



Mid-Atlantic Marine Debris Summit  
June 17-19, 2019

George Mason University Arlington Campus.  
Arlington, Virginia



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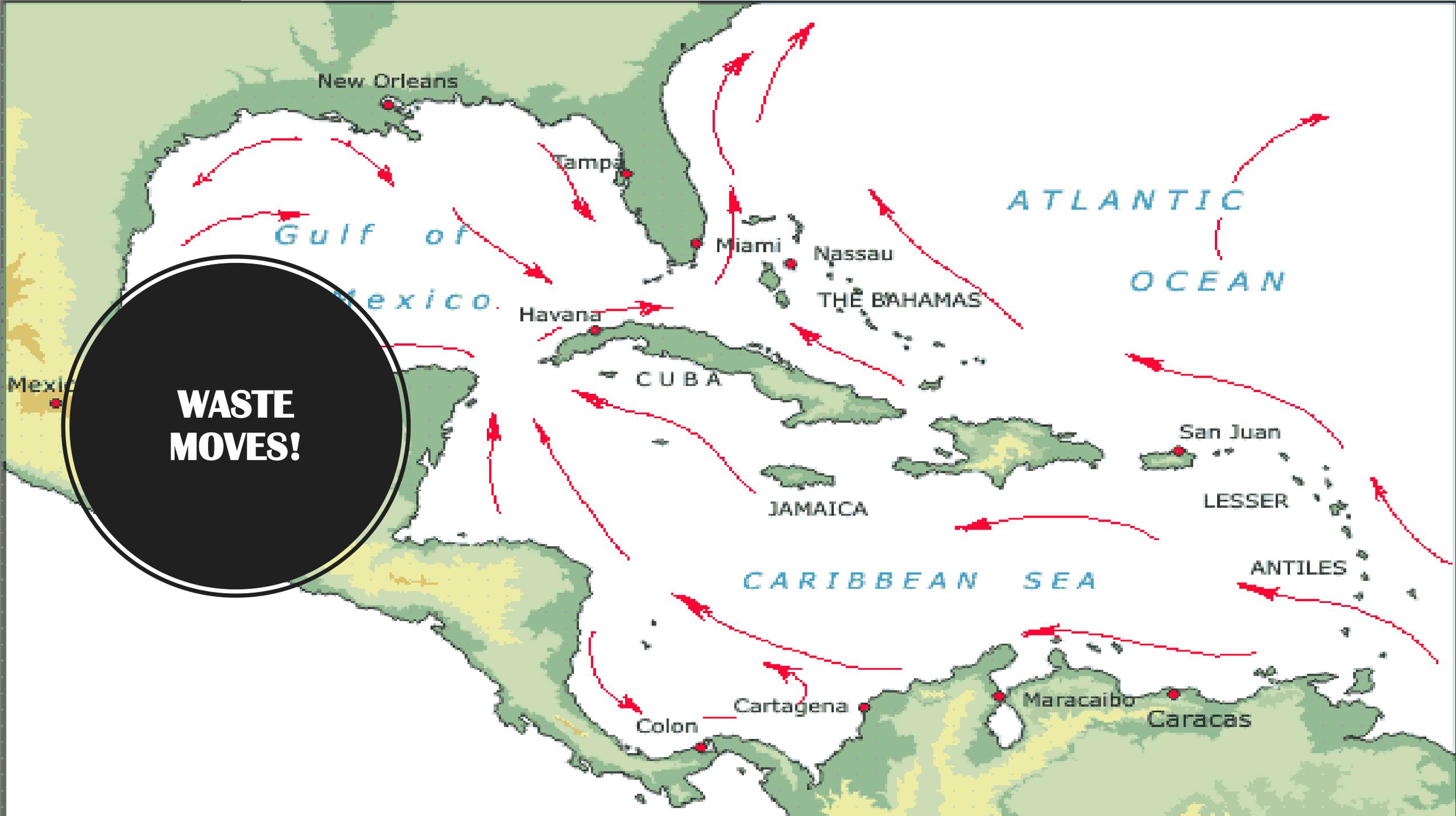
Part

1

# Let's Take a Journey through the Caribbean Sea

A man in a red polo shirt and blue jeans stands on a beach covered in trash, looking out at a large body of water filled with floating debris. In the background, there are mountains and a factory with smoke rising from it. A speech bubble above the man contains the text "Where do I begin?".

Where do I begin?



**WASTE  
MOVES!**





Part **2**

# Global & Regional Solutions

# Global Commitments

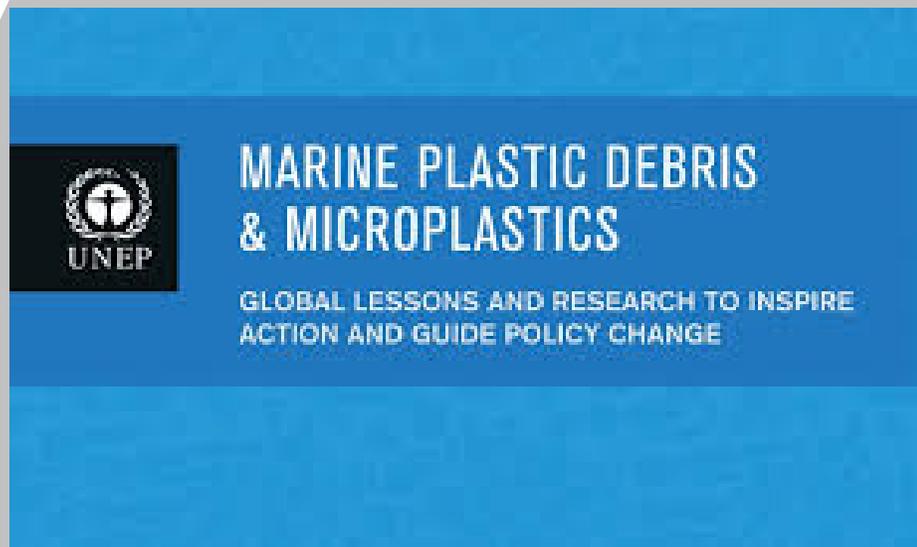
UN Resolutions & Political Commitments

Sustainable Cities, Consumption & Production

Waste Management Outlooks & Guidelines

Scientific Knowledge on Plastics & Microplastics

Green, Blue & Circular Economies  
(*Waste as a Resource & Waste to Value*)



The Importance of  
Solid Waste  
Management to  
Achieving

SUSTAINABLE  
DEVELOPMENT  
GOALS

1 NO  
POVERTY



Waste picking is an important livelihood for the urban poor

2 ZERO  
HUNGER



Organic waste can fertilize new food

3 GOOD HEALTH  
AND WELLBEING



SWM prevents disease and food contamination

4 QUALITY  
EDUCATION



Environmental and health training awareness

5 GENDER  
EQUALITY



Relieve undue burden of poor waste management on women

6 CLEAN WATER  
AND SANITATION



Better SWM goes hand-in-hand with better WASH

7 AFFORDABLE AND  
CLEAN ENERGY



Waste to energy as an optional energy source

8 DECENT WORK AND  
ECONOMIC GROWTH



Green job growth in collection, recycling and treatment

9 INDUSTRY, INNOVATION  
AND INFRASTRUCTURE



R&D in recycling and treatment innovation

10 REDUCED  
INEQUALITIES



SWM can increase the economic potential of the urban poor

11 SUSTAINABLE CITIES  
AND COMMUNITIES



SWM makes cities more sustainable

12 RESPONSIBLE  
CONSUMPTION  
AND PRODUCTION



Shift to waste reduction and resource management

13 CLIMATE  
ACTION



Reduce GHGs through less dumping and burning

14 LIFE  
BELOW WATER



Prevent plastic pollution in the ocean that harms sea life

15 LIFE  
ON LAND



Less land pollution leads to healthier environments

16 PEACE, JUSTICE  
AND STRONG  
INSTITUTIONS

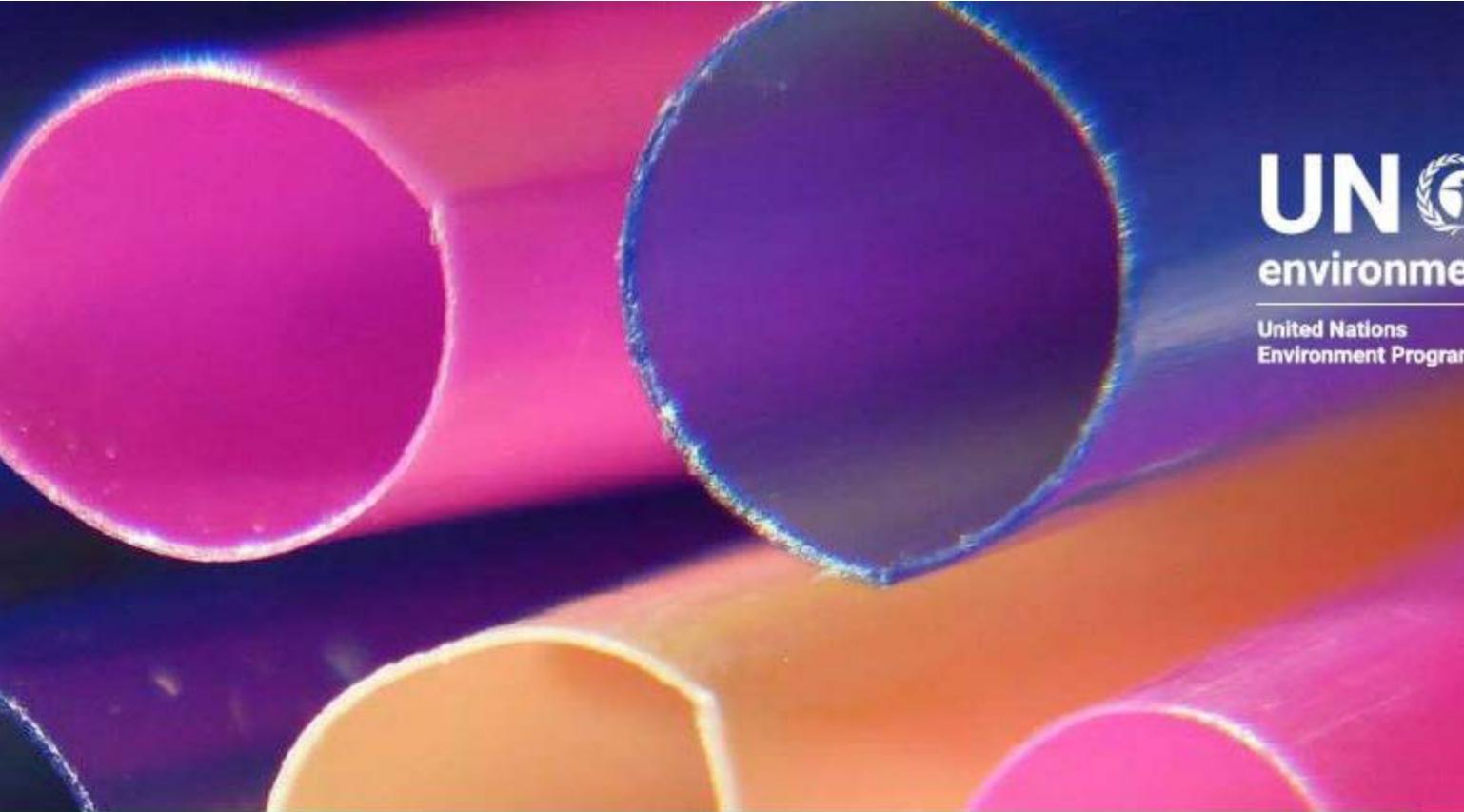


Better governance of environment and resources

17 PARTNERSHIPS  
FOR THE GOALS



Work together and create public-private partnerships



# Legal Limits on Single-Use Plastics and Microplastics: A Global Review of National Laws and Regulations







ENVIRONMENTAL  
INVESTIGATION  
AGENCY

GREENPEACE

## Checking out on plastics

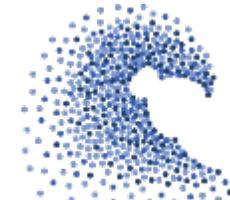
A survey of UK supermarkets' plastic habits

NOAA Marine Debris Program  
NOAA Office of National Marine Sanctuaries

## Marine Debris Toolkit *for educators*

# GOOD PRACTICES GUIDE

## BANNING SINGLE-USE PLASTIC BAGS



**clean  
seas**

turn the tide  
on plastic

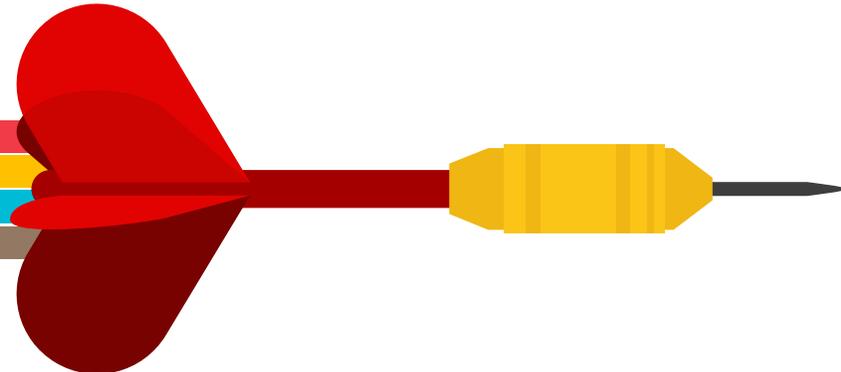
#plasticfreejuly;  
#pickitup  
#litteringisnotcool;  
#zerowaste;  
#plasticfree;  
#strawssuck;  
#refusesingleuse;  
#wepickupplastic;

Clean Seas

Beat Plastic  
Pollution

Ban the  
Microbead

Break up  
with Plastics



**Advocacy**  
**Behavioral**  
**Change**  
**Awareness**  
**Policy Change**



#CleanSeasCampaign

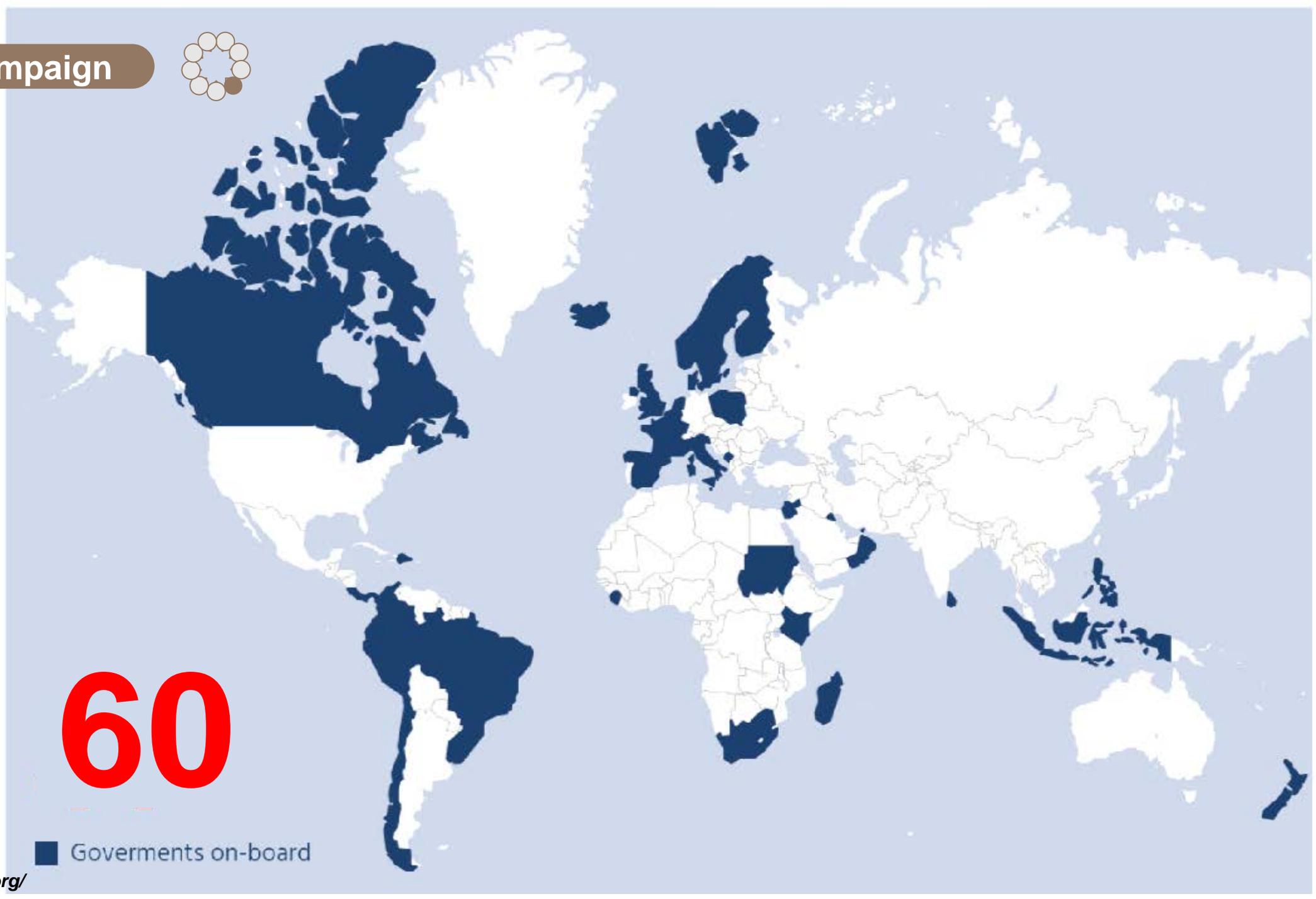


In Latin  
America &  
Caribbean

**20**  
**countries.**

**60**

■ Governments on-board



# RATIFICATION OF LBS PROTOCOL

## STATUS OF THE CARTAGENA CONVENTION & THE LBS PROTOCOL



\* Caribbean Netherlands: Special Public Bodies of the Netherlands. Alternatively known as Bonaire, St Eustatuis and Saba, BES Islands.

# About the Caribbean Node



## The Caribbean Node for the Global Partnership on Marine Litter



A healthy Caribbean Sea providing sustainable economic opportunities and reduced human and environmental risks from improper management of solid waste and marine litter.

Global Partnership on Marine Litter - Caribe (GPML-Caribe) is a partnership between the UN Environment Caribbean Environment Programme (UN Environment CEP) and Gulf and Caribbean Fisheries Institute (GCFI). As a regional node, we facilitate training, research, resource mobilization, project development, outreach and advocacy on marine litter through a partnership approach involving all stakeholders.



Founded in 1947 to promote the exchange of current information on the use and management of marine resources in the Gulf and Caribbean region.



UN Environment established the CEP in 1987 to support the sustainable development and use of coastal and marine resources in the Wider Caribbean Region.

The Caribbean Node represents a partnership for national and regional organizations, governments, research and technical agencies and individuals, that work together to reduce the quantity and impact of marine litter in coastal zones of the Wider Caribbean Region.

### Some of our projects include:

Wang, S. & M. G. Torres

#### Research ZIKA in the wider Caribbean (2017)

Focusing on high quality data from Puerto Rico, a possible correlation was researched between levels of marine litter and mosquito population, which carry the ZIKA virus.

#### Microplastics in fish, 2017

A research partnership with Saint George's University in Grenada showed: The species of fish we eat all contained microplastics.

#### Advocacy and Awareness Raising

Carnival in Trinidad and Tobago litter reduction, 2016

This pilot study aimed to reduce marine litter through the use of effective communication strategies and economic incentives for stakeholders involved in the Carnival business.

Interested in more information? Sign up for our mailing list:

<https://www.gcfi.org/gpml-carib-subscription-request/>

For more information on projects, please contact GPML-Caribe: [gpml-caribe@gcfi.org](mailto:gpml-caribe@gcfi.org)



Legislation, policies and enforcement



Institutional frameworks and Stakeholder involvement



Monitoring Programmes and Research



Education and outreach



Solid waste management planning



# Harmonizing Marine Litter Monitoring in the Wider Caribbean Region: A Hybrid Approach

2019



C. Caporusso & M. Hougee





Part **3**

Our Caribbean Reality



From  
here

to there





New Providence, Bahamas, 2017

# Waste & Marine Litter Trends

Most Tourism Dependent Region

Waste Characterization & Generation Rates  
*(Increase in Plastics from 5% to 35%)*

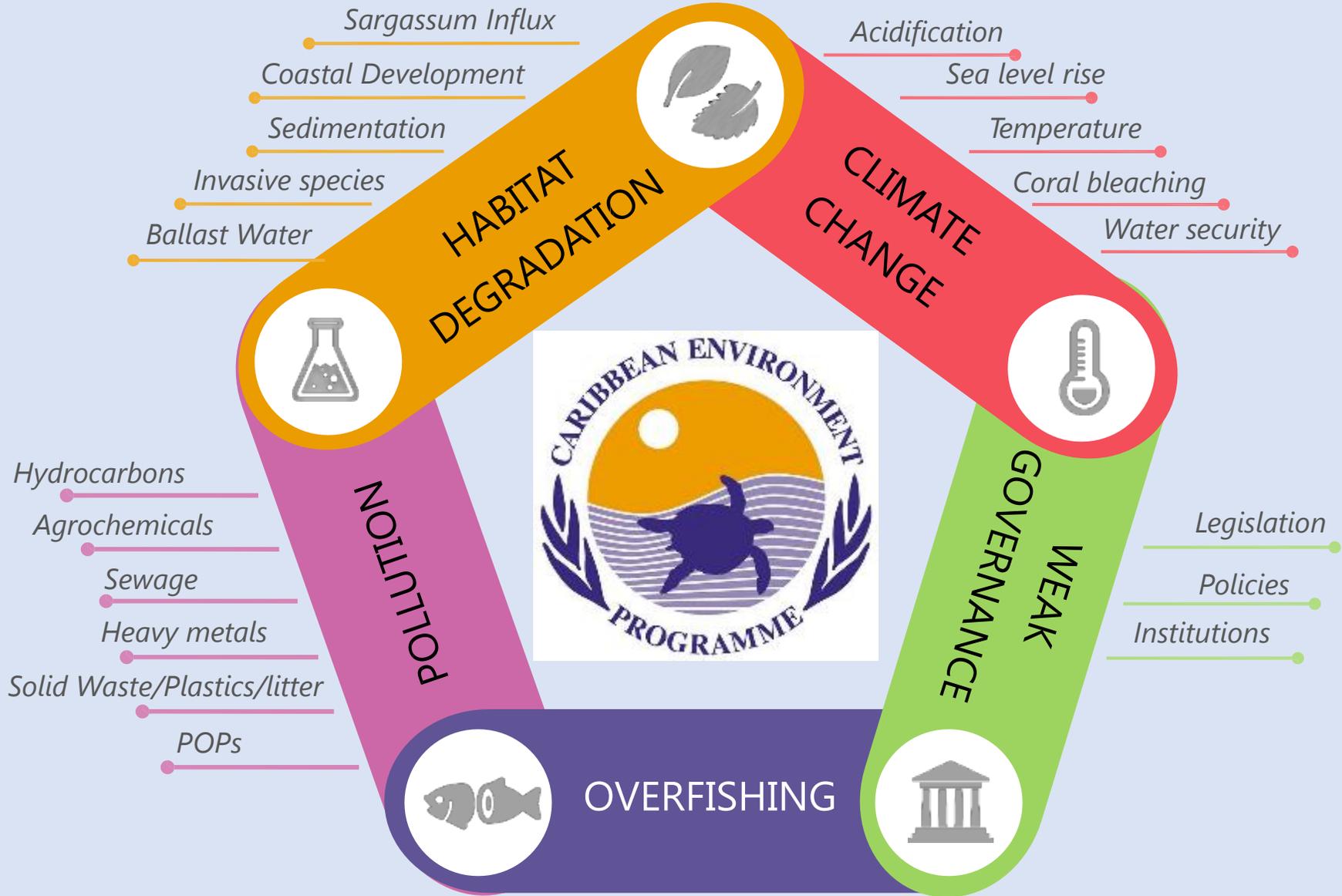


Increase of Waste to Energy Proposals  
Banning of Plastics, Styrofoam etc.



Climate Change Adaptation & Mitigation





## Systems:

Lack of integration of marine litter into solid waste management frameworks

Inadequate collection, recycling & recovery

Inadequate reception facilities at ports & marinas



## Information:

Plastic use, sources,  
alternatives & impacts

Business Models for  
Waste to Energy/Value

Implications of bans,  
alternatives

Barriers to Private  
Sector Involvement



## Enabling Environment:

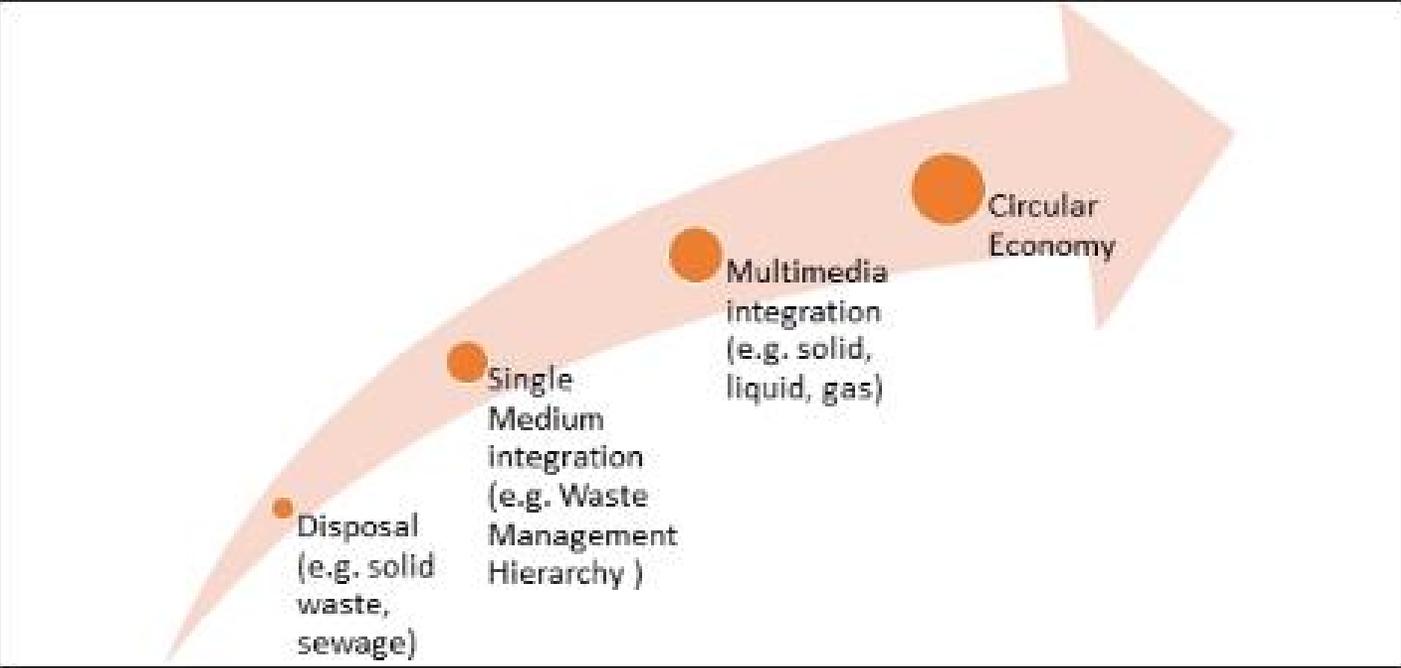
Policy, Legislation &  
Enforcement

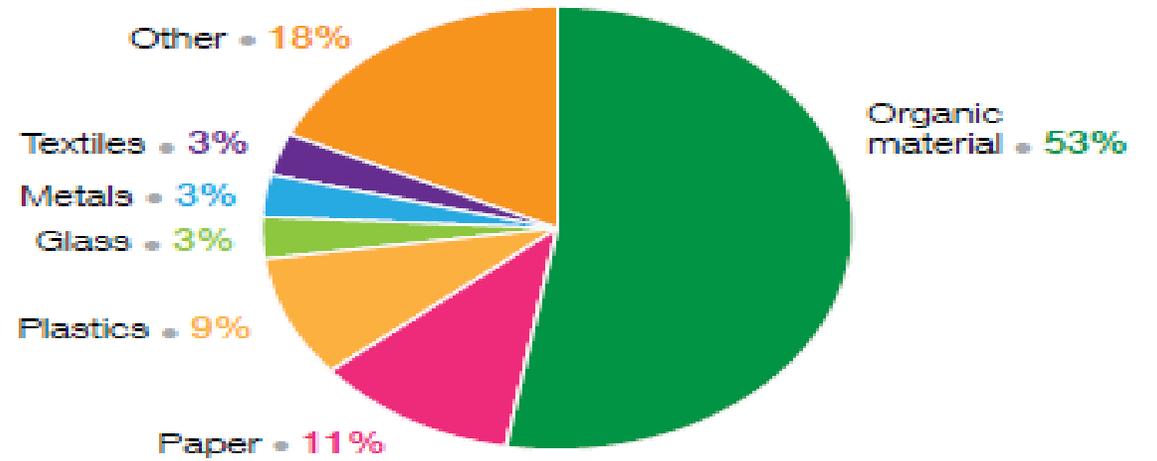
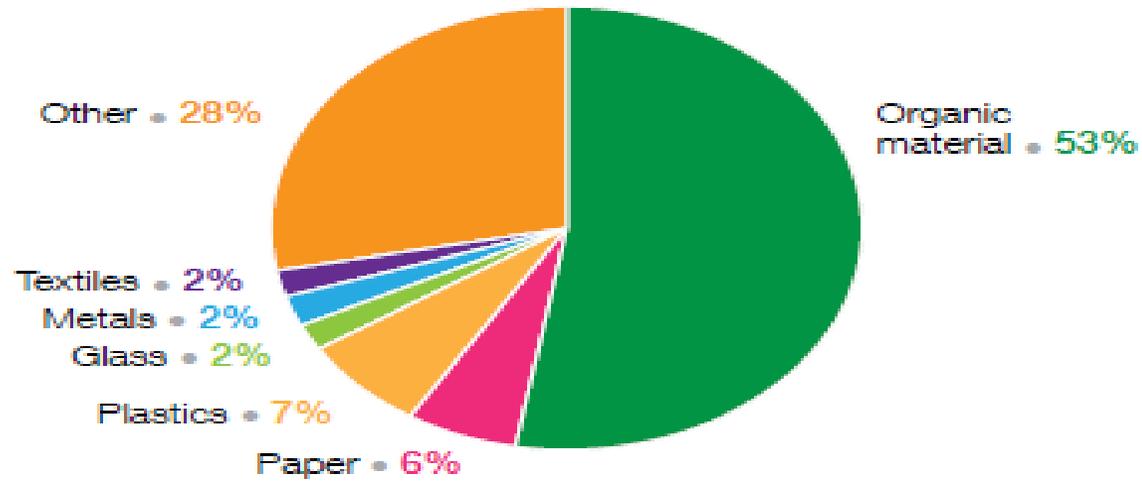
Awareness, Attitudes &  
Behavior

Political Priorities

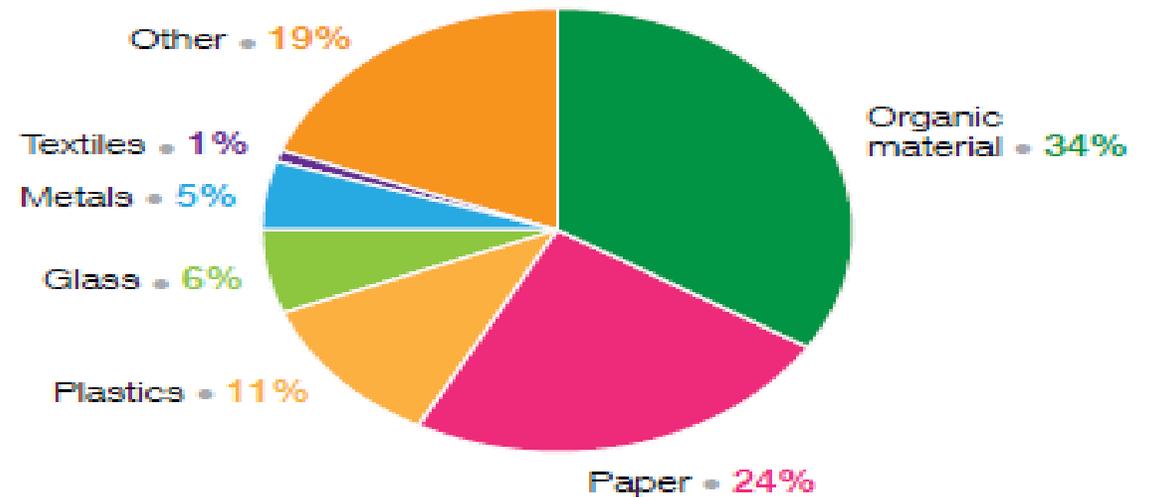
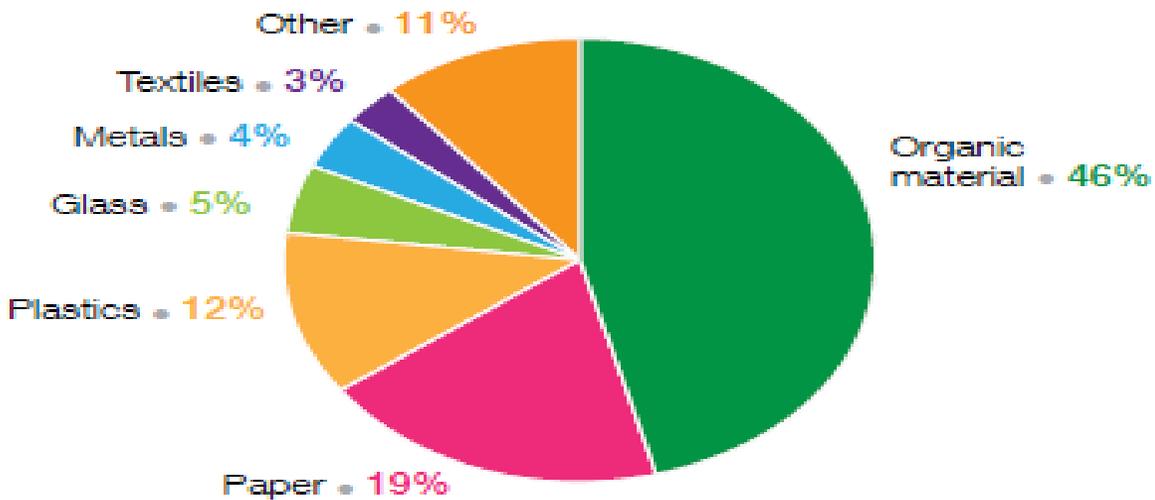


Trinidad and Tobago	High income
Turks & Caicos	High income
US Virgin Islands	High income
St Kitts & Nevis	High income
St Maarten	High income
Anguilla	High income
Antigua and Barbuda	High income
Aruba	High income
The Bahamas	High income
Barbados	High income
Bermuda	High income
British Virgin Islands	High income
Cayman Islands	High income
Curacao	High income
Haiti	Low income
Belize	Upper middle income
Cuba	Upper middle income
Dominica	Upper middle income
Dominican Republic	Upper middle income
Grenada	Upper middle income
Guyana	Upper middle income
Jamaica	Upper middle income
Montserrat	Upper middle income
Saint Lucia	Upper middle income





**INCOME**





# STATUS OF STYROFOAM AND PLASTIC BAG **B**ANS IN THE WIDER **C**ARIBBEAN **R**EGION

**UN**  
environment



News > World

# Dominica will ban plastic straws and styrofoam by January 2019

The Caribbean nation is still recovering after Hurrigan Maria

Chris Riotta New York | @chrisriotta | Friday 10 August 2018 19:25 | 1 comment



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# Gov't Bans Single-Use Plastic Bags, Plastic Straws and Styrofoam

By Alecia Smith September 18, 2018



Photo: Rudranath Fraser

Starting January 1, 2019, the Government will be imposing a ban on the importation, manufacture, distribution and use of specific categories of plastic packaging materials.

These include single-use plastic carrier/shopping bags; expanded polystyrene foam, commonly referred to as styrofoam; and plastic drinking straws.

Minister without Portfolio in the Ministry of Economic Growth and Job Creation, Hon. Daryl Vaz, who made the disclosure at a press conference at Jamaica House on Monday (September 17), said the restriction has become

# Single-use plastic banned by 2020

Health, Local, The Big Story | April 24, 2018 | Theo Sealy

**By 2021 Costa Rica Will be the First Country to Eliminate Single-Use Plastics**

*It will become a pioneer of this kind of 'green' initiative*

By Mercedes Landa - July 20, 2017 | 134 | 6



SEA VOICE NEWS

HOME CONSERVATION CORAL REEFS ENERGY POLLUTION WILDLIFE

POLLUTION

# Belize To Ban Single-Use Plastics By Earth Day 2019

March 23, 2018 | By Alex Larson | Leave a Comment



<b>National Ban</b>	<b>Local Ban</b>	<b>Ban Announced</b>
<b>Ban in Discussion (Gov't)</b>	<b>Ban in Discussion (Public)</b>	<b>No Data</b>



**Our Map**

# Towards a Plastic-Free Caribbean Sea!



# Discover our Interactive Map!



Visit us at [www.unenvironment.org/cep](http://www.unenvironment.org/cep)

## The Bans in the Region



In Jamaica, as of 2015, each person has been using almost 500 plastic bags annually, an estimated 75 per cent increase from 2011.

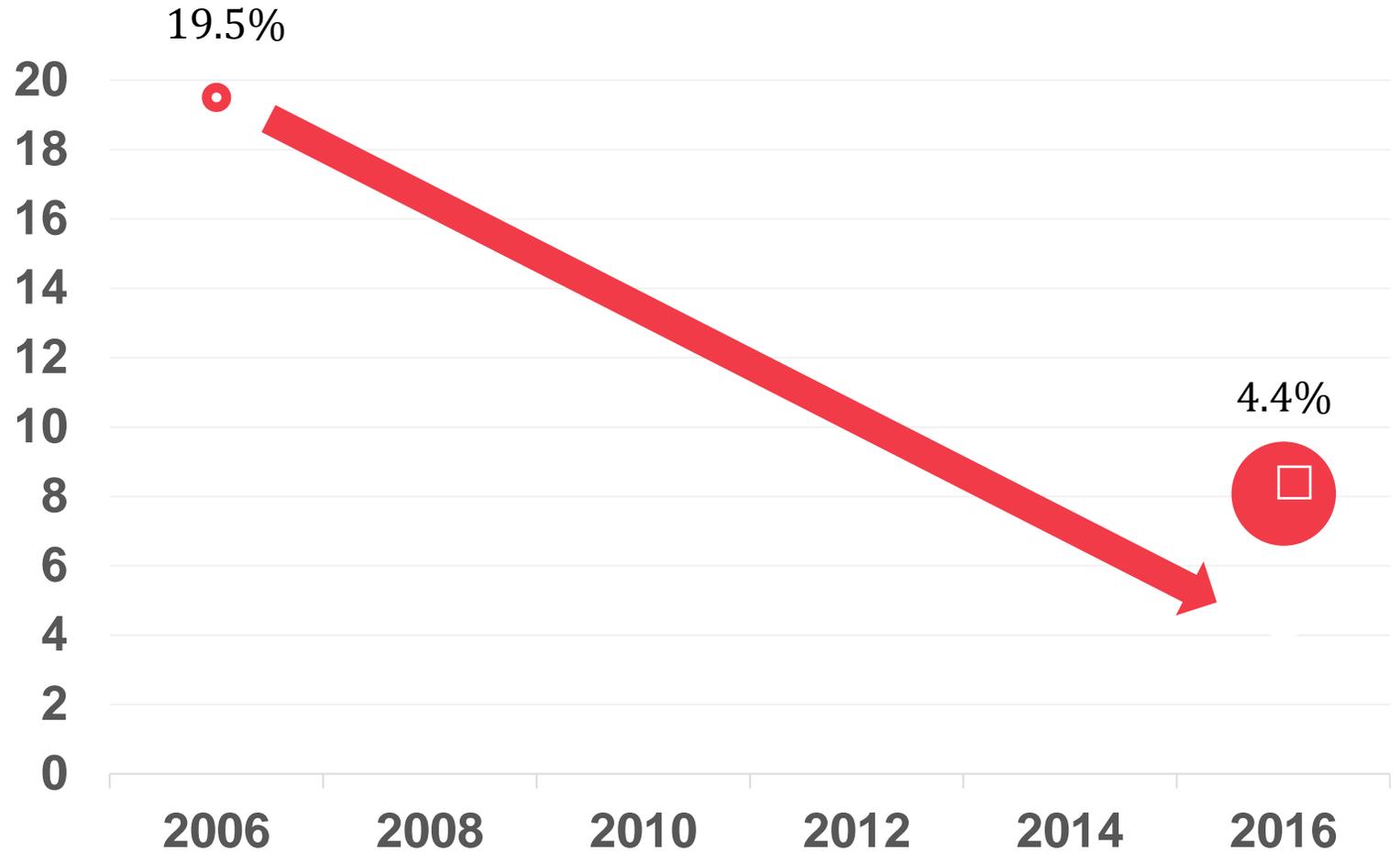
# The Bans in the Region



Antigua and Barbuda



### Composition of plastic at landfill (%)





# Part 4 Education & Outreach



I'm With Nature



WORLD ENVIRONMENT DAY



presents  
in support of World Environment & World Oceans Day 2017



JAMAICA

**BE "PLASTIC AWARE"**

**Shopping Challenge**



10 am- 2 pm  
General Food Supermarket  
Liguanea

**Thursday, June 8, 2017**

Thank you to our sponsors:  
The Canadian High Commission



RECYCLING PARTNERS  
OF JAMAICA LIMITED



Island Grill

Environmental Exhibitions  
Fun Plastic Challenges  
Prizes & Giveaways  
Have fun while you shop!













**Kingston**  
Before it's too late!

PICK-UP

Rebirth  
Please!

Don't  
Waste!

TAKE

Domino's  
Pizza

Krispers

Drink out  
a Grukette  
95M

69

90

WASH  
HANDS

Think of the  
*Possibility*







Part 5

# National & Community Actions

# Policy Solutions: Solid Waste

SIDS Specific  
Solutions

Sustainable  
Financing

Regional Plan

Awareness –  
Behaviour  
Change

Climate  
Change

# Policy Solutions: Plastics

<b>Promote</b>	Elimination of problematic or unnecessary plastic packaging and/or products
<b>Encourage</b>	Reuse models where relevant, to reduce the need for single-use plastic packaging and/or products
<b>Incentivize</b>	Use of reusable, recyclable, or compostable packaging
<b>Increase</b>	Collection, sorting, reuse, and recycling rates
<b>Facilitate</b>	Establishment of the necessary infrastructure and related funding mechanisms/cost recovery
<b>Stimulate</b>	Demand for recycled products including plastics

# Activities of the GPML-Caribe

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Link Between Marine Litter and  
Zika



## Relationship between cases of ZikV & marine debris density

Human Health



# Microplastics in Fish

**Microplastics in the Caribbean**

Microplastics are plastic fragments typically smaller than 5mm.<sup>1</sup>

There are different types originating from various sources.

Because plastic does not decompose, they just get infinitely smaller.

**Where do microplastics come from?**

- Microbeads:** Microbeads are small plastic granules manufactured and used in personal care products such as toothpaste and facial cleansers.
- Microfibers:** Microfibers can come from washing your (semi) synthetic clothing, resulting in fibers ending up in our oceans and seas.
- Nanoplastics:** The smallest particles, called nanoplastics, are a result of marine debris breaking down over time. They are in the range 0.2 - 2mm.<sup>2</sup>

**A recent study in Grenada on microplastics in fish showed:**

- All species examined contained plastic.\*

**St. George's University**  
THINK BEYOND

**Examined species:** Red Snapper, Red Hind, Mutton Snapper, Barracuda, Blue Runner, Mahi Mahi, Yellowfin Tuna, Lionfish

**1 out of 34 fish tested had no microplastics**

**80** Highest number of microplastics from a single fish/sample (Lionfish)

**9.9** Average number of fibres per Kg of the fish's total weight

**11.3** Average number of microplastics per fish/sample

**The species with most microplastics was the Lionfish**

**We eat all of the fish shown to contain microplastic!**

**Health hazard?**

- Very little is known about the long-term effects of consuming fish with microplastics.
- Plastic is made from oil and contains toxic materials like pesticides, which can have neurotoxic effects.<sup>3</sup>
- A single microplastic can absorb up to 1,000,000 more toxic chemicals compared to the water around it.<sup>4</sup>

\* Copyright by S. D. R. Adams, E. Parker and Dora E. Wirths, 2017. Microplastic is increasingly ingested fish from Grenada, W.I. Food and Agriculture Organization, FAO, 2017, 26-30.

1. Cole, J. et al (2011). Microplastic concentrations in the marine environment: A review. Marine Pollution Bulletin, 62, 102-110.

2. Gnanaprakasam, S. et al (2011). Microplastic in the marine environment. Marine Pollution Bulletin, 62, 102-110.

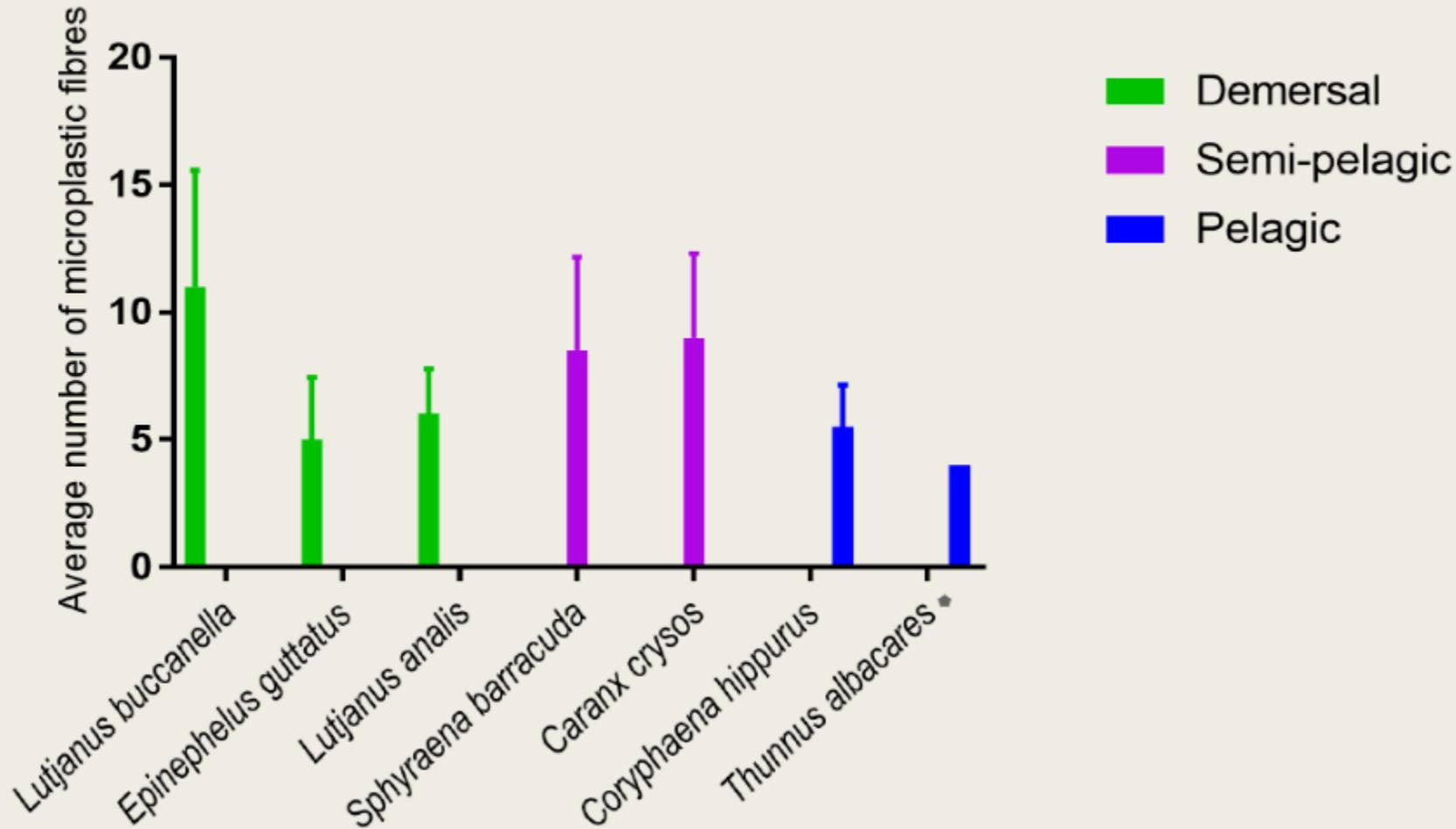
3. The 2015 Greenpeace report: Microplastics: From the supermarket shelves to our stomachs. <http://www.greenpeace.org/usa/our-work/microplastics>

4. <http://www.fox.com/news/2015/01/20/microplastic-could-absorb-toxic-chemicals-1.20150120/>

© 2018, Dr. P. J. van Duyn, Dr. E. Parker, Dr. Dora E. Wirths

# Results – Fibres

## Microplastic in Commercially Exploited Fish from Grenada, West Indies



\* *Thunnus albacares* n=1

Average number of micro-plastic fibres found in each species of fish. Error bars indicate the mean  $\pm$  S.E.M.



Part

6

Where do we go from here?



**RECYCLING**



**Plastic Bottles ONLY**

Sandals FOUNDATION  
UN Environment  
nep

**COMPOST**



**Grass · Vegetables · Peels**

Sandals FOUNDATION  
UN Environment  
nep

**GARBAGE**



**Trash ONLY**

Sandals FOUNDATION  
UN Environment  
nep



## The Global Partnership on Marine Litter – Caribbean Node

The GPML-Caribbean Node represents a partnership for national and regional organizations, governments, research, and technical agencies and individuals, that work together to reduce the quality and impact of marine litter in coastal zones of the Wider Caribbean Region.

[Read about the Node >](#)



[www.gpml-caribe.org](http://www.gpml-caribe.org)

STUDIES PREDICT THAT

by 2050, there will be more plastic than fish in the world's oceans



Environment and  
Climate Change Canada



# Strategic Planning for Marine Litter Activities in the Caribbean Region

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**Sustainability**

Four Themes

Research and  
Monitoring

Governance

Communication

Capacity  
Building &  
Training

### **Pollution (LBS) Protocol**

Marine Litter/Plastics included as priority pollutant - SDG 14.1

### **Research**

Impacts of plastic on human & ecological health included associated economic costs.

### **Sustainable Consumption & Production**

Solid waste generation is expected to increase; Reduction of the influx of waste is required as well as change in consumption; Appropriate Technologies;

### **Integrated Waste Management**

The new Rs – Refuse, Repurpose, Re-engineer; Land & Marine-Based Sources;

# THANK YOU



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Caribbean Environment Programme  
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**Website: [www.unenvironment.org/cep](http://www.unenvironment.org/cep)**

**Facebook: UN Environment-Caribbean Environment Programme**

**Twitter: @UNenvironm\_CEP**

