely to degrade fully in the natural environment or sanitary landfills, and may subsequently contribute to microplastic pollution after partial degradation.

Strategy 2: Policies

- **Policy 2.1:** Plastic packaging and bag taxes
- **Policy 2.2:** Refill system for single-use food service items
- **Policy 2.3:** Promote reusable nappies

BAU

The impact of policies modelled within Strategy 2.

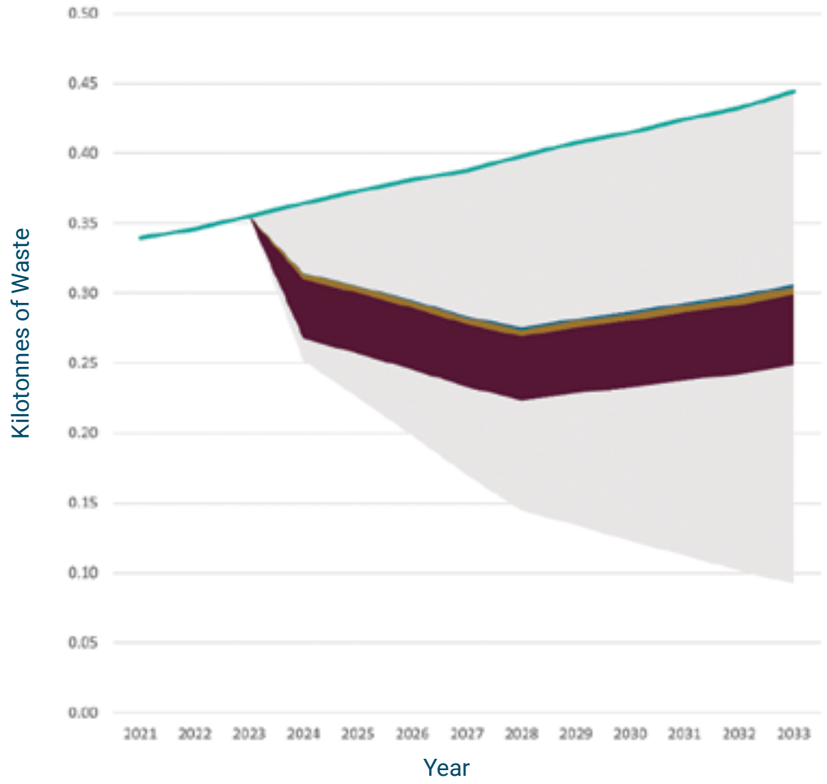


FIGURE 14

Policy 2.1:
Plastic packaging and bag charges

Key considerations

While Grenada's Environment Levy is a tax, it is not applied to consumers on individual items they purchase. A consumer-facing charge on these types of single-use items could serve to reduce this type of plastic pollution (by an estimated 465 tonnes) and encourage a shift towards more sustainable, non-charged alternatives, or even reusable systems.

Charges could be implemented on plastic packaging (take-away containers, disposable cutlery and plates, and single-portion food packaging), bags (without handles), as well as balloons and wet wipes. These could be paid by consumers and must be transparently shown in addition to the product purchase price. The level must be high enough to encourage consumers to shift towards more sustainable, non-charged alternatives, or even reusable alternatives. This will incentivise new circular business models and catalyse behaviour change from disposable to reusable items.

Public engagement is critical and The Ministry of Mobilisation, Implementation and Transformation has a key role to play here. Communications around this charge should include strong support for reusable alternatives, particularly for poorer households and consumers. Additionally, clear standards, and potentially labels, will be needed to ensure that customs, the supply chain and consumers know what attracts a charge. Technical assistance and training will be required for enforcement authorities, ensuring there is sufficient enforcement capacity.

It will be crucial to ensure accounting is simple and transparent. A staged increase in rates over a period of a few years would allow those being charged to adjust, and reporting and monitoring processes to be tested and refined. Using the revenue generated for environmental initiatives will reinforce the messaging around the need for a charge and reduce the risk of this being perceived as a revenue-generating initiative.

The aim of a charge should be to reduce consumption of targeted single-use plastics. However, it is unlikely to eliminate the target single-use plastics entirely. There will need to be collection infrastructure in place for these items and clear guidance for consumers, particularly for 'biodegradable' packaging.

Plastic pollution reduction potential:

465 tonnes

by 2033.

Implementation

We propose that the implementation of charges on these items be preceded by the introduction of a refill scheme for food takeaway containers and public awareness-raising to promote reuse alternatives. For necessary packaging it is crucial that alternatives are accessible. As a charge directly facing the consumer, this policy may receive some push-back, so the design of this policy needs to be very carefully considered.

A research phase will underpin the policy development to inform the scope of materials being included. It will also be useful to research and understand any issues with the existing charge on plastic bags with handles. An impact assessment on the system design will consider policy design issues in the round. For example, would any particular group of stakeholders be adversely affected and are there particular mitigations that form part of the design to help alleviate the impact on these groups (e.g. providing free refillables)? A national public consultation will be needed on the detailed policy proposals.

Policy 2.2:
Refill system for single-use food service items

Key considerations

The introduction of a refill scheme for food takeaway containers will provide an alternative solution to single-use food service items. There are several ways this scheme could be implemented, so a demonstration project will be critical to enable the testing of different modes of delivery and underlying business models.

Supporting infrastructure, such as collection and washing facilities, should be developed, with accessibility issues associated with refill taken into account. Various approaches to financing this policy, such as providing grants, seeking sponsorship, setting up a challenge fund (i.e. run a competition for grants), will also need to be considered.

The scheme will need to impose food hygiene standards or practices, so that these can be communicated to allay any potential hygiene concerns. Obtaining buy-in – from staff and the general public – is critical; therefore, staff training and public education are essential, as success is reliant on behaviour change.

Refill will create a new local market for the manufacture of refill containers, and will provide an opportunity to create a unique local 'brand' of refill containers.

It will be important for the tourism sector to be a key partner in piloting and implementing these measures. This programme could become a global exemplar, demonstrating how a tourism-focused economy can address plastic pollution.

Plastic pollution reduction potential:
46 tonnes
by 2033.

Implementation

Provision of a refill system for single-use food service items was strongly supported at the stakeholder workshop, being the third highest scoring policy. Although uptake will be affected and driven by making single use less accessible (removing, or charging for single-use options), we recommend launching the refill scheme beforehand to allow for the policy to be functioning ahead of the charge.

A desk-based review of refill systems should be undertaken, with particular focus on identifying schemes in comparable locations. St George's University expressed interest in testing a reusable food service item system (based on the Muuse model from Hong Kong), as did Grenada Hotel and Hospitality Association, who are potentially interested in demonstration projects.

It may be possible to consider the demonstration as phase 1 of the roll out, rather than a standalone trial. This type of communication creates more certainty for consumers and allows them to buy in to the system if they are confident it will be running over the longer term, even if it may be tweaked.

Depending on the approach and what existing infrastructure is available, washing, collection and redistribution infrastructure is an important aspect to put in place ahead of wider roll-out.

Supporting behaviour change towards refill systems is critical to their success. This may be assisted by the system mechanism (e.g. placing a deposit or incurring a penalty to encourage container return), but public awareness and openness to such systems, along with removing barriers to change, is key to driving uptake.

Policy 2.3:
Promote reusable nappies

Key considerations

Nappies are an important item to consider due to the amount of waste generated (>400 t per annum), with approximately 14 tonnes escaping into the environment in 2021. With the Ministry of Climate Resilience, The Environment and Renewable Energy and the Ministry of Health, Wellness and Religious Affairs working closely together, a pilot could be used to test incentives and different approaches for incentivising the use of reusable nappies and reduction of disposable nappy consumption (e.g. provide a free set of reusables to new parents).

Encouraging a move away from disposable nappies will require a strong awareness-raising and education campaign, as disposables are seen as cheaper and more convenient. The main agencies that engage with new parents will be key champions for the scheme, e.g. midwives, community health care practitioners, doctors, healthcare professionals, and support groups within the community for new parents.

This is an ongoing communications issue, as the audience is rapidly changing due to the constant stream of new parents. The window of opportunity is quite specific, as habits can form quickly and children are in nappies for a relatively short period of time. Over the medium to long term, the intention should be to embed this change as a societal norm to facilitate the ongoing uptake of reusables.

Implementation

Early stakeholder engagement with the Ministry of Health, Wellness and Religious Affairs and health practitioners, as well as community parent support groups, will help to inform the process. Understanding what support is provided to new parents may inform how best to share information about reusable nappies.

A desk-based review of reusable nappy schemes, with a particular focus on comparable locations, will inform a pilot which could be used to test incentives, e.g. provide a free set of reusables to new parents.

Through incentivising the use of reusable nappies, the aim is to reach a point at which their use is embedded into society and accepted as the norm. This is likely to be a medium- to long-term ambition, as disposable nappies provide such a convenient solution and are used for a relatively short period of time by any family. Whilst incentives may encourage some to switch to reusables, stronger mechanisms may need to be considered further down the line to reinforce the switch away from disposables. Depending on the approach, and existing infrastructure, washing, collection and redistribution infrastructure is an important aspect to put in place.

Plastic pollution reduction potential:
15 tonnes
by 2033.


Image: © Bumbi

Case Study:
Reusable nappy campaign in Indonesia

Common Seas is supporting East Java to radically reduce its plastic pollution, with a focus on stopping the flow of single-use nappies into the Brantas River. The Bumbi project started by identifying single-use nappies as the most prolific plastic waste item in the river.

At least 1.5 million nappies enter its waters every day, representing about half of all plastic waste in the Brantas. As a result of this insight, the project is initially focusing on reducing the use of single-use nappies across the region. Common Seas is doing this by creating a market for reusable nappies, improving the management of nappy waste, and cleaning up existing waste hotspots along the river.

Our reusable nappy initiative will employ 600 local women and stop 29 million nappies from entering the Brantas every year. Common Seas is already piloting the project in several communities along the river, with demand for it to scale to seven regencies along the Brantas in 2021 (Common Seas).

stop
29 Million
nappies entering the brantas river every year


Image: © Bumbi

Strategy 3: Implement schemes to drive source separation

Source separation of waste is the process of segregating different types of waste materials at the point of origin, such as in the household, businesses, and other establishments. This involves sorting waste into distinct categories such as organic waste, recyclable waste, hazardous waste, and general non-recyclable (or 'residual') waste.

Source separation is identified as one of the primary methods for reducing the amount of recyclable/recoverable material going to landfill (Welsh Government, 2024). This is particularly important in Grenada, as the last remaining cell in Perseverance landfill is expected to reach capacity within four to five years. Modelling indicates that, with no action, Grenada will be landfilling approximately 5,800 tonnes of plastic waste per year by 2033. It will be essential to drive waste reduction and recycling to reduce the disposal of plastic waste (and other wastes), and avoid spiralling waste management costs, and thus this strategy is solely focused on driving source separation.

The Government of Grenada has already recognised source separation as a national priority, both in proposed legislation and through the development of trials to identify best practice.

Firstly, the Draft Sustainable Waste Management Policy identifies source separation as one of the key recommendations under Pillar 2, which is focused on Effective and Sustainable Waste Management Services. Policy Recommendation 4 recommends that "steps be taken to encourage the separation and recovery of waste", recognising that source separation enables the contamination of collected waste to be significantly reduced, thus ensuring that high-quality materials are readily available for recycling. Source separation is thus seen as a key way to support income generation from waste materials.

Next, the Draft Waste Management Regulations (2022) include proposed standards for waste management operations, one of which includes the separation of waste. While the draft regulations do not specify that plastics should be separated (they are focused on cardboard and green waste), the framework is there.

Beyond the legislative framework, the Government of Grenada has also already started to invest in measures to promote source separation. However, it is largely limited to collecting PET beverage containers via public litter bins. This type of source separation could be expanded to households as well. Doing this would increase the total amount of PET collected and available for processing – making recycling efforts more cost-effective.

Strategy 3: Policies

Policy 3.1: Implement source separation at the household level

BAU

The impact of policies modelled within Strategy 3.

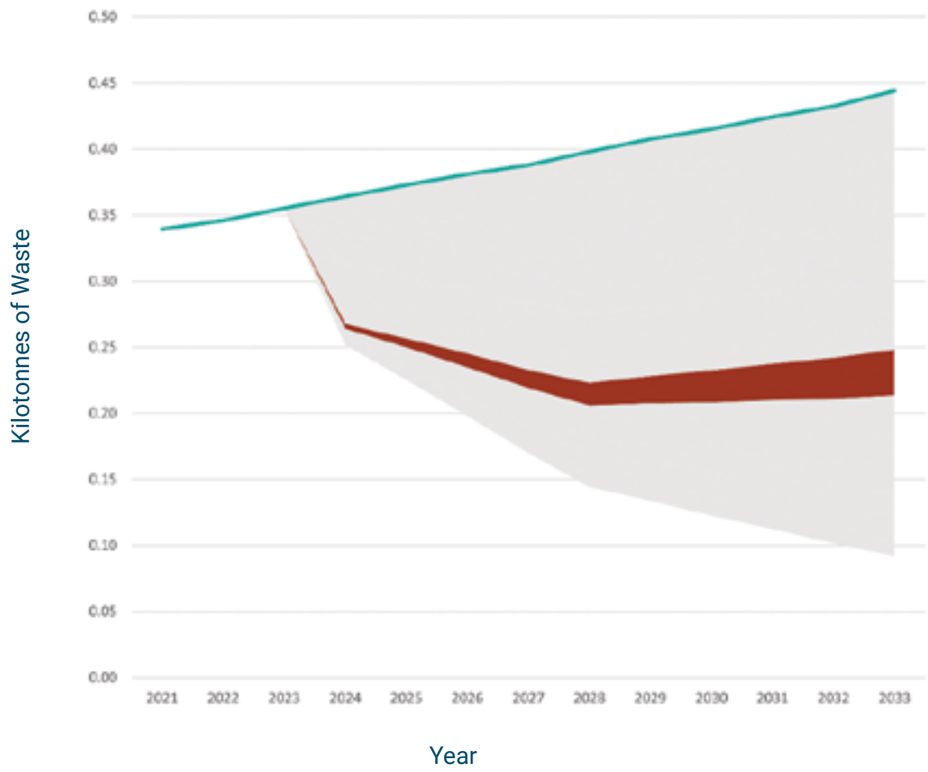


FIGURE 15

Source separation in Grenada

- The ReMLit project implemented a programme of community waste collection and separation. The project procured a number of colour-coded public litter bins. Each bin represented a different faction of waste, e.g. blue for plastic waste, green for organic waste, and yellow for general waste. This programme was accompanied by a public education campaign.
- The Recycle OECS programme piloted source separation at the household level in two communities.

While the source separation of plastics will have a relatively small direct affect on marine plastic pollution rates, it is likely to have a reinforcing effect on behaviours with regards to waste. The strategy will drive material away from landfill (where leakage occurs) and could potentially provide opportunities to develop the capacity to recycle or derive value from plastic waste, either in Grenada or via export markets.

In the medium to long term, the Government of Grenada may consider whether Extended Producer Responsibility (EPR) could be a valuable tool to continue to drive up recycling rates while at the same time helping to finance local waste collection and recycling services more widely.

The concept of EPR places the responsibility for managing items at the end of their lives on the producer or importer. By setting collection and recycling targets for producers to meet, it engages the producers and importers to implement and finance source segregation.

Image: © iStock (EyeEm Mobile GmbH)

Policy 3.1: Implement source separation at the household level

Key considerations

Implementing source separation schemes is most successful if other solid waste management priorities have been addressed, such as providing a high collection coverage (which is the case in Grenada) and establishing a value chain and markets for the resale of recyclables (which is being designed through Recycle OECS). It is important that the design of the source separation scheme is technically applicable, financially affordable and sustainable. Communication and awareness-raising activities are also important to ensure that householders segregate recyclable materials effectively (for example, placing the correct items in the correct bins).

From a technical standpoint, when designing a waste segregation scheme for the household, one of the key elements to consider is the level of segregation desired. This can range from all recyclables in one bin (known as co-mingled) to having separate bins for different types of recyclables (known as multi-stream). Containers for recyclable materials can be provided at the individual household level or at centralised locations, such as supermarket car parks, allowing householders to bring their materials to the collection points. The latter approach is less costly to operate but typically results in a lower level of participation and higher levels of contamination. The ReMLit project for the recycling of on-the-go waste took a multi-stream approach, with blue, yellow and green public litter bins for different groups of recyclable materials.

Different countries take different approaches. Generally, having one bin for recyclables tends to increase participation by householders, as it makes sorting simpler for the public. The collected co-mingled recycling would then require additional sorting at a Material Recycling Facility (MRF), or other similar facility. The most basic and simple technology for recovering co-mingled waste usually includes a 'picking line' whereby staff manually separate recyclable materials that are moving along a conveyor belt. More sophisticated approaches involve the use of automated systems using magnets, near infrared refraction (NIR) sorting and air pulses. Artificial intelligence-based automation is also increasingly being used to detect and separate different materials for recycling.

The more waste is separated into smaller factions at the household level, the less sorting is required at the MRF. The sorting of co-mingled recyclables at MRFs can be costly and not very effective, as the waste is often too contaminated to have much value. Higher levels of separation at the household level ensures higher quality (cleaner) waste streams, contributing to higher revenues for operators. However, separating at the household level also has its challenges, as it requires high levels of public participation, as well as separate collections using specialised vehicles to ensure that the separated waste remains that way.

The scheme must also be financially affordable and sustainable. Economic incentives such as A Deposit Refund System (DRS) can help boost source separation. When a waste separation scheme is introduced, we can expect to see significant increases in recycling compared to the previous limited/no recycling scenario. However, over time, recycling rates tend to flatline, requiring additional measures to further drive recycling rates (e.g. penalties for contaminated waste streams or 'pay-as-you-throw' schemes whereby householders

Plastic pollution reduction potential:

190 tonnes

by 2033.

are charged to dispose of non-recyclable waste, often combined with on-going communication and behaviour change campaigns).

Implementing further measures to maintain (and increase) recycling rates is costly. Countries around the world are establishing Extended Producer Responsibility (EPR) schemes to help cover these costs; with nearly 400 EPR policies existing worldwide, the merits of EPR are widely accepted (OECD 2016). The concept of EPR places the responsibility for managing (i.e. paying) for items at the end of their life on the producer (or importer). By setting collection and recycling targets for producers to meet, EPR is widely used as a policy instrument to increase source separation and recycling. It provides the revenue flows necessary to support the development and operation of the infrastructure needed to collect, sort and, reprocess recyclable materials.

The issues associated with economies of scale and volumes available, as well as fluctuating prices in external markets and supply chains, extend beyond Grenada and into the broader Caribbean and global supply chain. Regional cooperation on EPR design could form a key part of future consideration of this policy. A regional approach is in line with Recycle OECS's ambitions to develop model recycling, and can help develop harmonised standards, policies, and targets across multiple islands simultaneously.

EPR requires careful design and close engagement with manufacturers and retailers, but it has strong potential to serve as a cross-cutting policy instrument for reducing and recycling plastic waste. Grenada could establish itself as a key leader in applying EPR to tackle plastic pollution in SIDS, particularly as this concept is currently a key part of the draft text of the UN Plastics Treaty.

Implementation

To support the Government of Grenada to understand the best delivery model for the source separation scheme, and the associated costs, the Government could commission a feasibility study working in close collaboration with Recycle OECS and the GSWMA to coordinate as much as possible with existing municipal waste collection services. The study should build on lessons learned from the residential pilots and public litter bin scheme, and model the likely costs associated with potential scheme options (e.g. commingled collection or multi-stream collections) and identify likely sources of funding. The feasibility study could also assess the collection, sorting and recycling infrastructure required, as well as the end markets available through regional dialogues facilitated by Recycle OECS.

The findings of this feasibility study should be shared with key stakeholders for consultation. Following this, a source separation strategy could be developed, which could include a shorter, mid- and longer-term approach to develop capacity over time.

For example, in the medium term, Grenada may consider how an EPR scheme can be designed to provide the regular and sustained revenue flows necessary to support the development and operation of the infrastructure needed to collect, sort and reprocess recyclable materials. Extended Producer Responsibility is a relatively complex policy that will require careful design and close collaboration with producers and importers.

Finally, source separation (potentially supported by EPR) can be further solidified by national sustainable waste management targets. The below targets would all require a steady increase in source separation over time:

- All plastic packaging to be recyclable, reusable or compostable by 2025.
- No food waste to landfill by 2030.
- Eliminate all biodegradable waste to landfill by 2030.
- Reduce municipal waste to landfill by 10% by 2035.
- Achieve a 65% recycling rate by 2035.
- Eliminate avoidable plastic waste by 2042.
- Eliminate avoidable waste of all types by 2050.

Strategy 4: Improve on-the-go waste collection and tackle littering

Grenada has very recently implemented initiatives to tackle litter, including introducing segregated waste bins and granting GSWMA enforcement powers through the Abatement of Litter Act.

Both of these strategies will be key in ensuring plastic waste that is not addressed through more 'upstream' policies (e.g. single-use plastic bans or taxes) can be intercepted before entering the marine environment.

As these initiatives are still in an early implementation phase, several issues have been reported, including the contamination of recycling bins and misleading signage. For this reason, their impact on litter reduction in the Plastic Drawdown model was minimal. They nonetheless provide an excellent foundation to strengthen the policies to ensure they provide maximum impact.

Strategy 4: Policies

- **Policy 4.1:** Enhance enforcement against littering and fly-tipping
- **Policy 4.2:** Enhanced 'on-the-go' waste collection and recycling to tackle littering
- BAU

The impact of policies modelled within Strategy 4.

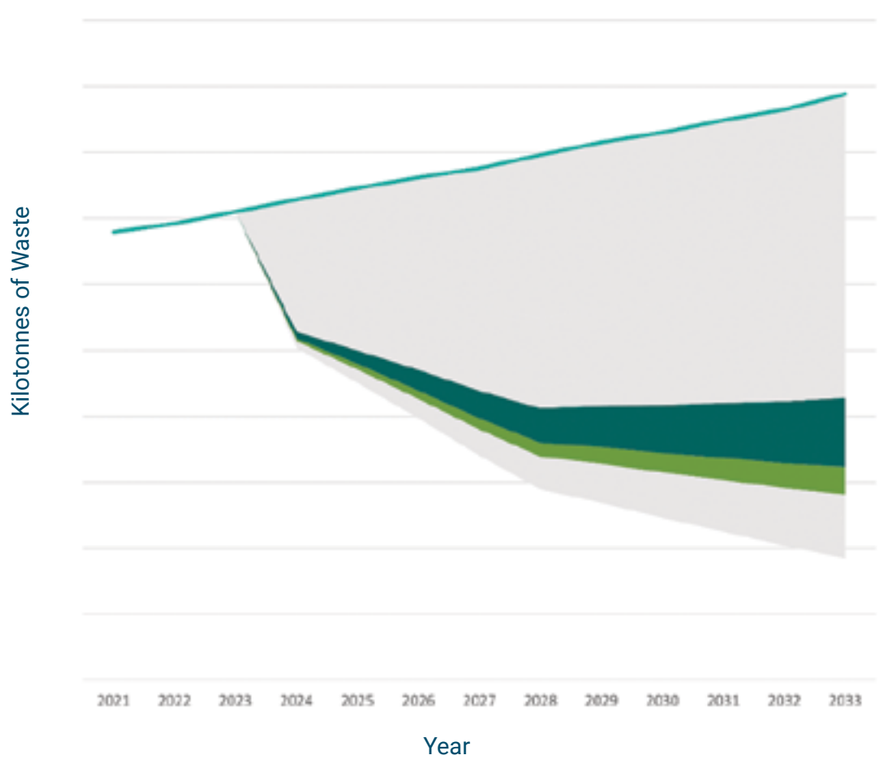


FIGURE 16

Policy 4.1: Enhance enforcement against littering and fly-tipping

Key considerations

Litter wardens could be introduced with enforcement powers to give on-the-spot fines to litterers, but also become local champions of cleanliness, providing identification and monitoring of litter and fly-tipping hotspots through surveys, tracking down littering culprits and implementing public engagement campaigns. The existing Abatement of Litter Act 2015 could provide the legal basis for their appointment (the application of enforcement powers should be clarified). GSWMA could be given responsibility for appointing, training and managing the litter wardens.

Note that this policy supports IUCN's Plastic Waste Free Islands report, which also recommended that the Government of Grenada should immediately enforce the Abatement of Litter Act.

Public information and awareness campaigns are essential to create more understanding about the impacts of plastic pollution and instill pride in citizens' clean environment and local areas. Litter monitoring apps could also be promoted to support the identification of hotspots and enhance local engagement.

Financing for any actions taken could be covered as part of any EPR scheme that is considered (see above). This will help to internalise the costs of litter collection and clean-up. The cost per importer or item would be small, but sufficient to cover the necessary costs. In the interim period, some of the funds from the Environment Levy could be used for these activities.

Plastic pollution reduction potential:
287 tonnes
by 2033.

Implementation

One of the first steps is to identify litter and fly-tipping hotspots and then create an action plan around this baseline information. To better understand these hotspots, consultation with local authorities and stakeholders (GSWMA, local communities, environmental NGOs, consumers associations, restaurants, etc.) will be crucial, along with a baseline monitoring survey. This may include setting up a mapping system to illustrate litter hotspots, which can subsequently be used as a tool for monitoring and reporting progress.

Defining the level of fines will be important, as well as making relevant enforcement responsibilities clear and ensuring there are enough upskilled litter wardens in place.

A public information and awareness campaign would create more understanding about the impacts of plastic pollution and pride in citizens' clean environment and local areas.

Policy 4.2: Enhanced 'on-the-go' waste collection and recycling to tackle littering

Key considerations

This policy would build upon Grenada's existing network of litter bins. Convenience is one of the most important aspects of on-the-go waste collection. It is important to have enough bins in the right locations, close to where citizens are consuming the on-the-go food and drink. A study of existing locations, food and drink outlets and footfall – using big data solutions such as Google locational analytics – can help pinpoint where additional locations could be added.

The initiative could include: adding more bins, particularly in high footfall areas, and adding measures to avoid contamination of the waste streams, including 'biodegradables' in the 'organic' waste bin. This could also include increasing street sweeping operations (e.g. expanding to rural areas), and supporting this with a strong and clear communication campaign to address littering and promote the proper use of the segregated waste bins.

Plastic pollution reduction potential:
115 tonnes
by 2033.

Implementation

Relevant legislation should have already been considered as part of the work for Strategy 4, Policy 1. Similarly, the same stakeholders could reconvene to share their insights into the situation with regard to enhancing on-the-go waste collection and recycling.

A study of existing bin locations, food and drink outlets and footfall concentration would inform the development of a baseline from which the policy could then be developed. Planning the required infrastructure could include identification of bin type, number of bins, bin signage design, and possible use of technology.

Running an initiative to promote more recycling as part of major events and festivals could support the wider public awareness campaign. Exemplary on-the-go infrastructure could be showcased at an event.

Strategy 5:
Improved waste and wastewater management

This strategy would increase waste collection coverage within rural areas and improve the standards for the storage and management of waste during transportation and at the landfill. Additionally, it would improve screening within the waste water system to prevent flushed plastic waste from entering the ocean.

Strategy 5: Policies

- **Policy 5.1:** Improve household waste collections
- **Policy 5.2:** Enhance waste transportation, storage and handling
- **Policy 5.3:** Enhanced screens to capture flushed items
- BAU

Shows the impacts of policies modelled within Strategy 5

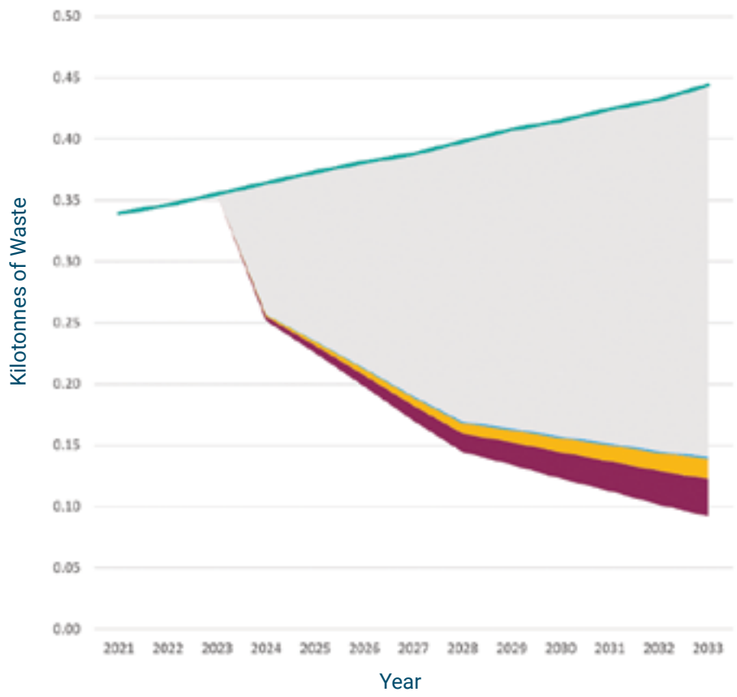


FIGURE 17

Policy 5.1:
Improve household waste collections

Key considerations

The GSWMA provides an at least twice weekly garbage collection service to householders in sparsely populated residential areas and three times per week in densely populated areas. Additionally, the GSWMA provides a daily collection service in heavily populated communities where there is unplanned development. There is no limit to the amount of waste that a householder can place out for the collection service on their designated collection days. It therefore means that the householders are adequately serviced with a regular and timely collection service for all waste.

Nonetheless, small improvements can be made to reduce the likelihood of leakage, e.g. from waste awaiting collection from households by replacing bins with lidded wheeled bins/carts to help properly store waste until collection. For example, while the GSWMA recommends householders place their waste in tied bags or covered bins, some do not do this, and the waste bins are not always appropriately positioned on the kerb for collection, resulting in spills. Some bins are also used as communal units, resulting in overflowing, spills and several other public health and environmental concerns. Increased bin capacity or increased collection frequency in some areas could be considered to remedy this.

Plastic pollution reduction potential:
167 tonnes
by 2033.

Implementation

An early outcome could be to set up the governance structure for this initiative going forward, with GSWMA highlighting the relevant stakeholders.

Scenarios could be developed to be modelled and these may include increased residual waste collection frequency, and increased geographical scope, if required.

If the design involves new vehicles and other capital expenses, time for procurement of these should be allowed ahead of planned system roll-out.

A household communication awareness programme could inform residents of forthcoming service changes. As consumers receive better services their engagement will improve which will lead to better participation and lower misuse, spills and other issues

Policy 5.2:
Enhance waste transportation, storage and handling

Key considerations

This would include improving waste containment at the landfill as well as in collection vehicles. Deploying more enclosed waste collection vehicles or vehicles with retractable covers would prevent loss of plastic while waste is being transported to Perseverance landfill. Additionally, works to fence Perseverance landfill to prevent the windblown release of plastic waste and to improve management at the landfill on Carriacou should be carried out.

Plastic pollution reduction potential:
90 tonnes
by 2033.

Implementation

GSWMA would be the ideal agency responsible for implementing improvements to waste transportation, storage and handling to reduce the escape of materials from the waste management system. The approach taken to improvements at the landfills should be informed by a baseline survey.

In practice, the updates at the landfills, especially those at Carriacou, may be staggered in their implementation, depending on funding availability – with securing funding being a priority task.

Policy 5.3:
Enhanced screens to capture flushed items

Plastic pollution reduction potential:
12 tonnes
by 2033.

Key considerations

While the sewer network in Grenada is small, wastewater is still pumped through screens in the system and collected from the emptying of septic tanks before being pumped into the sea. These screens capture a proportion of flushed items, such as wet wipes, condoms, and sanitary pads. The current efficiency of these screens in capturing flushed items is not well understood, but this intervention could achieve up to a 95% capture rate of flushed items from the wastewater.

Initially, a monitoring programme could be carried out to fully determine the extent of plastic inflow and outflow through the wastewater treatment system. This would consider how much is being caught in existing screens, and therefore evaluate what improvements need to be made. Based on the monitoring and survey work, recommendations can be made to implement additional screening within the network, along with other suggested improvements. A supporting campaign targeted at reducing the flushing of items into toilets and drains should be run to better inform householders of the impacts and costs of flushing items down the drain.

Implementation

The National Water and Sewerage Authority could lead on this initiative. The first step would be to undertake a monitoring programme to fully determine the extent of plastic inflow and outflow through the wastewater treatment system to determine how much is being caught in existing screens.

On the basis of the monitoring and survey work, recommendations would be made based on an evaluation of what improvements are needed (e.g. additional screening within the network and/or other suggested improvements). At this stage, recommendations may be modelled, even at a high level, to consider costs and benefits.

Implemented measures should be supported by a household communication awareness programme, which focuses on informing householders of the impacts and costs of flushing items down the drain.

5. Enabling measures for change

Each policy recommended in this report has many similar, cross-cutting elements that are crucial for their success. These are outlined below, but should be considered for all strategies across the board.

Legislative Review

Before the design and implementation of any new policy, a legislative review is required to understand what the current barriers to the implementation of existing policies are, particularly for importation policies and practices and the management of the funds collected from the Environment Levy. It is important to understand what is not currently working with the existing scheme, and how this could be improved before then deciding what the best way to introduce a new measure is. This may be amending existing legislation or developing it anew.

For example, the Environment Levy allows importers to claim back 80% of the levies paid on their items if they can prove the re-export of the same quantity of material. This is a strong incentive to divert material from landfill and encourage recycling. However, the GSWMA is not able to provide this refund because the full amount of levy collected is not received by the authority. To extend the capabilities of existing frameworks such as the Environment Levy, it is important that existing challenges and barriers are identified and rectified first.

Education and Youth Action

The children and young people of Grenada are the future leaders, innovators, artists, engineers and citizens, so it is critical that every school student can access the skills, knowledge and experience they need to help build a cleaner, greener and fairer future. Young people can also play a key role in mobilising action within their families, schools and communities.

An education programme could be designed and implemented to provide young people with deep, practical learning experiences about plastic, that create understanding and agency, as well as wider sustainability and climate change initiatives.

The programme will combine fully resourced lessons and professional development for educators with practical learning opportunities and support for young people to take action to enhance the school and community environment. Collectively, this will support time-poor educators to formalise learning on sustainability and the plastic crisis, and put children and young people at the heart of the action. In turn, this will support them to lead on reducing plastic waste in their school, while building essential skills for active citizenship beyond the classroom.

Behaviour Change Campaign

A general public engagement and education campaign will be essential to raise awareness of the plastic pollution challenge and to encourage all stakeholders to play their part in implementing all of the policies recommended in this report and in making its aspirations a reality. Positive action and behaviour change will be critical, including reducing consumption of plastics, particularly single-use items, and addressing the leakage of plastics into the environment through littering and dumping.

A detailed behaviour change campaign should be considered, based on comprehensive stakeholder mapping to ensure that it targets the right stakeholders, in the right way, and at the right time. Clear and targeted messaging will be important to engender behaviour change, recognising that different stakeholders (e.g. householders, hotels, retailers and other businesses) will have different perspectives and priorities.

The campaign could utilise a range of engagement techniques as part of a clear long-term programme to raise awareness, promote behaviour changes and provide information. It is recognised that this will need to go beyond communicating the scale and nature of the plastics pollution problem in Grenada, to providing information that helps consumers and businesses to make positive changes and reiterating communications so that behaviour change is embedded in the long term.

Techniques are likely to include billboard, radio, television and social media messaging, as well as roadshows to provide direct face-to-face engagement with stakeholders. The inclusion of plastic pollution as an issue covered by schools and other educational establishments will also be important. These are key ways to communicate the issue and to equip current and future generations with the understanding and tools needed to reduce plastic pollution for the long term. One element could be to frame waste management as a key utility provided by the government. The rationale for such an approach is that if people understand the true cost of waste management, not just financially to the government but also its impact on the environment, they may be more willing to take on board the actions envisaged under policies.

The behaviour change campaign programme should be reviewed and refreshed periodically to ensure that the approach is appropriate and effective.

Continually improving data on waste and behaviours

The collection of better data on plastic waste – and waste management generally – will allow the detailed elements of the recommendations included in this report to be designed effectively and provide a key basis for monitoring and evaluating their implementation. Key elements of data collection could include:

- Periodic waste composition analysis, including detailed analysis of the plastic fraction so types of plastic waste generated over time can be understood and assessed.
- Periodic litter surveys to provide information on the scale and nature of littering, with a particular focus on plastic.
- Periodic surveys to collect data on waste management behaviours, for consumers, business and other sectors such as tourism. This will allow a better understanding of how waste is managed and will inform policy design, future action planning and behaviour change campaigns.

6. Future Considerations

Plastic pollution is a complex challenge which requires a long-term, systemic change to solve. This report presents an ambitious but achievable programme for tackling plastic pollution in Grenada. The extensive work undertaken in preparing this report identified wider issues that will be important to consider and address in the long term.

Firstly, the Plastic Drawdown assessment identified that microplastics – in the form of pellets, clothing fibres and tyre and brake wear – comprise a large part of plastic pollution generated in Grenada. A series of measures were assessed to potentially address this, including:

- Regulations to reduce tyre wear by setting clear standards for tyre quality and wear rates. **Plastic pollution reduction potential: 21 tonnes by 2033.**
- Regulations to implement a fibre release threshold and label clothing to reduce microplastics emissions from the washing of synthetic textiles. **Plastic pollution reduction potential: 12 tonnes by 2033.**
- Regulations to improve controls over the pre-production handling of plastic pellets (the precursor of most manufactured plastic products and items). **Plastic pollution reduction potential: 4 tonnes by 2033.**

It was estimated that these measures could reduce plastic pollution by 1.2%. It is important to recognise that these policies for addressing microplastics pollution are very much under development and have not been tested. Given the estimated quantities of microplastic waste generated, it is important that the Government of Grenada consider these types of potential instruments for its long-term planning. In particular, it will be important to engage with international activities on these issues.

Secondly, assessment using available data suggested that the relative quantity of marine plastic pollution arising from lost and abandoned fishing gear is relatively low (approximately 1.6 tonnes in 2021). However, given the high impact that 'ghost gear' can have on marine creatures and the importance of Grenada's blue economy, Common Seas have assessed several measures that could be used to tackle plastic pollution associated with this sector:

- Collection systems funding through Extended Producer Responsibility and/or a Deposit Return Scheme.
- Track and trace systems for lost fishing gear to help with its retrieval.
- Gear zoning to prevent problems caused by different vessels interfering with each other's gear.

Altogether, these measures could reduce the plastic pollution caused by lost and abandoned fishing gear by an estimated 1 tonne by 2033 (0.04%).

On a wider note, it will be important that the evolving science and understanding of both the plastic pollution problem and the efficacy of different measures for addressing it are kept under review so that any recommendations taken from this report can be adjusted and refreshed to reflect evolving knowledge and best practice on the issue.

7. Turning theory into action: A Roadmap to tackle plastic pollution

The Roadmap outlines the major steps to delivering the recommendations outlined in this report. Each stage of work – from policy design to post-implementation – is illustrated along with key milestones.

The Roadmap to implement the policy recommendations is delivered across three main types of interventions.

Firstly, the government could start with several 'quick wins' in year 1 that don't require new legislation. Strong public outreach and private sector engagement will ensure this lays important foundations to support the long-term vision.
This includes:

- **Providing water refill points.**
- **Trailing reuse systems for food and drink on the go (e.g. at St George's University).**
- **Including pre-forms in the Environment Levy.**

Secondly, work could be done to build on existing waste management infrastructure and services, including waste collection, storage and handling. This would fall under the GSWMA and would align with existing and planned activities. It initially requires legislative review to inform subsequent design implementation in year 2.

Finally, new policies are needed to tackle plastic pollution at source. This requires longer planning and design, which could be overseen by the Ministry of Environment, coordinating with other relevant ministries where appropriate. Consider grouping actions, as new policies will each require legislative review and stakeholder consultation.

QUICK WIN POLICIES

EXISTING POLICIES AND INITIATIVES

NEW POLICIES TAKE LONGER TO DESIGN AND PLAN

The Roadmap describes distinct stages of work, from policy design through to post-implementation.

However, generally, the design stage may involve a legislative review to understand the legal framework for implementing the policy, supporting research, a feasibility study to review the policy considerations and the early stage of the consultation process. This would involve defining the key stakeholders and presenting the feasibility study results to them. The policy design would be scoped and refined, and an impact assessment undertaken, along with ongoing stakeholder consultation. Governance arrangements would be defined.

The pre-implementation involves any testing, trials, or demonstration projects. Public consultation would be undertaken during this stage, if required. An implementation plan would be developed and practical and logistical set-up arrangements such as policy operator, infrastructure, reporting, training and enforcement measures would be put in place. A public awareness campaign would be launched.

The implementation stage sees the point at which the policy is rolled out. In some cases, this may be a phased approach.

And finally, the post-implementation stage is intentionally blank in the roadmap and accompanying annexes, as actions would be defined according to monitoring and review work. As such, this stage would involve monitoring the policy effectiveness and ongoing review of policy design. Policy specifics may be amended based on findings or supporting measures introduced. In some cases, the policy scope may be extended over time.

Roadmap of strategies to tackle plastic pollution in Grenada

FIGURE 18

80% of all plastic beverage bottles consumed in Grenada started out as pre-form.

Reverse Vending Machines provide efficiencies in transportation and logistics, given their compaction capabilities.

Y1 Y2 Y3 Y4 Y5 Y6 Y7 Y8 Y9 Y10

Strategy 1
Reduce and recover SUP beverage bottles

- **Policy 1** DRS to include plastic beverage bottles
- **Policy 2** Include pre-forms in Environment Levy
- **Policy 3** Phased ban on SUP bottles
- **Policy 4** Provide water refill points

DRS implemented

Pre-forms included in Environment Levy

SUP bottles <500ml banned

SUP bottles >500ml banned

Water refill and reuse system trials designed

Reduce plastic pollution by **31%** **1,087 tonnes**

Strategy 2
Tackle other single-use plastics

- **Policy 1** Reuse system for single-use food service items
- **Policy 2** Promote reusable nappies
- **Policy 3** Plastic packaging and bag charges

Reusable nappy trial implemented

Charges introduced for SUP food packaging and SUP bags

Review impact. Consider extending charge to all disposable food packaging and all disposable bags

Reduce plastic pollution by **13%** **526 tonnes**

Strategy 3
EPR-based source separation

- **Policy 1** Promote EPR-based source separation

EPR for source separation introduced

Reduce plastic pollution by **8%** **190 tonnes**

Strategy 4
Reduce on-the-go waste and littering

- **Policy 1** Enhanced enforcement against littering and fly-tipping
- **Policy 2** Enhanced on-the-go waste collection and recycling

Enforcement measures for littering and fly-tipping start

Measures introduced

Reduce plastic pollution by **16%** **402 tonnes**

Strategy 5
Improve solid waste management and wastewater

- **Policy 1** Enhance waste transportation, storage and handling
- **Policy 2** Improve household waste collections
- **Policy 3** Enhanced screens to capture flushed items

Reduce plastic pollution by **11%** **269 tonnes**

Clear colour-coding and branding for litter bins and shaped entrance holes can improve understanding and reduce contamination.

Improve waste water treatment system filters to capture wet wipes and other plastic items flushed into drains.

Litter tracking apps and mapping tools can help identify and monitor litter hotspots and prioritise interventions.

Automated bin-level monitors can help improve the efficiency of recycling collections

Legend

STAGE

- DESIGN
- PRE-IMPLEMENTION
- IMPLEMENTION
- POST-IMPLEMENTION
- TO BE DETERMINED

TYPE

QUICK WIN POLICIES should have shortened timescales, with implementation happening in/around year 1. Review of the pilot or programme would happen in/around year 3.

NEW POLICIES TAKE LONGER TO DESIGN AND PLAN with implementation happening in/around year 3, and review happening in/around year 5.

EXISTING POLICIES AND INITIATIVES around service design and waste management are complementary and so timelines can be grouped together, with some being prioritised first to alleviate pressure on GSWMA. GSWMA could run a full review of policies in year 5.

7.1 Financing

The strategies and policies identified in the this report will require resourcing, technical support and investment over time.

A clear financing plan should be developed for each key policy, identifying needs in terms of coordination and technical capacity, and capital and operational finance. Existing capacity in government departments and agencies should firstly be assessed. As well as considering existing and future government capacity, there are a range of sources of technical assistance and finance that can be used to help develop and implement the policies recommended in this report. These include:

1. **Extended Producer Responsibility** will offer a basis for providing operational finance for improved waste management and recycling. The policy would provide a mechanism by which producers help create operational finance for collecting and recycling the products they place on the market. This is a well-established approach used to help fund waste management and recycling in many parts of the world. The existing Deposit Return Scheme (DRS) for glass containers can be considered to be a type of EPR. Please see Strategy 3 for more information.

2. **Collaboration with business and civil society.** There is real scope to collaborate with key business sectors, such as the tourism sector, to jointly deliver key elements of the report. This will help to provide positive environmental outcomes and support businesses in addressing key corporate social responsibility aims.

3. **Technical support from international agencies and NGOs.** This report has been prepared with the support of the international social enterprise Common Seas and builds on work conducted by the IUCN's Plastic Waste Free Islands programme. We will continue to engage with these and other partners to help deliver the policy recommendations. Examples include:
   - Specialist Waste Management Financing support from UNEP, working under the EU Cariforum Zero Waste Caribbean Initiative.
   - Support from the Recycle OECS Project, which is co-financed by the German development agency GIZ, and implemented by AFD, GIZ, and UNEP, in partnership with the OECS.

4. **Accessing international development and philanthropic finance** to design and implement the recommendations included in this report. Opportunities to access finance to implement the full range of policy recommendations should be explored. These could help deliver new infrastructure, support behaviour change campaigns and test new approaches to tackling single-use plastics. Potential sources include the multi-lateral Problue fund, administered by the World Bank and the Global Environment Fund.

Final remarks

This report recommends policies and initiatives to support the Government of Grenada to set a bold, optimistic vision to tackle plastic waste and pollution over the next decade.

It provides the impetus for urgent action, and highlights Grenada's ambition to safeguard its blue economy, protect the environment and the health of its citizens – whilst supporting global efforts to deliver on the UN Sustainable Development Goals.

No single strategy can solve the problem, but this document demonstrates how implementing five strategies, each tackling the problem from a different angle, has the potential to reduce Grenada's plastic pollution
by 80%.

This also highlights the pressing need to catalyse global innovation and action, including through a robust Global Plastics Treaty. This will help tackle the 20% of pollution that remains, as well as the myriad of impacts of legacy plastic pollution that are not addressed in this report.

This report represents the combined efforts and knowledge of stakeholders across government, business, and civil society, alongside Common Seas' technical support and Plastic Drawdown tool. It represents a set of policies that can help Grenada safeguard its magnificent biodiversity and tackle climate change.

However, this can only be achieved through immediate, ongoing and coordinated action by all stakeholders – to deliver the coordinated policy framework, investment and behaviour change needed to match the scale of the plastic pollution problem.

8 Acknowledgements

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UK International Development:

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Common Seas is partnering with five Small Island Developing States (SIDS) to develop National Action Plans to tackle plastic pollution. This critical funding allows us to develop and scale an approach tailored to the unique challenges and needs of SIDS, which are disproportionately affected by the plastic crisis.

The project supports partner governments to radically reduce ocean plastic in their countries over the course of ten years and contribute to a sustainable blue economy.

The views expressed do not necessarily represent the UK government's official policies.

For more information, please visit: sbe-platform.org.uk/about#sbe-programme

Image sourcing

Unless otherwise stated, all photos have been sourced from stock image websites and have been credited where required. Images sourced from: iStock.com, Unsplash.com, Pexels.com, Envato.com.

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