FWC SERVICES FOR THE IMPLEMENTATION OF EXTERNAL AID (SIEA) 2018

Lot 2 - Infrastructure, sustainable growth and jobs

Short-term expert support to assess and define opportunities for action in the field of solid waste management (SWM) in the Caribbean

FWC SIEA 2018- LOT 2

EuropeAid/138778/DH/SER/multi

SIEA 2018-445

Final report

17 May 2021

This project is funded by the European Union

Project implemented by
Luvent in cooperation with Prospect C&S

CONSORTIUM
SAFEGE FWC-Lot2

Project Title:	**Short-term expert support to assess and define opportunities for action in the field of solid waste management (SWM) in the Caribbean**		
Project No.:	**FWC SIEA2018 – LOT 2** **EuropeAid/138778/DH/SER/multi** **Request: 2018-445**		
Country:	**The Caribbean – CARICOM countries** (Antigua and Barbuda, Bahamas, **Barbados**, Belize, Dominica, **Grenada**, **Guyana**, Haiti, **Jamaica**, Montserrat, Saint Kitts and Nevis, **St. Lucia**, Saint Vincent and the Grenadines, Suriname, and Trinidad and Tobago)		
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List of abbreviations

ACP	African, Caribbean and Pacific (states)
AFD	French Development Agency (Agence Française de développement)
CA	Contracting Authority
CARICOM	Caribbean Community
CARIFORUM	The Caribbean Forum
CRIS	Common External Relations Information System
CWWA	Caribbean Water and Wastewater Association
DRS	Deposit Return Scheme
EC	European Commission
ECLAC	Economic Commission for Latin America and the Caribbean
EDF	European Development Fund
EEAS	European External Action Service
EPA	Economic Partnership Agreement
ESG	Environmental, Social and Governance
EUD	European Union Delegation
GIZ	German Corporation for International Cooperation (Deutsche Gesellschaft für Internationale Zusammenarbeit)
GPA	Global Programme for Action for the Protection of the Marine Environment from Land-based Activities
HDI	Human Development Index
HQ	Headquarters
IDB	Inter-American Development Bank
IN	Inception Report
KE	Key Expert
MEA	Multilateral Environmental Agreements
NUVI	Nueva Vida para los Residuos (New life for Waste)
OECS	Organization of Eastern Caribbean States
PPP	Public-Private Partnership
SICA	Sistema de la Integración Centroamericana
SIDS	Small Island Developing States
SWM	Solid Waste Management
ToR	Terms of Reference
UNEP	United Nations Environment Programme
WB	World Bank
WS	Waste System
WtE	Waste to Energy

1. Introduction

1.1. Context

Solid Waste Management (SWM) is an increasingly urgent challenge for the Caribbean region. Each day, tons of solid waste are either burnt in the open air or discarded in open-air dumps, local waterways, or in the environment. Eighty-percent of marine litter in the Caribbean comes from land-based sources of solid waste, mainly plastics. The failure to better manage solid waste has grave public health and environmental impacts, as well as economic costs, not least given the importance of tourism to many of the region's economies.

Forbes magazine declared the Caribbean islands as the largest per capita polluters in the world. SWM has been a moving target over the last decades[1], as the quality and composition of the waste stream has altered significantly since the late 1980s, while at the same time quantities have dramatically increased; solid waste has changed from the dense and almost completely organic waste associated with agricultural economies to the less biodegradable waste produced in industrialized economies. Recent studies conducted by UNEP[2] project exponential growth (more than 60 per cent by 2025) in the generation of waste in the region, due to global trends such as population growth and increased urbanisation, increased per capita incomes, tourism and hospitality-related activities, along with unsustainable patterns of production and consumption characterizing a linear economy.

The Caribbean is the second most plastic-contaminated sea in the world after the Mediterranean Sea[3] with estimations of the volume of plastic waste in this area ranging from 600 to 1,414 plastic items per square kilometre in different locations. In the Caribbean, as recorded in annual campaigns of marine litter collection from 2006 to 2012, the five materials with the greatest presence were: plastic drink bottles (19.6%), plastic and paper bags (16.9%), caps and tops (11.4%), utensils, dishes and glasses (9.6%), and drink glass bottles (6.7%).

While a diverse grouping of Small Island Developing States (SIDS), the countries targeted by the present assignment face certain common challenges in the implementation of sound, sustainable SWM. Growing urbanisation and rising consumption within linear economic patterns are multiplying the output of waste. As SIDS, the countries' populations and territories are often dispersed and remote, rendering the logistics of waste processing challenging and costly. Meanwhile, at both the national and regional levels, no appropriate legislative framework, effective technical solutions or – crucially – holistic strategic planning have been developed to fully overcome these challenges.

Waste profiling is rather limited in the region due to the scarcity of data; a recent UNEP report[4] (covering 8 Caribbean countries: Belize, Cuba, Dominican Republic, Haiti, Saint Kitts and Nevis, St. Lucia, St. Vincent and the Grenadines, and Trinidad & Tobago) highlights the opportunity for the region, and proposes a set of actions around efficient waste management that would enable the transition towards a circular economy model.

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1 *Caribbean Environment Outlook, UNEP – EC 1999*

2 *Waste Management in LAC – page 23 UN Environment + Study UNEP 2016*

3 *GEF Global Environment Facility project scoping mission 2020 - "Reduce marine plastics and plastic pollution in Latin American and Caribbean cities through a circular economy approach"*

4 *UN Environment (2018). Waste Management Outlook for Latin America and the Caribbean. United Nations Environment Programme © Shutterstock.com Latin America and the Caribbean Office. Panama City, Panama* https://wedocs.unep.org/bitstream/handle/20.500.11822/26448/Residuos_LAC_EN.pdf?sequence=2&isAllowed=y

The EU recognises SWM as one of the major challenges to sustainability in the Caribbean and an important area of activity for the EU-CARIFORUM partnership in developing sustainable and environmentally friendly development throughout the Caribbean, while building on existing international frameworks such as the London Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter[5], the Global Programme for Action for the Protection of the Marine Environment from Land-based Activities[6] (GPA), the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes[7] or the MARPOL Convention[8]. The present assignment aims to assist the CARIFORUM countries and Cuba to meet this challenge, in partnership with the EU. Its analysis of existing legislative frameworks and field research into current solutions and challenges, and its identification of innovative and holistic technical, legal, and policy interventions will facilitate development of an effective SWM regime, including the promotion of circular economic patterns.

The assignment takes place within the cooperation framework of the ACP-EU Cotonou Agreement, the CARIFORUM-EU Economic Partnership Agreement (EPA) and the joint Caribbean-EU partnership strategy, and be guided by the principles underlying the European Green Deal[9] and its external cooperation dimension through European Green Deal diplomacy and the Circular Economy missions[10]. It will also support relevant interventions by the UNEP, GIZ, and AFD[11], implementation partners for the EU's support to the effective and sustainable management of Solid Waste in the Caribbean.

1.2. Objective and Scope of the Study

The present assignment takes place within the cooperation framework of the ACP-EU Cotonou Agreement, the CARIFORUM-EU Economic Partnership Agreement (EPA) and the joint Caribbean-EU partnership strategy, and is guided by the principles underlying the European Green Deal[12] and its external cooperation dimension through European Green Deal diplomacy and the Circular Economy missions[13].

The assignment aims (**global objective**) to provide technical assistance to CARIFORUM and EUD Barbados in the identification of opportunities for policy development and implementation of innovative interventions to improve SWM systems in selected Caribbean countries (CARIFORUM states and Cuba), paving the way for future circular economy investments in the region. It also aims to provide support to the UN Environment Programme, GIZ, and AFD on the formulation of the interventions to be planned in the framework of the EU Annual Action Programme 2020 in favour of the Caribbean Region: *Support to the effective and sustainable management of Solid Waste in the Caribbean* (CRIS number FED/2019/041964), financed under the 11th European Development Fund, currently in its final stages of operationalization.

In particular, the **specific objectives** (SO) of this assignment are presented in ***Figure 1***. It should be noted that, in the course of several meetings with EUD Barbados during the inception phase,

5 https://treaties.un.org/doc/publication/unts/volume%201046/volume-1046-i-15749-english.pdf
6 https://sustainabledevelopment.un.org/partnership/?p=7432
7 http://www.basel.int/theconvention/overview/tabid/1271/default.aspx
8 *https://www.imo.org/en/About/Conventions/Pages/International-Convention-for-the-Prevention-of-Pollution-from-Ships-(MARPOL).aspx*
9 https://ec.europa.eu/info/strategy/priorities-2019-2024/european-green-deal_en
10 *See among others,* http://ec.europa.eu/environment/circular-economy
11 *Annual Action Document 2020 - Caribbean Region: Support to the effective and sustainable management of Solid Waste in the Caribbean, CRIS number FED/2019/041964, financed under the European Development Fund*
12 https://ec.europa.eu/info/strategy/priorities-2019-2024/european-green-deal_en
13 *See among others,* http://ec.europa.eu/environment/circular-economy

the importance of going beyond the mandate of the initial Terms of Reference was emphasized, in order to bring consistency and deep analysis to a number of thematic issues. As such, SO4 was partially revised with respect to the original TORs (and Technical proposal submitted), to integrate the provision of support to the EUD and the implementing partners of the EU-CARIFORUM Regional Waste Management Programme for further definition of the scope and appropriate implementation modalities for actions to be implemented under the programme. The mission thus supported EUD Barbados in the preparation of the activities to be undertaken to support SWM systems in the Caribbean countries to better align with circular economy principles and Nationally Determined Contributions, and to be better able to attract green/sustainable investments in the sector.

SPECIFIC OBJECTIVE 1	• To undertake a **comprehensive review of the legislative frameworks for Solid Waste Management in the Caribbean** inclusive of regional and country-level strategies, plans of action and requirements/guidelines to determine the gaps and opportunities for legal and institutional strengthening.
SPECIFIC OBJECTIVE 2	• To **assess and map all SWM actions and programmes** in the region (past and ongoing) to determine their scope, impacts and areas in which additional interventions may be necessary to address priority needs.
SPECIFIC OBJECTIVE 3	• To undertake a **full stakeholder needs assessment** towards provision of recommendations for next steps.
SPECIFIC OBJECTIVE 4	• To **develop a regional baseline assessment report and to facilitate the practical implementation of the identified pilot projects in St. Lucia and the Dominican Republic**, and ensure they best add value, align effectively with the baseline recommendations, and analyse further opportunities to replicate pertinent pilot activities at the regional level.
SPECIFIC OBJECTIVE 5	• To further develop 3 synthetic action fiches for 3 thematic subjects for further potential pilot activities

Figure 1: *Specific objectives of the present assignment*

In line with the objectives of the Action Document[14] identifying the actions to be funded under the 11th EDF Waste Management Regional programme, the analysis and recommendations of the mission will contribute to tackling the questions of:

- ER 1: development of robust SWM legal and strategic frameworks
- ER 2: enhancement of the capacity for sustainable consumption and sustainable SWM
- ER 3: facilitation of investment opportunities in circular economy, and in SWM in particular
- ER 4: increased awareness of the EU-CARIFORUM partnership, including in the SWM and circular economy fields.

In addition, a fifth specific objective (SO5) aimed at the preparation of three action fiches on marine litter, sustainable tourism and eco-ports was also added to the study.

[14] *Annual Action Document 2020 - Caribbean Region: Support to the effective and sustainable management of Solid Waste in the Caribbean, CRIS number FED/2019/041964, financed under the European Development Fund*

It should be noted that while these specific objectives, intended to provide comprehensive information on SWM regarding legislative frameworks, ongoing and past SWM initiatives, applied to all 17 target countries (*16 CARICOM countries and Cuba*), there was a specific focus on the six target countries where virtual "field missions" were undertaken, namely, Barbados, St. Lucia, Grenada, Jamaica, Dominican Republic, and Guyana, for which a more in-depth assessment was undertaken. This resulted in differentiated treatment of these six countries, relative to the 17 as a whole, within the outputs.

1.3. Objective and Structure of the Report

The present report responds to the Final Report, and brings together all activities undertaken as part of Output 2 and Output 3 towards the completion of the comprehensive regional assessment of SWM in the Caribbean in fulfilment of specific objectives SO1 to SO5. It describes first the data collected, stakeholders consulted and consultation process followed, the analysis of existing legal and regulatory frameworks, common major constraints and opportunities in SWM in the region, in particular in the six focus countries, and key SWM programmes/initiatives put in place in the region, among other aspects in fulfilment of specific objectives SO1, SO2 and SO3. Secondly, on the basis of the analysis of areas for feasible policy and action at the national and regional levels, an analysis of the AFD, GIZ and UNEP activities under the 11th EDF EU-CARIFORUM Regional Waste Management Programme, as well as in-depth analysis on marine litter, sustainable tourism, and eco-ports, undertaken in fulfilment of specific objectives SO4 and SO5, it presents a set of recommendations related to institutional and policy development initiatives, technical interventions to address the national and regional needs identified, so as to encourage the development of effective SWM regimes and the promotion of circular economy patterns, and specific recommendations for the practical implementation of the AFD, GIZ and UNEP activities.

Following this introduction, the report is structured in 13 additional sections as follows. ***Section 2*** summarizes the methodological approach followed in the assessment process. ***Section 3*** presents the regional and national assessment of SWM systems in the Caribbean, followed by the assessment of the legal and regulatory frameworks for SWM presented in ***Section 4***. In ***Section 5***, an overview of the most important regional and national SWM initiatives is provided, while ***Section 6*** describes the involvement of the private sector in SWM in the region. ***Section 7*** documents the tools and new initiatives developed and implemented by regional and international organizations. ***Section 8*** presents the lessons learned drawn from sector studies carried out in the region as well as a summary of relevant best practices in SWM. ***Section 9*** summarizes the main gaps to be bridged. ***Section 10*** presents the main recommendations at the regional and national scales while ***Section 11*** presents the recommendations on the EU Programme. ***Section 12*** introduces the Action Fiches developed for the three thematic areas, namely, marine litter, sustainable tourism and eco-ports, while ***Section 13*** presents a regional pilot action for plastic recycling. Finally, ***Section 14*** provides a summary of the assessment, while ***Section 15*** regroups the Annexes.

2. Methodological approach

2.1. Overall approach of the study

As previously noted, the TOR for this study were revised to incorporate a deeper analysis on a number of specific thematic issues. In line with the revised TOR and the Technical Proposal submitted, the methodological approach followed throughout the study was structured around the following four core tasks:

Task One: Organize the collection of data in the target countries to enable subsequent tasks.

Task Two: Analyse legal and strategic frameworks (at national and regional level) and lessons learnt from current projects and gaps to be bridged.

Task Three: Gather as much relevant field data as possible, namely through the practical organization of the various field missions themselves. These field missions will include interviews of key stakeholders, such as ministry officials and agency representatives, operational stakeholders (both public and private sector), as well as visits to current projects and installations.

Task Four: Following the field missions, analyse data from field research activities, and further detail the country/regional analysis in order to develop a comprehensive regional assessment report.

In the following sections, the specific activities carried out as part of each of these tasks are described.

2.2. Focus countries for in-depth assessment

As per the TOR, the assignment had a specific focus on six countries. Five of them, Barbados, St. Lucia, Grenada, Jamaica and the Dominican Republic, were already identified in the TOR while a 6th country was to be agreed with the EUD following the desk study. As indicated in the Inception Report, Guyana was selected as the 6th country of the assignment.

The selection of Guyana was done on the basis of an evaluation of all remaining target countries against defined, transparent criteria (*including the presence and level of EU diplomatic representation; UNDP Human Development Index score; size of urban population; nature of existing SWM infrastructure; total population over 100,000 inhabitants* – see ***Annex 7*** of the Inception Report for a description of the analysis and criteria used for the selection of the sixth country). While Guyana placed third-highest in the resulting ranking, the top two countries, Haiti and Trinidad and Tobago, were not selected due to the fact that there were other SWM projects already in operation (*in the case of Haiti*), and because of COVID-19-related closure to external travellers (*in the case of Trinidad and Tobago*).

2.3. From field missions to online interviews

Given the ongoing COVID-19 situation and the travel restrictions imposed, as well as both the fundamental priority of the safety of the Team of Experts and of all of their interlocutors in the CARICOM member states[15] and the unacceptable reputational risk of causing an outbreak in the visited countries, during the meeting between the Contractor Leading Partner (Luvent) and EUD Barbados on 3 November 2020, it was finally decided not to physically undertake the field missions to the six target countries.

The methodological approach of the overall assessment was therefore modified to move from face-to-face meetings that would have been held during the field missions to virtual meetings with stakeholders.

To compensate for the missed face-to-face meetings, reinforced backstopping support – a dedicated technical/IT team – was provided by Luvent in order to help experts reach a larger number of stakeholders and ensure the quality of communication and exchanges. **Corporate Zoom facilities** were used to facilitate communication with the stakeholders.

15 *Including prevention and protection against pandemics, but also avoiding situations where the experts could face lockdowns in target or intermediary countries due to either unexpected outbreak of Covid-19 or quarantines due to reinforced rules.*

2.4. Activities undertaken towards the completion of the regional assessment

A comprehensive set of activities involving data collection, field research and stakeholder consultations was undertaken as part of each of the tasks previously outlined.

An extensive literature review, data collection exercise and desk analysis were undertaken in order to identify the main information and stakeholders in the sector and collect the necessary SWM data for the completion of the *Country Assessment Profiles* for the 16 CARICOM countries and Cuba, develop regional assessments, and perform more in-depth analysis for the six focus countries, namely, Barbados, St. Lucia, Grenada, Jamaica, Dominican Republic, and Guyana.

In light of the travel restrictions imposed by COVID-19 and the impossibility to undertake the field missions to the focus countries, the stakeholder consultations were carried out by means of virtual meetings and questionnaires sent to key stakeholders (see ***Annex 2 and Annex 3***), with a view to assess the existing gaps and possible strategies to bridge these gaps, and identify best practices in the region and means through which they were implemented.

An important step in this process was the exchange undertaken with the partners of the 11th EDF EU-CARIFORUM Regional Waste Management Programme, AFD, GIZ and UNEP, on their pilot projects' preparation and challenges. An in-depth analysis of the forecasted actions under this programme, and in particular related to the pilot initiatives of the implementing partners, AFD and GIZ, in St. Lucia and the Dominican Republic was also undertaken.

One of the specific aspects of the assessment was the analysis of the legal and regulatory frameworks in relation to the SWM sector. To this end, the national frameworks in place and relevant existing regional regulations or policy development initiatives being undertaken were carefully examined.

Following the meetings held with the EUD/Reference Group, and noting the topics of special interest expressed by the Client, the analysis and recommendations of the Team of Experts go beyond the requirements of the initial Terms of Reference. As such, additional specialized high-level expertise was mobilized to facilitate the expanded work covering the additional aspects related to marine litter issues, sustainable tourism, potential developments for Corporate Social Responsibility, and the potential of developing the eco-ports concept for the Caribbean (under Specific Objective 5).

2.5. Main sources of data and information consulted

The data collected during the implementation of this study come from the following main sources:

- Documents received by the EU Delegation to Barbados;
- The High-Level Forum (virtual conference) organized by the Caribbean Water and Wastewater Association in November, 2020;
- Meetings with the implementation partners (AFD, GIZ and UNEP);
- Specific research led by the team;
- Questionnaires on principal SWM aspects sent by email to relevant stakeholders;
- Meetings with public and private stakeholders organized during the virtual missions in the focus countries;
- Additional meetings organized in the focus countries.

A list of the most relevant documents is included in ***Annex 1***.

2.6. Stakeholder consultations

As previously noted, in light of the travel restrictions imposed by COVID-19 and the impossibility to undertake the field missions to the focus countries, an extensive stakeholder consultation process was undertaken in an attempt to compensate for the lack of in-country face-to-face meetings. The stakeholder consultations were carried out by means of virtual meetings and questionnaires sent to key stakeholders.

The interviews conducted with the operational stakeholders during the virtual missions in the focus countries helped the team to better understand how SWM systems were working in the countries, where the main needs and challenges were, what projects were planned to improve the current context, and overall to assess the situation of SWM systems in the country. In particular, it was an opportunity to qualitatively evaluate the main SWM infrastructures existing in the country, such as the sanitary landfills, which could be used as a basic indicator of specific technical development level. It was also worth to evaluate the various ways utilized in the different countries to divert waste from this final treatment through composting and recycling activities, important to promote circular economy principles in the countries. Although the interviews were finally carried out in a virtual manner, the consultants were also able to assess how SWM was considered politically and evaluate the level of willingness to make a step forward towards an improved situation. Overall, most of the countries were found to still have significant needs in terms of recycling, while quite a few were felt to be willing to move from the business-as-usual approach to SWM by a desire to put in place concrete actions in the following years.

In this sub-section, the stakeholder consultation process, main stakeholders consulted and conclusions from the consultations are described.

2.6.1. List of stakeholders consulted and main conclusions, needs and constraints for the development of actions in the SWM sector

A significant number of institutional and operational stakeholders (both from the public and private sectors) throughout the region were contacted in order to collect relevant information and documentation that was not readily available in existing public record sources. In addition to the 6 focus countries as set out in the initial Terms of Reference, stakeholders from the other 10 countries were also approached. The exchanges with EUD focal persons in the six focus countries assisted the team in the identification of relevant stakeholders to be interviewed. Further contacts were also made during the High-Level Forum organized by the Caribbean Water and Wastewater Association held in November 2020, and were followed by focused interviews.

The implementation partners of the EU-CARIFORUM Regional Waste Management Programme, AFD, GIZ and UNEP, were approached to request further documents on relevant initiatives in the Caribbean in general, and on pilot initiatives in St. Lucia and the Dominican Republic in particular, as well as to further identify additional relevant stakeholders to be interviewed. CARICOM, CARIFORUM, the OECS Commission and the Cartagena Convention Secretariat were also key interlocutors of the team experts. The full list of stakeholders consulted is included in ***Annex 2***.

2.6.1.1. Public stakeholders

Most public stakeholders responsible for SWM in the six focus countries were contacted and a series of interviews were carried out with some of them. These consultations allowed a better understanding of their current procedures and systems and existing capacity building needs for strengthening their institutional arrangements and developing new technologies.

In many countries, the public stakeholders operate in a rather centralized manner but always in close collaboration with the private sector from which a few companies are contracted to carry out collection and treatment services, sometimes with little cooperation with the city councils. This

approach has been working well in terms of efficiency, but perhaps fails to adapt to the local situations, especially in the rural or remote parts of the countries.

Authorities responsible for SWM tend to be focused on the day-to-day operational activities related to collection and treatment services, and lack perspective towards the promotion of a circular economy, even if in some instances a planning department tasked with this aspect exists. In general, for most countries some capacity building of government stakeholders is needed in the short-term to help them formulate and implement a SWM strategy/master plan for the country.

2.6.1.2. Private stakeholders

The private sector SWM stakeholders contacted were quite specialized, either in collection or treatment activities, but very few are actually involved in recycling activities even in the largest countries. Most of the SWM initiatives are local and usually put in place by quite small structures (1-20 employees), while there are certainly scope and opportunities for some of them to increase their size to more than 100 employees. They generally concentrate on waste collection activities, in partnership with or supported by the state.

A real need for capacity building in order to help the private sector take good and effective strategic decisions was evident in many cases. In particular, in relation to recycling, there is a real need to support and incentivize companies to take important decisions and drive the sector towards the integration of recycling activities, which will in turn need to be supported by suitable government policies towards recycling.

2.6.1.3. Programme partners

Several meetings were carried out with two of the implementation partners of the EU-CARIFORUM Regional Waste Management Programme, AFD and GIZ, both with project activities focused on plastic recycling currently at the conceptualization stage. Specific details on these two initiatives are included in ***Section 11***.

The GIZ project will focus on a set of activities to be implemented in the Dominican Republic that range from awareness raising to the implementation of pilot projects on the ground, in particular with the involvement of the private sector. Also, while the Dominican Republic will be selected for the piloting of these specific projects, the GIZ project also envisions the implementation of other activities intended to harmonize approaches for the whole Central American Integration System (*Sistema de la Integración Centroamericana, SICA*) region from the beginning, despite the differentiated contexts of the countries that comprise the region.

Given the current pressing need for collecting and recycling plastic waste in the small island States of the Caribbean Region, the AFD project will focus on replicating and scaling up the RePLAST initiative (*currently being implemented in Saint Lucia with funding from the French Embassy*) in Saint Lucia and in another country from the Eastern Caribbean region. In addition, in collaboration with the OECS, the project is also expected to bring a regional dimension (with some restrictions to the AFD eligible countries), in terms of opportunities for both replication of the collection scheme and markets for the secondary materials.

Meetings were also held with the third implementation partner, UNEP, to discuss its experience with both the legal and regulatory national contexts and the status of regional action. The representatives from UNEP assisted the team to gain further understanding on the current national and regional context, and helped in the identification of additional relevant stakeholders.

2.6.1.4. Other donors

Some other donors involved in SWM initiatives in some of the countries were also approached.

A major donor in the region involved in the SWM sector is the Japan International Cooperation Agency (JICA). JICA is present in several countries, but in particular in the Dominican Republic

and Jamaica. The agency seems to be mostly involved in legal and policy development and capacity building initiatives, as well as technical interventions on sanitary landfills, often as part of long-term programmes with several implementation phases and significant funding.

The Inter-American Development Bank (IDB) is also quite present in the region in relation to SWM initiatives. It is primarily focused on big SWM infrastructures, like sanitary landfills, and awareness rising initiatives, with activities that are sometimes implemented in collaboration with the Caribbean Development Bank (CDB). In some countries like the Dominican Republic, it also collaborates with JICA and manages and supervises the implementation of dedicated funds.

In addition to the EU-CARIFORUM Regional Waste Management Programme, AFD and GIZ are also involved in other countries with initiatives in other sectors such as urban development. Other bilateral donors like the Spanish Agency for International Development Cooperation (*Agencia Española de Cooperación Internacional para el Desarrollo, AECID*) and some of their regional agencies, have related projects (*i.e. in Cuba, where the Andalusian Agency for International Cooperation, the Cordoba City Council and the Cordoba municipal sanitation company support waste collection operations improvement*).

Some Embassies, such as the Embassy of France in Haiti, the Embassy of Spain in the Dominican Republic, the Embassy of The Netherlands in some of the Dutch islands as well as the British Embassy, were also identified as donors in the region. However, the projects related to SWM are usually limited to sporadic support for a given action, often to NGOs.

2.6.2. From field missions to questionnaires

In addition to the numerous interviews held with key stakeholders in the SWM sector, as indicated in the previous section, the team of experts developed a questionnaire to access more specific SWM information which was shared with relevant contacts via email. The questionnaire disseminated to stakeholders included a common framework of questions based on the template of the Country Assessment Profile developed and specific sections dedicated to the target countries. A sample of the questionnaire is included in ***Annex 3***.

For the in-depth analysis on marine litter, sustainable tourism, and eco-ports, undertaken in fulfilment of specific objectives SO4 and SO5, the Luvent team and experts created additional questionnaires for two of the three thematic topics, in order to collect information across the wider Caribbean region. Qualitative questionnaires were drafted, reviewed by the entire team of experts and translated into English and Spanish, with the objective of assessing:

- The general approach and situation of SWM in the respective topic fields;
- The level of understanding and knowledge of SMW legal and regulatory frameworks and other SMW initiatives locally and globally;
- The feedback on these frameworks and initiatives;
- Suggestions for improved SMW in the respective topic fields;

Samples of these questionnaires are included in ***Annex 9***. The questionnaires were sent to previously-identified actors in each topic and in each country.

- **In relation to sustainable tourism**, the objective of the questionnaire was to get responses from hotels chain headquarters and local hotels in the Caribbean. For this purpose, questionnaires were shared with:
  - Hotel chain headquarters (*e.g. Iberostar, Marriott, Riu, Radisson, Holiday Inn*), local hotels
  - Global, regional and national hotel and tourism associations
  - Hotel certification bodies e.g. Green Globe
- **In relation to Eco-ports**, the objective of the questionnaire was to get responses from maritime and port authorities and local ports in the Caribbean. For this purpose, the questionnaires were shared with:

- National maritime and port authorities' managers
- Local ports managers

The number of responses received for each thematic topic was 21 and 11, for sustainable tourism and eco-ports, respectively.

3. Country/Regional Assessment on SWM systems

3.1. Regional Assessment. All CARIFORUM Countries

3.1.1. Common issues related to Solid Waste Management in the Caribbean Region

The current context of SWM in the Caribbean Region is characterized by a combination of factors, which relate both to the overall problem of solid waste pollution itself, and to the challenges of creating an effective SWM approach in the region. Some of these factors include the diversity of SWM contexts and the disparate institutional frameworks across the region, the lack of coherent and comprehensive SWM frameworks and strategies/action plans at the national level, poor enforcement of legal frameworks, limited landfill capacity, limited financial resources and low public awareness and mismanagement of solid waste. These factors, which were pre-identified through the literature review and desk analysis process, were validated with relevant stakeholders during the stakeholder consultation process. They are presented in ***Table 1***, hereby.

ISSUE	DESCRIPTION
Diverse SWM contexts across the region	While there are notable commonalities in the experience of solid waste and its management across the region, there is also substantial variation in the waste production and management context in the different target countries. Two particular data points identified by the World Bank highlight this. Firstly, the rate of solid waste production ranges from 0.41 kg/capita/day in Suriname to approximately 1.70 kg/capita/day in Barbados, Bahamas, and St. Kitts & Nevis. Secondly, the urban waste collection rate varies from 12% in Port au Prince, to 85% in Santo Domingo, and 100% in Havana[16]. Disparate experiences and diverging contexts, emanating from a diversity of socio-economic conditions across the region, lead to unavoidable challenges in defining a unified, coherent regional approach.
High volume of waste untreated and rising trend in waste generation	In general, there are currently high volumes of municipal waste untreated or discarded in landfills in several countries in the region. This coupled with the raising trend of increased per capita waste generation throughout the region due to changing consumption patterns makes SWM a critical sector for the region's sustainable development.
Disparate institutional frameworks across the region	As the Inter-American Development Bank (IADB) notes, the SWM institutional frameworks are dissimilar from country to country – and indeed often outdated. Each country engages different types of actors in their SWM processes. This lack of uniformity is difficult to reconcile into a coherent, regional approach. It particularly raises substantial practical barriers to establishing common SWM infrastructure (*e.g. incinerators, recycling, composting plants*)[17].
Lack of coherent, comprehensive	SWM systems and frameworks are not only inconsistent at a regional level but also frequently disjointed and patchy at a national level. At present, few[18] of the target countries

16 *Kaza, Silpa; Yao, Lisa C.; Bhada-Tata, Perinaz; Van Woerden, Frank. 2018. What a Waste 2.0: A Global Snapshot of Solid Waste Management to 2050. Urban Development. Washington, DC: World Bank. © World Bank.* https://openknowledge.worldbank.org/handle/10986/30317 *License: CC BY 3.0 IGO*

17 *Rodrigo Riquelme, Paola Méndez, Ianthe Smith. 2016. Technical Note Nº IDB-TN-935 Solid Waste Management in the Caribbean Proceedings from the Caribbean Solid Waste Conference, Inter-American Development Bank , Water and Sanitation Division,* https://publications.iadb.org/publications/english/document/Solid-Waste-Management-in-the-Caribbean-Proceedings-from-the-Caribbean-Solid-Waste-Conference.pdf

18 *Such national frameworks exist, for example for Jamaica and Guyana*

national SWM frameworks	have a comprehensive national SWM framework, including definition of responsible authorities and clear targets for all SWM phases. In many cases, several institutions are involved in SWM activities, without a clear definition and demarcation of their respective roles, hindering coordination among stakeholders and sector efficiency. In other cases, there is no clear designation of the entity responsible for policy development, regulation or enforcement. Furthermore, collection and disposal activities are in some cases carried out by the regulator, which can create a loss of efficacy in the performance of SWM services[19].
Poor enforcement of (often outdated and patchy) legal frameworks	In many of the target countries, legal and regulatory frameworks are similarly disjointed. Not only are regulations and standards for SWM processes poorly defined and often non-operational but relevant legislation is also patchy and enforcement of penalties for offenders limited. Furthermore, SWM regulations in place require updating to match technological evolution in the sector[20].
Different tariff and taxation systems to support the SWM sector in the Caribbean	In many cases, government authorities finance the service of SWM. In Jamaica, the funding comes from the tax system. Other examples include Belize, where municipalities are financed by the property tax; in Barbados the Sanitation Services Authority is in charge of partially financing the service; in Trinidad and Tobago the SWM sector is directly supported by the government; in Haiti and Suriname, SWM services are paid for by the government; and in Guyana municipalities receive grants annually.
Logistical impediments	The overwhelming majority of the target countries are small island nations, featuring dispersed populations and territories. This scattering of small populations – and thus centres of solid waste production – across numerous island territories raises logistical challenges and transport costs, and impedes economies of scale[21].
Limited landfill capacity	Target countries typically feature highly limited land space for landfill (most common form of disposal in the region). Most sites are in coastal areas (together with centres of population). Such coastal dump sites threaten serious environmental impacts on coastal resources (*e.g. beaches, reefs, wetlands, groundwater sources*). These impacts are important for both local population and tourism sector vital to many of the national economies[22].
Limited financial resources	Development of more effective SWM is impeded by the target countries' often constrained financial resources. Modern SWM infrastructure and equipment are costly, requiring expensive equipment, machinery, and vehicles, with high maintenance costs, especially for collection infrastructure, which usually represents two thirds of total expenses. These sizeable outlays generally lose out to competing budgetary priorities. There is moreover likely limited appetite for a dedicated waste tax or similarly targeted fee to directly fund SWM, though this remains a possible solution[23].
Natural environment	In the Caribbean an average of 275,000 tons/day of waste are disposed of in open air dumps or end up in waterways. The region's natural environment shapes the impact of poor SWM. Approximately 22 percent of households dispose their waste directly into waterways, or on land exposed to the sea, from which waste is then washed into the sea. The environmental impact is considerable, damaging coral reefs and killing marine creatures, such as sea birds, fish and sea turtles. Furthermore, recent research suggests that around 90 percent of marine litter that enters the ocean remains close to the shore,

19 *Rodrigo Riquelme, Paola Méndez, Ianthe Smith. 2016. Technical Note Nº IDB-TN-935 Solid Waste Management in the Caribbean Proceedings from the Caribbean Solid Waste Conference, Inter-American Development Bank , Water and Sanitation Division,* https://publications.iadb.org/publications/english/document/Solid-Waste-Management-in-the-Caribbean-Proceedings-from-the-Caribbean-Solid-Waste-Conference.pdf

20 *Ibid*

21 *ECLAC. 2013. Municipal solid waste management in the Caribbean: a benefit-cost analysis. Willard Phillips, Elizabeth Thorne. Studies and Perspectives. UN ECLAC Sub-regional Headquarters for the Caribbean.*

22 *Ibid*

23 *World Bank. 2018. Municipal Solid Waste Management. A Roadmap for Reform for Policy Makers. Tokyo Development Learning Center. Daniel Levine and Coll.*
https://openknowledge.worldbank.org/bitstream/handle/10986/30434/130055-WP-P162603-WasteManagement-PUBLIC.pdf?sequence=1&isAllowed=y

	turning coastal environments into a sink for marine litter. This can cause serious economic losses for coastal communities, impacting tourism, shipping, fishing and aquaculture[24].
Low public awareness	Sensitivity to environmental concerns remains relatively low amongst Caribbean populations. Targeted awareness campaigns are lacking to promote behaviours (*e.g. separation at source, reduce, reuse and recycle*). Promotion of these behaviours, and application of rules/regulations is particularly weak in rural areas and isolated communities.

***Table 1**: Common issues related to SWM in the Caribbean*

3.1.2. Common SWM features according to state of development, territorial typology and size of Caribbean countries

In such a diverse region as the Caribbean, as reflected by the first two aspects included in the previous table, the diversity of SWM contexts and the disparate institutional frameworks across the region, it is also interesting to establish some commonalities between some of the countries in the region. The countries were therefore classified according to criteria that are relevant to the SWM sector. The following criteria were considered for this purpose:

- **State of development**, defined by the Human Development Index (HDI) of the country (according to UNDP figures);
- **Territorial typology**, island or continental territory;
- **Size**, according to the island surface (*where Small Islands are those with less than 5,000 km²; Medium Islands are those with surface between 5,000 and 20,000 km²; and Large Islands are those with more than 20,000 km²*);

The scoring of these criteria is presented in ***Table 2*** hereafter. The analysis of these criteria allows for the classification of Caribbean countries into four main categories, according to their territorial typology, namely, small Islands, medium islands, large islands and large continental territories/countries. The main SWM features and issues of these four groups of territories are presented in ***Table 3***:

- **Small islands**: Antigua, Barbados, Dominica, Grenada, Montserrat, St. Kitts & Nevis, St. Lucia, St. Vincent & the Grenadines;
- **Medium islands**: Bahamas, Jamaica, Trinidad& Tobago;
- **Large islands**: Cuba, Dominican Republic, Haiti;
- **Large continental countries**: Belize, Guyana, Suriname.

COUNTRY	STATE OF DEVELOPMENT (HDI[25])		TERRITORIAL TYPOLOGY	SIZE
Antigua & Barbuda	0.776	High	Island	Small
Bahamas	0.805	Very high	Island	Medium
Barbados	0.813	Very high	Island	Small
Belize	0.720	High	Continental	Large
Cuba	0.778	High	Island	Large
Dominica	0.724	High	Island	Small
Dominican Republic	0.745	High	Island	Large

24 *GIZ - Improving plastic waste management for a sustainable tourism development)*

25 *HDI (Human Development Index) is classified according to the following tiers: 0.800–1.000 (very high); 0.700–0.799 (high); 0.550–0.699 (medium); 0.350–0.549 (low) http://hdr.undp.org/en/content/human-development-index-hdi*

Grenada	0.763	High	Island	Small
Guyana	0.670	Medium	Continental	Large
Haiti	0.503	Low	Island	Large
Jamaica	0.726	High	Island	Medium
Monserrat	0.821	Very high	Island	Small
St. Kitts & Nevis	0.777	High	Island	Small
Saint Lucia	0.745	High	Island	Small
Saint Vincent & the Grenadines	0.728	High	Island	Small
Suriname	0.724	High	Continental	Large
Trinidad & Tobago	0.799	High	Island	Medium

Table 2: *Scoring of SWM criteria for Caribbean countries*

TERRITORIAL TYPOLOGY	COMMON SWM FEATURES
Small Islands	▪ Major group of the regional countries, with special representation in the Eastern part of the region (i.e. Eastern Caribbean States or "Lesser Antilles"). ▪ They are very small territories that are not densely populated (thus, with not very high solid waste generation based on their population size), characterized by an intermediate development level, with an HDI ranging from 0.724 to 0.821, and a mainly tourism-based economy. ▪ The SWM legislation and services are reasonably good, with almost full collection coverage and a central landfill which is often not managed sanitarily (except in Barbados, Grenada or Dominica). ▪ However, there is a major gap in relation to recycling (i.e. low recycling rates), mainly because of the lack of local industry and markets for recycled materials. There is also a high level of informality in the sorting and recycling sector.
Medium Islands	▪ Medium size territories (3) distributed throughout the region, not very densely populated except in the major cities, where the amount of solid waste is significant. ▪ They have an intermediate development level with an HDI ranging from 0.726 to 0.805. ▪ The SWM legislation and services are quite good with almost full collection coverage and a central landfill which is not managed sanitarily (exception in the Bahamas). ▪ As for the small islands, there is also a gap in relation to recycling, mainly because of the lack of local industry and markets.
Large Islands	▪ The large islands are located in the Western part of the region - "the Greater Antilles". ▪ They are very densely populated, therefore characterized by large amounts of SW. ▪ They also have an intermediate development level, except for Haiti, which, with an HDI of 0.503, has the lowest HDI in the Americas. ▪ The SWM legislation tends to be good in relation to tourism, but services do not always follow, with the exception of Cuba, which has quite a low collection rate and poor treatment. The gaps in these territories are therefore in collection, recycling and treatment.
Large continental countries	▪ The three countries located on the continent (in Central America and two in South America) are characterized by quite large territories. ▪ Their development level is quite low (HDI ranging between 0.670 and 0.724), pollution is quite scarce except in the capital city, thus amount of waste to be managed quite low. ▪ The SWM legislation is quite good and services are quite contrasted depending on the location, with a trend of improved treatment. Recycling is better due to the access of continental industry and markets, except for Guyana and Suriname, which are a bit isolated by the rainforest.

Table 3: *Common SWM issues and challenges of Caribbean countries on the basis of their territorial typology*

3.1.3. Country Assessment Profiles

As previously indicated, based on the extensive literature review (e.g. using WB, IADB, ECLAC and UNEP data), data collection exercise, desk analysis and information gathered during the stakeholder consultations, 17 *Country Assessment Profiles* were completed for the 16 CARICOM countries and Cuba, as a tool to report all the data that was being gathered for each of these countries. The Country Assessment Profile is therefore neither a survey nor a document to be circulated to the country focal points but was rather a canvas for the Team of Experts to document the country analysis, to direct interviews and further search for information. It is an executive summary assessing all countries in a standardized way, that provides consolidated information in terms of legal, regulatory and strategic frameworks, specific and common issues related to circular economy and sustainable development in general, and to SWM in particular. An additional policy review allowed for the identification of opportunities for further policy developments, which would assist in tackling investment barriers and the legislation that would support these investments.

The Country Assessment Profile is therefore intended as a tool for EUD Barbados and other Caribbean EU Delegations to monitor the transformation and latest developments in the circular economy; a live document that could be updated on a regular basis based on further resources and new developments in the sector.

The overall template of the Country Assessment Profiles has two main sections. A first section that provides and overview of the main characteristics of the country (see ***Table 4***), and a second section that provides an overview of the main features of the SWM systems in the country, including the status of legislative, technical and financial aspects, and main past and on-going initiatives, as well as main recommendations (*see **Table 5**, hereby*).

The Country Assessment Profiles for all 17 countries (*16 CARICOM countries and Cuba*) are included in ***Annex 4***.

GENERAL	RESULT	COMMENT
Official name		
International code		
HDI (cf. UNDP)		
Total population (cf. WB)		
Population growth rate (%)		
Main language		
Capital city		
Urban rate (%)		
Main city		
Population of main city		
Travel & Tourism Industry* CREST - Center for Responsible Travel www.responsibletravel.org (WWF / Food waste 2018)		
EU representation		
Possible funding partners		
Potential implementing partners		
Potential corporate partners (CSR, voluntary agreements, …)		
General observations		

***Table 4**: First section of the Country Assessment Profile – Overview of general characteristics of the country*

SWM SYSTEMS		
LEGISLATIVE ASPECTS	**RESULT**	**COMMENT**
National SWM framework, including collection and treatment regulations for SWM, if any		
Plastic ban* * UNEP / CEP		
Reception & Collection of Ship-Generated Wastes (SGW)** *RAC-REMPEITC Caribe		
Enforcement, Control and (environmental) Monitoring Systems		
National SWM authority		
TECHNICAL ASPECTS	**RESULT**	**COMMENT**
Household SW generation ratio		
Collection rate		
Recycling rate		
Existing pre-collection mode		
Existing collection mode		
Existing composting facilities		
Existing recycling facilities		
Existing final treatment facilities		
Main type of stakeholders		
FINANCIAL ASPECTS	**RESULT**	**COMMENT**
Annual budget required (USD / inhabitant)		
Participation form of population		
Coverage of expenses (%)		
TO-ACTION PART	**RESULT**	**COMMENT**
Past or current projects		
Key issues		
Type of projects needed		
Main recommendations		
Final considerations		

Table 5: *Second section of the Country Assessment Profile – Overview of SWM systems in the country*

3.2. Country-level assessment of focus countries

An in-depth assessment of the SWM systems has been undertaken for the six focus countries, namely, Barbados, St. Lucia, Grenada, Jamaica, Dominican Republic, and Guyana.

Annex 5 presents a summary of the main features of these systems in the different focus countries. The current management methods for major waste streams in each country are also described.

Specific information for each of the focus countries is also presented in the Country Assessment Profiles in ***Annex 4***.

3.3. Gap analysis and needs in SWM in the Caribbean

On the basis of the assessment undertaken, a number of gaps concerning the SWM systems in the region were identified. In a given context, it is generally accepted that there are some common requirements for good SWM such as:

- waste reduction;
- large collection coverage;
- diversion of recyclable waste;
- some recovery of the organic waste;
- sanitary final treatment.

It is therefore proposed to assess the gaps towards these basic requirements for the various groups of countries that share similar SWM contexts, as per the classification included in ***Section 3.1.1.*** and ***3.1.2.*** As such, ***Table 6*** hereby describes the main gaps identified for small islands, medium islands, large islands and large continental countries. The needs identified for support are easily derived from these gaps.

TERRITORIAL TYPOLOGY	GAPS IN SWM	NEEDS IDENTIFIED
Small Islands	▪ As reported before, there are some obvious gaps in waste diversion for recycling but also for composting. This represents a considerable challenge for small islands, given that the final treatment becomes difficult because of the lack of space and resources.	▪ Focus on domestic and central composting, allowing for the production of local fertilizers; ▪ Collect and prepare in-country recyclable waste as much as possible; ▪ Get connected to a potential regional recycling scheme. ▪ These needs should be supported by awareness-raising campaigns, to help the population get involved into waste separation, and capacity building to national and local authorities in each country.
Medium Islands	▪ The previous gaps identified about waste diversion for small islands are also valid for medium islands. ▪ An additional issue is the way landfills are managed with higher risks of being over-flooded by waste because of the population.	▪ In addition to the needs related to waste diversion, there is a need to convert existing landfills in the form of open dumps into sanitary landfills, with the corresponding management patterns. This will involve a certain level of investment. ▪ If necessary depending on the specific context of the country, some new sanitary landfills could be constructed.
Large Islands	▪ The previous gaps are usually also valid for large islands, even if waste diversion for composting and recycling is less of a challenge as a result of the larger amounts of waste available. ▪ In addition, these islands usually have collection issues often related to the lack of financial resources.	▪ In addition to the similar needs of small and medium-sized islands, there is a need for support to better organize and finance collection. This could imply the design and construction of transfer stations depending on the distance to the final treatment.
Large continental countries	▪ The gaps identified on large continental countries are slightly different. Despite being more connected, they still have waste diversion issues. They have the issue of the final treatment, although they are not as densely populated as islands. They do not tend to have issues related to collection.	▪ The needs of these countries are therefore related to diversion (composting and recycling), and less to market connection or sanitary landfills. ▪ In terms of infrastructure, space is not an issue and facilities are easier to be appropriately located.

Table 6: *SWM gaps in Caribbean countries on the basis of their territorial typology*

4. Assessment of the institutional arrangements and legal and regulatory frameworks for SWM in the Caribbean

A comprehensive review of the legislative frameworks for Solid Waste Management in the Caribbean, both at the regional and country levels was undertaken. This section summarizes the most relevant aspects of this review. It describes first the policy and regulatory context at the regional and national levels, with special emphasis on the six target countries, and then the main gaps and challenges identified.

4.1. Regional policy and regulatory context

Existing waste management legislation needs to be evaluated for its effectiveness and current levels of enforcement. It should be underscored that, very often, substantial legislation and regulations do exist but are poorly enforced due to a variety of reasons. MARPOL Annex V needs to be assessed to determine if it is functioning effectively in terms of reduction/prevention of ocean-based sources of marine litter. Islands which have not signed on should be encouraged to do so. Lack of an integrated approach in dealing with different types of waste, and the lack of cooperation between agencies that have jurisdiction for managing the waste, have adversely impacted the enforcement and monitoring of waste.

The establishment of policies for the sector is a national responsibility and, contrary to what is seen in most Latin American countries, where WM is usually in hands of the municipality, the management of solid waste (*collection, transport, treatment and disposal*) in the Caribbean countries is a national government responsibility in almost all countries - with the exception of Trinidad and Tobago, Belize, Guyana and Haiti. In these countries the legislation does stipulate that the responsibility for collection and disposal stays with the Municipality. Several countries in the region have created an entity responsible for SW collection and disposal.

While some of the factors that hinder the development of effective SWM policies and systems may be common throughout the region (*e.g. variable political priorities, enforcement challenges, inadequate funding, among others*), the national contexts and frameworks for SWM are very diverse. Such a diversity of national nuances makes the development of a comprehensive regional legislative framework on SWM in the Caribbean rather challenging. Despite this, in the recent years, the region has taken some steps in an attempt to align sectoral approaches towards common regional objectives and strategic planning and, ultimately, towards a concerted integrated regional approach.

Therefore, the regional policy framework for the Caribbean region for the SWM sector is at present inspired by the following plans:

- **CARICOM Strategic Plan 2015-2019**, under Strategic Priority 'Building Environmental Resilience': supports regulatory reform to improve waste management, among other actions, to ensure effective management of natural resources across Member States.
- **Regional Action Plan on Marine Litter Management (RAPMaLi) for the Wider Caribbean Region**, updated in 2016.The RAPMaLi is a toolkit.
- **Convention for the Protection and Development of the Marine Environment in the Wider Caribbean Region (WCR)**. A regional legal agreement for the protection of the Caribbean Sea under which Land Based Sources of Marine Pollution is covered under one of the three technical agreements.

- **Caribbean Waste Management Regional Action Plan (CWMRAP)**: Finalized and adopted in 2018.

Recognizing the need for coordinated efforts to tackle waste management, a High-Level Forum of Caribbean Ministers responsible for Waste Management is organized annually by the Caribbean Water and Wastewater Association (CWWA), supported by UNEP and the Netherlands and counts on the participation of various development partners including the IDB, the Caribbean Development Bank (CDB), Department for International Development of the UK (DFID), AFD, as well as the EU. This Forum is the only regional coordination mechanism on the topic. ***Annex 6*** provides a summary of the recent High-Level Forums and main priorities identified, in particular during the last forum held in November 2020.

4.2. Country specific frameworks: heterogeneous institutional arrangements and legal and regulatory frameworks

SWM is not a well-recognized public policy issue in the Caribbean region, despite its clear relevance to the economic and environmental spheres[26]. It often does not receive the priority that it deserves in the political agenda, as it has to compete with other pressing national economic and social challenges and needs of Caribbean nations, such as fiscal and trade matters, poverty and unemployment, or education and health.

In many of the Caribbean territories waste laws and regulations are in place, in addition to mechanisms for their enforcement. Some converging trends in the institutional arrangements and legal and regulatory frameworks related to SWM in the Caribbean countries can be observed:

- Regional database for regulations / prohibitions relating to plastics and polystyrene available through UNEP / Cartagena Convention, comprehensive regional information is available through various reports and studies.
- Ban on single-use of plastic implemented in several Caribbean countries.
- DRS beverage containers in place in some counties such as Barbados and Saint Vincent and the Grenadines;
- Increased ratification of MEAs as the terrestrial sources of the Marine Pollution Protocol of the Cartagena Convention Forum of the UNEP and UNDP programs.
- SWM authorities have been established in many territories: In small-medium islands there is frequently a national solid waste management organization, which is in charge also of operations, and functions are generally centralized, not at municipal/local level.

While these converging trends exist, the institutional arrangements and legal and regulatory frameworks related to SWM in the Caribbean countries are, for the most part, heterogeneous. Each country has a different set of actors involved, as well as different legal and regulatory frameworks in place for SWM. Few Caribbean nations have a comprehensive national solid waste management framework that addresses all main challenges of SWM, namely:

i) Definition of entities/authorities in charge of SWM and a clear definition of roles between the policy developer, the regulator and the operator(s).
ii) Clear targets for all WM phases (minimization of solid waste at source, composting, recycling, reuse, other waste treatment, collection, disposal).
iii) Definition of regulations and standards for all waste treatment processes, collection and disposal per waste type.
iv) Designation or creation of enforcement entity and appropriate penalty for offenders.

[26] *Riquelme, R., Mendez, P. and Smith I., 2016. Solid waste management in the Caribbean: proceedings from the Caribbean Solid Waste Conference. Water and Sanitation Division, Inter-American Development Bank. Technical Note Nº IDB-TN-935. April 2016*

Enforcement is particularly challenging in small or dispersed communities and therefore those countries with a larger rural population or with many islands in their territory have an additional challenge.

At country level, Solid Waste Management is mainly regulated through specific or more general legislation but in very few countries is there a comprehensive policy and legislation (Jamaica), that addresses the different waste streams.

The Country Assessment Profile forms included in ***Annex 4*** provide an overview of the legislative aspects related to SWM for each country, specifically addressing aspects related to i) collection and treatment regulations (where existing); ii) plastic ban policies; iii) reception and collection of ship-generated wastes; iv) enforcement, control and (environmental) monitoring systems; and v) the National Solid Waste Management Authorities.

In addition, Caribbean countries have ratified a number of international conventions relevant to SWM. The status of ratification of relevant international conventions for each of the 17 countries assessed in this study is included hereby, in ***Table 8 (Section 4.2.4)***.

4.2.1. Management of Marine Litter

There are several national regulations and policies that are country-specific which address SWM and other pollution concerns. However, specific marine litter legislation is very rare or non-existent and even when legislation does exist, poor implementation is due to lack of resources to support enforcement and compliance.

In many of the countries, the management of marine litter is spread across different agencies or in some cases a specific agency has not been identified. Lines of responsibility and authority need to be streamlined in order for management to be efficient and effective. Several agencies have partial responsibility for select components which leads to a division of resources and ineffectiveness in overall marine litter management. In this connection, collaboration and co-operation between NGOs and government agencies where authority is defined should be encouraged with a view to strengthen the management and control efforts.

In many countries, there are no *designated enforcement officers* to deal with marine litter infractions. Training of designated enforcement officers is necessary to deal with public compliance on this issue to help promote compliance and stewardship. The importance of litter prevention and abatement must be elevated as a priority for coastal management and overall national development.

4.2.2. Prevention of plastic consumption: Single-use Plastic Ban

The Caribbean Sea is regarded as the second most plastic-contaminated space after the Mediterranean Sea, with estimations of plastic waste ranging from 600 to 1,414 plastic items per square kilometre. The Caribbean region is also one of the main contributors to plastic pollution with the dubious distinction of having 10 of the 30 largest per capita polluters of single-use plastics in the world[27].

Over the last decade, the region has had a reasonable response against the use of single-use plastics, making important developments that reflect the region's commitment to address the high levels of single-use plastics found in its waste stream. Within the Caribbean region, as many as 27 countries and territories have already legislated or proposed some form of policy controls on reducing the use of plastics over the past decade. Starting January 1st, 2020, single-use plastics and polystyrene were banned in seven Caribbean countries. CARICOM countries currently

[27] *SWM in the Caribbean, UNEP; 2019*

having policy and/or legislative controls on single-use plastics include (***Table 7,***): Antigua and Barbuda, the Bahamas, Barbados, Belize, Dominica, the Dominican Republic, Grenada, Guyana, Haiti, Jamaica, Monserrat, St Lucia, St Vincent and the Grenadines, and Trinidad and Tobago. These measures should be harmonized throughout the Caribbean region, including Surinam and Saint Kitts & Nevis, with regulations currently under development, but also Cuba.

COUNTRY	PLASTIC BAN	DATE	DETAILS
Antigua & Barbuda	✓	Jan 1st, 2016	Plastic bags Styrofoam containers
Bahamas	✓	Jan 1st, 2020 for full implementation on July 1st, 2020	Plastic bag Styrofoam containers, plastic utensils, plastic straws
Barbados	✓	Apr 1st, 2020 Temporary stop (curing COVIC-19 curfew) because of shortage (on world market) of biodegradable resin	Plastic bags Food utensil Styrofoam
Belize	✓	Apr 22nd, 2019	Plastic bags Food utensil Styrofoam
Cuba	✗	No ban in place, in discussion or announces	But there are relatively clear "rules" for 3(4)R in place
Dominica	✓	Jan 1st, 2019	0% import duty on authenticated biodegradable products and reusable shopping bags Go Green Dominica (ban on plastic bags and styrofoam) Supporting measure(s) announces Feb 14th, 2020: Gov will provide all households with jute and cotton bags as sustainable alternative to plastic bags
Dominican Republic	Under development		General Law 225-20 on Integrated Management and Co-processing of Waste approved in 2020, promotes the reduction, reuse, recycling, and recovery of waste. Ministry of the Environment is in the process of developing and adopting specific measures to combat marine litter generated by plastic waste.
Grenada	✓	Mar, 1st, 2019 Febr 1st, 2019 Sept 1st, 2018	Sale of polystyrene "Styrofoam" materials Single-use plastic bags Styrofoam (importation)
Guyana	✓	Jan 1st, 2016 2021 (planned, tbc)	All Styrofoam products Single-use plastics
Haiti	✓	Aug 1st, 2013 previous ban largely ignored	Black plastic bags and foam containers
Jamaica	✓	Jan 1st, 2019 Jan 1st, 2020	Plastic bans Styrofoam containers, straws
Monserrat	✓	Oct 2018 (full ban expected for Dec 31st 2018)	Single-use plastics Government expected to identify and support biodegradable products suppliers (ensure compliance with plastic ban) Agreement (Dec 2019) Gov Monserrat & UNDP Barbados & OECS implement ban enforcement & supporting measures
Saint Kitts& Nevis	Under development	Aim: ban the use of single-use plastic as from 2020	Styrofoam products, plastic bags, plastic straws and plastic cutlery
Saint Lucia	✓	Dec 1st, 2018 with (phasing out period of 12 months, from Aug 1st 2019 to July 31st, 2020)	Plastic bags Styrofoam 0% import duty on all biodegradable and compostable food service containers *#CleanSeas Campaign (Febr 2017): commitment to eliminate marine litter / plastics*

Saint Vincent& the Grenadines	✓	Jan 31st, 2018 (ban suspended Aug 15th, 2020 until after 2020 Christmas season to deplete stock & Covid challenge)	Styrofoam products
Suriname	Under development	The Foundation Support Recycling Suriname (Suresur) was working towards a ban in 2019.	SuReSur plays also a pioneering role in making the Surinamese population aware of the recycling process.
Trinidad & Tobago	✓	Jan 1st, 2020 June 1st, 2020 Petitions (works on-going) for banning single-use plastics and plastic straws	Ban on plastic imports for F&B industry Ban on plastic / Styrofoam containers manufacturing

Table 7: *Styrofoam and single-use plastic bag bans in CARICOM countries*[28, 29, 30]

The plastic-ban measure is intended to prevent further degradation of the coastal and marine ecosystems of these countries, and therefore also the potential impacts on health and food security for some 40 million people living in coastal areas. While it is still too early to assess the success of these initiatives, it is expected that significant welfare benefits may be achieved over time through the reduction of the negative externalities associated with single-use plastics.

4.2.3. Circular Economy Strategy

Generally, no real strategy towards circular economy has been adopted and implemented by the governments in the region, with the exception of specific isolated measures, such as the ban of single use plastics as previously indicated.

Figure 2: *Definition of circular economy (UE parliament)*

However, the regional commitment to the implementation of the 2030 Agenda translates into recent launch (February 2021) of the Latin America and the Caribbean Circular Economy

28 *Worldwide Review of Current Restrictions on Single-use Plastics and their Replacement by Alternative Materials in Relation to the Commonwealth Litter Programme (CLiP) in Belize. (2019). Eunomia - CEFAS*

29 *UNEP, 2019c. Report on Status of Styrofoam and Plastic Bags Bans in the Wider Caribbean, June, 4, 2020* https://www.unenvironment.org/cep/news/blogpost/styrofoam-andplastic-bag-bans-caribbean-interactive-map

30 https://www.unep.org/cep/news/blogpost/styrofoam-and-plastic-bag-bans-caribbean-interactive-map

Coalition. The regional coalition (*gathering under PACE[31] partners such as CTCN[32], EMF[33], IADB[34], KAS[35], UNEP, UNIDO and WEF[36]*) aims to create a platform for best practices exchanges and knowledge sharing through collaborative work between governments, companies and society, supporting the region to advance and invest in the circular economy transition as part of the COVID-19 recovery.

The circular economy model is often misunderstood in the region as solely an environmentally sustainable model, which is the reason why the environment ministries in the region tend to be the promoters and hosts of circular economy initiatives[37]. However, the circular economy cuts across sectors and institutional boundaries, and is just as relevant to the industrial sector as it is to the environment. The present somewhat rigid and 'silo' institutional structures in the region, constitute a major obstacle to accelerating the circular economy agenda.

In addition, there is a lack of private-sector involvement in circular economy related initiatives, which also constitutes a major barrier to the implementation of the circular economy agenda[38]. The circular economy concept is often perceived by firms as an 'environmental tax' on productive activity, which makes them broadly sceptical of the circularity concept. The fact that ministries of the environment tend to be the only institutions to embrace circular economy often intensifies the perception that private sector firms have, and reduces the acceptance of related policies, such as the extended producer responsibility (EPR) waste management regulations.

Out of the seven usually considered levers of circular economy, only recycling (*through SWM, including EPR*) and responsible consumption (*through bans*) are really addressed at a government level. It is expected that the recently launched regional coalition will foster an inducive regulatory and community-of-practices for a more integrated approach, promoting eco-design and related innovation, advocating the full 6R (*reduce, reuse, repair, revalue, recover and recycle*) approach with an increased involvement of the private sector and the creation of green jobs.

4.2.4. Global and Regional Multilateral Environment Agreements

Caribbean countries and territories have ratified several global and regional treaties tackling sustainable development issues already recognized during the Earth Summit in 1992, and further identified as post-2015 SDGs, which specifically address the protection of human health and of the environment from the hazards associated with dangerous wastes, chemicals and terrestrial and marine pollution (***Table 8***). These Conventions carry obligations for the signatory Member States to enact domestic legislation and to implement a variety of institutional measures to enabling the implementation of the Conventions' provisions.

31 *Platform for Accelerating the Circular Economy Coalition (PACE)* https://pacecircular.org/latin-america-and-caribbean-circular-economy-coalition

32 *Climate Technology Centre & Network (CTCN)* https://www.ctc-n.org/

33 *Ellen MacArthur Foundation (EMF)* https://www.ellenmacarthurfoundation.org/circular-economy/

34 *Inter-American Development Bank (IDB)* https://blogs.iadb.org/sostenibilidad/en/circular-economy-now-or-never/

35 *Konrad Adenauer Foundation (KAS)* https://www.kas.de/de/home

36 *World Economic Forum (WEF)* https://www.weforum.org/projects/circular-economy

37 *Patrick Schröder, Manuel Albaladejo, Pía Alonso Ribas, Melissa MacEwen and Johanna Tilkanen, 2020. The circular economy in Latin America and the Caribbean. Opportunities for building resilience. Research Paper. Energy, Environment and Resources Programme. September 2020. The Royal Institute of International Affairs Chatham House*

38 *Ibid*

COUNTRY	Cartagena Convention 1983 / 1986	Oil Spills Protocol 1983 / 1986	SPAW Protocol 1990 / 2000	LBS Protocol 1999 / 2010	CARICOM Strategic Plan 2015 – 2019 2019 - 2025	RAPMaLi 2008	London Convention	MARPOL Annex V 2012
Antigua & Barbuda	1986	1986	1990	2010				
Bahamas	2010	2010	2010	2010				
Barbados	1985	1985	2002			Pilot		
Belize	1999	1999	2008	2008				
Cuba	1988	1988	1998					
Dominica	1990	1990						
Dominican Republic	1998	1998	1998	2012				
Grenada	1987	1987	2012	2012				Pending
Guyana	2010	2010	2010	2010		Pilot		
Haiti								Pending
Jamaica	1987	1987	1990	2015				
St. Kitts & Nevis	1999	1999						
Saint Lucia	1984	1984	2000	2008		Pilot		
St. Vincent &Grenadines	1990	1990	1991					
Suriname								
Trinidad and Tobago	1986	1986	1999	2003				
*Turks and Caicos Islands**								
France (Guadeloupe, Martinique, Saint Barts, Saint Martin) 1	*1985*	*1985*	*2002*	*2007*				
Netherlands (Aruba, Bonaire, Curacao, Saba, St. Eustatius, St Maarten) 2								
United Kindom (Anguilla, British Virgin Islands, Cayman Is, Montserrat) 3								
United States (Puerto Rico, U.S. Virgin Island) 4								

***Table 8**: Status of ratification of relevant International Conventions (Source: Marine Pollution in the Caribbean: Not a Minute to Waste[39])*

Date: Signature
Date : Ratified / Acceded

39 *Status of Ratification of Relevant International Conventions – in Marine Pollution in the Caribbean: Not a Minute to Waste, Annex 7: World Bank Group, 2019*

4.3. Legal and regulatory frameworks in the focus countries

The main features of the legal and regulatory frameworks for SWM in the six focus countries are presented here. Additional specific details are also included in the Country Assessment Profile forms in ***Annex 4*** and ***Annex 5***.

4.3.1. Dominican Republic

A new government was established in the Dominican Republic in 2020, following the election of President Luis Abenader in August 2020. SWM is a priority of this new government, in particular after the eruption of some fires in the landfill of La Duquesa during the Summer of 2020, which contaminated the city of Santo Domingo for some time.

From a quite liberal legislation, a new law which was in preparation for many years (13) has recently been adopted in the country to better monitor and manage the situation of solid waste in the Dominican Republic, namely General Law for the Integral Management and Co-processing of Solid Waste, Law 225-20 (*Ley General de Gestión integral y Co-procesamiento de Residuos Sólidos, 225-20, October 2020*). This law defines the new SWM mechanisms to be implemented in the country.

Among others, the law promotes the following points:

- The waste hierarchy (reduction > reuse > recover > recycle > dispose);
- The installation of the Ministry of Environment and Natural Resources as the national authority for SWM;
- The regulation of importation;
- The reduction of single-use plastic items;
- The local organization of recycling;
- The installation of local communities to manage the local scheme including a tax system.
- Among the new prerogatives of the Ministry of Environment and Natural Resources, the governing authority for national policy and regulation of waste management, is to create the Department for Comprehensive Waste Management, as the administrative unit of the Ministry in charge of fulfilling and enforcing the obligations derived from the application of the law 225-20.
- The law includes the principle of Extended Producer Responsibility, which means that producers, importers and marketers must ensure the correct final disposal of the waste or its reuse as secondary raw material and / or energy recovery.
- With regards to financial sustainability, the law also creates the figure of the trust “Fideicomiso”, which will be integrated by representatives of the central government, municipal, private sector, and civil society, and will make up the first public-private alliance to manage the funds for proper waste management. Municipalities and municipal districts, will continue to exercise their current function of setting user fees or taxes on users (individuals and companies) to provide waste collection, transport and management services, based on the quantity and quality of waste. In order to guarantee the self-financing provided for in the law, these payments should reflect the reality of the operational cost of integrated waste management. At the national level, a special annual mandatory contribution will be levied on all individuals and companies based on their

income and transferred to the trust / Fideicomiso[40]. The law will facilitate the development of the recyclable materials market as it considers a series of economic instruments. For example, in addition to monetary charges, economic incentive instruments such as the green bond are created. This subsidy would be used to finance or refinance projects considered "green"[41].

The law is currently being converted into regulations by the Ministry of Environment with support from JICA, through the second phase of the project "Strengthening the Institutional Capacity for the Integrated Management of Solid Waste at the National Level in the Dominican Republic ("*Proyecto de Fortalecimiento de la Capacidad Institucional para la Gestión Integral de los Residuos Sólidos a nivel Nacional en República Dominicana*").

The project will support the preparation of the regulations for the application of the recently approved General Law for the Integral Management and Co-processing of Solid Waste, Law 225-20, which establishes that they should be prepared within 6 months following the enactment of this Law.

The National Plan for the Management of Final Disposal Sites (SDF) of solid waste will also be created. This plan will identify the landfills that may be rehabilitated, those that should be closed and the locations where new infrastructure works for final disposal sites may be planned.

Overall, the project will increase the Ministry's capacity to coordinate, guide and support municipalities in the processes of design, construction, operation, rehabilitation and closure of open dumps, which represent a health hazard for thousands of Dominicans.

The initiative seeks to contribute to the solution of the pollution generated by open dumps, which is one of the main environmental problems of the country, as it affects public health, air, soil and subsoil, as well as surface water sources, since many dumps are located near rivers and streams.

4.3.2. Guyana

The country of Guyana has quite a limited legislative framework in relation to SWM. The main features of this framework can be summarized as follows:

- A SWM bill dated in 2017 that is being revised to better harmonize and modernize the current management approaches.
- The last legislative document dates from 2006.
- The Country has recently introduced a ban on Styrofoam and single-use plastics.
- The Ministry of Local Governments and Rural Development manages SWM nationwide, but the new bill is likely to establish a National SWM Authority to manage SWM instead.
- The city councils are responsible for collection and treatment of solid waste.

40 https://www.elmitin.do/todo-sobre-la-ley-general-de-residuos-solidos/

41 *Investments would qualify for these benefits if they: reduce greenhouse gases by more than 30%; reduce the consumption of raw materials; create technologies to transform waste into raw materials; engage in energy recovery; comply with their extended responsibility; and use waste as an alternative fuel.*

4.3.3. Jamaica

The main features of the SWM policy and regulatory framework in Jamaica can be summarized as follows:

- SWM framework is composed of the National Solid Waste Management Policy and the National Solid Waste Management Act from 2001, which is actually quite administrative and not very instructive, along with the Public Cleansing Regulations, the Public Health Act of the Ministry of Health and the Trade Act, which regulates the scrap metal industry (*recycling initiatives*).
- An Integrated Waste Management Strategy and Action Plan was developed in 2010 by the Government of Jamaica with funding from the Inter-American Development Bank[42]..
- Technically, SWM is quite centralized at the national level under the National Solid Waste Management Authority, which depends on the Ministry of Local Government and Community Development. Only some administrative role is left to city councils.
- The role of the National Environment and Planning Agency (NEPA), executive agency under the Ministry of Housing, Urban Renewal, Environment and Climate Change, includes activities such as natural resources and environmental management, spatial planning, compliance/enforcement and public education. The agency partners with NSWMA in various aspects (*i.e. promotion of recycling and use of reusable plastic bags*).

4.3.4. Barbados

The main features of the SWM policy and regulatory framework in Barbados can be summarized as follows:

- The Ministry of Environment and National Beautification (MENB) is responsible for legislation and policy development. The Environmental Protection Department (EPD) at MENB is the primary environmental monitoring and pollution control agency.
- The Sanitation Service Authority (SSA) is responsible for street sweeping, collection, transportation and disposal of all household municipal solid waste, as well as for the operation of waste disposal sites. The SSA is a quasi-government organization which falls under the MENB.
- The Environmental Health Department (EHD) is one of 4 main public sector agencies with responsibility for SWM issues and is part of the Ministry of Health. EHD is specifically responsible for the enforcement of guidelines and regulations as it relates primarily to public health and safety. EHD also regularly visits and inspects the landfills to monitor and prevent any health issues.
- The legal and regulatory SWM framework is comprised of:
  i) The Returnable Containers Act of 1986 and Health Services Act,
  ii) The Sanitary Service Act, and
  iii) The Municipal Solid Waste Tax Bill of 2014.

42 *Smith, I. (2010). Integrated Waste Management Strategy and Action Plan. Kingston: Government of Jamaica/Inter-American Development Bank.*

- The Returnable Containers Act (1986) provides for the control of the sale of beverages in beverage containers, the payment of a refundable deposit on beverage containers (10-20 ¢), a refund for the return of those containers and the final disposal of unused or unusable containers. This Act has been instrumental in the way in which recyclables are treated today in the country and the growth of the recycling industry in Barbados. The introduction of the refundable deposit on beverage containers encourages the return of empty containers by consumers.
- In Barbados there is no single legislation that encompasses hazardous waste management. Neither is there any hazardous waste treatment or disposal facilities. The EPD's role is to offer advice on the most suitable method of hazardous waste disposal.
- Some Caribbean countries, such as Barbados (*Ministry of Finance and Economic Affairs, 2013*) are looking at WtE as a policy option for waste management and energy production (see ***Section 8.2.3***).
- Barbados is one of the countries in the Caribbean that has implemented regulations related to recycling activities. The Sustainable Barbados Recycling Centre (SBRC) came into operation in 2009, with the main objective of diverting waste from the Sanitary Landfill. The SBRC is a Public Private Partnership that operates under contract with the government and was constituted as a Transfer Station and Materials Recovery Facility. Its implementation resulted in 70 percent diversion of waste from the landfill. Approximately 1,000 to 1,300 tons per day (tpd) go to the SBRC, whereas 300 to 400 tpd go to the landfill. Currently, diverse recyclables are exported bringing in foreign exchange and increasing employment.

4.3.5. Saint Lucia

The main features of the SWM policy and regulatory framework in St. Lucia can be summarized as follows:

- St. Lucia has created an entity responsible for solid waste collection and disposal, the St. Lucia Solid Waste Management Authority (SLSWMA). The SLSWMA was established in 1996 under Act No. 20 of 1996 (repealed and re-placed by the Waste Management Act No. 8 of 2004). The SLSWMA is responsible for coordinating and integrating systems for the collection, treatment and disposal of the island's solid waste. The SLSWMA is administered by an eleven-member Board of Directors. The Permanent Secretary, Ministry of Sustainable Development, Science and Technology is the Chairperson. The SLSWMA is responsible for the collection of solid waste from households and government establishments, e.g. schools, hospitals, health centres, prisons, government offices. Throughout the island, collection takes place at least twice a week using private contractors hired by the SLSWMA. In addition, a monthly bulky waste collection service is provided to every community (SLSWMA, 2015).
- The Environmental Health Department within the Ministry of Health, Wellness, Human Services and Gender Relations is responsible for monitoring and regulating the disposal of solid waste (PAHO, 2007).

4.3.6. Grenada

Grenada still employs an ineffective legislative and regulatory framework for SWM, in particular, weak and with negligible enforcement of sanctions. Furthermore, the following features should be highlighted:

- Inadequacy of the laws on waste management with respect to the natural environment.
- Customs and standards rooted in culture.
- Sufficient containers are not installed, particularly in areas where (*e.g. urban centres*) or on particular social occasions where waste generation is high.
- The lack of street cleaning services in shopping centres

Sectorial analyses carried out with the citizens concerned, and in particular with housewives, indicated that people of all ages and socio-economic backgrounds could potentially abandon their waste on the street or in the countryside. However, it has been noted that an awareness campaign could more easily change the behaviour of young people than of adults.

With regards to the financial instruments in operation, two main economic instruments for waste management are currently operational in Grenada:

- An Environmental Tax on Importers: A tax of XCD 0.25 is imposed on glass and plastic beverage containers imported to Grenada. The proceeds are forwarded to GSWMA.
  - i) Tourist Tax: Each stay-over and seaborne visitor will be charged USD 1.50 (XCD 4.05) as a one-time entry fee for Grenada.
  - ii) On households: the household waste tax is charged on the basis of electricity consumption. Households consuming less than 100 kW hours per month (45%) will not be charged.
- A deposit refund system for glass bottles was introduced in the early 1970s by Grenada Breweries Limited (GBL), at the start of the company as part of its commitment to business management. Despite the success of the deposit refund system for glass bottles, GBL officials stressed the lack of government incentives to operate the system that could be used to promote the continued use of glass bottles.

Actions are taken to improve solid waste management in Grenada. GSWMA is implementing a series of initiatives designed to improve the way the solid waste stream is managed. Four of its main programs are as follows:

1. **Environmentally Friendly School Initiative** is a program aimed at primary and secondary schools in which, for nine months of the year, participants undertake projects focused on different aspects of solid waste management. Projects can cover public education, waste management, waste minimization and the link between waste management and tourism. The program is evaluated and incentives are provided for excellent performance. On average, 56 schools participate in the program each year.
2. GSWMA, in collaboration with the Ministry of Health, organizes an **annual seminar on licensing for food suppliers** aimed at promoting, among other things, best practices in waste management for the catering sector.
3. GSWMA produces a **regular radio program** which is broadcast on seven different radio stations every day to inform the public about the collection service and offer tips on good solid waste management practices.
4. GSWMA supports any **initiative to promote effective SWM**.

5. A range of non-governmental organizations and private sector companies are involved in different interventions and, in particular, interventions aimed at addressing **plastic waste management problems**. Other initiatives include environmental certification programs for hotels, cleaning campaigns, and commitments by hotels and retailers to import or use alternatives plastic. In addition, the Grenadian Hotel and Tourism Association and GSWMA have proposed banning polystyrene products.

Based on the extensive research and consultation process undertaken, the following two policy tools were selected for further development, which ultimately seek to reduce the use of plastic bottles and increase separate collection:

- **Extended Producer Responsibility (EPR) Deposit Refund Scheme**
  - Establish a deposit refund system for plastic bottles, drawing on experience gained in implementing the existing deposit-refund system for glass bottles in the islands. The well-received and well-managed infrastructure of this system and also people's awareness of it serves as useful examples for any new PET recovery scheme.
  - Financing the system using the methods already in place for charging advanced recycling rates (i.e. the environmental levy on imported plastic beverage containers provided for by law no. 12 of 2000 and by law no. 13 of 2007). The weaknesses identified in the implementation of this environmental contribution must, however, be mitigated.
- **Encouraging separate waste collection in parallel with the introduction of pay-as-you-throw (PAYT)** principles in the tariff system.

The deposit-refund scheme focuses on mitigation. The problem of reducing plastic bottle waste looks very promising because the experience of Grenada Breweries' voluntary program for glass bottles shows that the key elements involved in this type of scheme are already accepted and functioning. The second option, which involves reforming the waste collection and pricing system, should be seen more as a medium-term approach. Implementing these changes may take longer, but will ultimately provide long-term benefits that will increase recycling rates and decrease the amount of waste going to landfill in Grenada.

An integrated approach to SWM does not yet exist in Grenada. The separate collection of the different waste streams has yet to be adopted and the collected waste is mainly disposed of in the Perseverance landfill, a dangerous open landfill located near the sea. Furthermore, a large amount of waste still ends up in the environment due to culturally rooted habits, inappropriate waste disposal behaviours, lack of public awareness and tourism activities. It is estimated that around 15% of municipal waste is dispersed in the environment. The percentage of littered plastic bottles is up to 30%.

Given the geological and hydrological conditions of the islands, local stakeholders expect that most of the plastic bottle waste and some of the plastic bottle landfill waste will eventually end up in the sea, negatively impacting the marine ecosystem of the islands.

5. Mapping of the most important regional / national programmes and infrastructure projects in SWM and main issues

A comprehensive review of past, on-going and forecasted initiatives at the national and regional levels related to SWM and circular economy, sustainable development, green/blue economy and other related sustainable development initiatives (*i.e. biodiversity conservation and restoration, marine and coastal-zone protection, resilience and climate-change adaption measures, etc.*) was undertaken as part of this assessment. Cross-sectoral initiatives were also assessed (*i.e. private sector development/SMEs development initiatives, including tourism, investment promotion and investment climate improvement in the region, etc.*), in order to identify possible cross-synergies.

This information gathered during the High-level regional conference organized by CWWA in November 2020, and during the interviews held with relevant stakeholders at the national and regional level facilitated the mapping of key regional and national programmes and projects.

This section provides a description of the main initiatives identified at the regional and national levels, with special focus on those pertaining to the focus countries. The projects identified in the assessment have been classified according to the type of project and description as follows:

- General: master plan or institutional organization;
- Reduction: ways to prevent waste from being produced;
- Collection: ways to transport waste from production sites;
- Recycling: ways to prepare and actually recycle waste;
- Recovery: ways to take advantage of waste-to-energy (*including composting*);
- Treatment: final treatment of waste (landfill).

Some of these project types relate to basic needs such as the collection and treatment of solid waste, while others are more advanced and focus on promoting the development of circular economy through activities involving reduction or recycling of waste. There are also other projects that focus on general matters regarding the design of the whole SWM system.

Of course, the topic of the projects depends on the specific context of the country and willingness of stakeholders (*political will of the public sector, investment capacity of private sector, etc.*).

The number of projects identified is higher in larger countries such as the Dominican Republic or Guyana, and is also influenced by the political will of the specific government, such as that of the new the government of the Dominican Republic. The regional projects are not many, usually quite specific and led by international institutions (*e.g. the Cartagena Convention, which focuses on land-based sources of marine pollution, led by UNEP*). There are also some regional initiatives implemented by NGOs that are undertaken at times, such as the RePlast project led by UNITE-Caribbean.

The following sections present the projects identified in relation to: i) Waste laws and regulations in place and enforced; ii) Infrastructure initiatives; iii) Private sector participation; and iv) Financial initiatives.

A comprehensive list of projects identified is presented in ***Annex 7***. An overall view of projects is also shown in the map included in ***Annex 8***. These projects are also referred to in each of the Country Assessment Profile forms included in ***Annex 4***. Due to lack of information, the information provided for most of them is not very detailed.

5.1. Initiatives related to waste laws and regulations in place and enforced

In many of the Caribbean territories waste laws and regulations as well as mechanisms for their enforcement are put in place. Moreover, several (sub) regional trends and potential developments have also been identified. Examples of some of these initiatives include:

- Regional database for regulations/prohibitions relating to plastics and polystyrene available through UNEP/Cartagena Convention. Comprehensive regional information is available through various reports and studies.
- Ban on single-use of plastic implemented in several Caribbean countries (*this will be further elaborated upon in Output 3 report*).
- Deposit Return Systems (DRS) beverage containers in place in some counties such as Barbados and Saint Vincent and the Grenadines.
- Regulatory impact assessment work underway in Jamaica for landfills and SW infrastructures in general.
- Increased ratification of Multilateral Environmental Agreements (MEAs), such as the terrestrial sources of the Marine Pollution Protocol of the Cartagena Convention of the UNEP and UNDP programs.
- SWM authorities have been established in many territories (*e.g. Belize, Jamaica, Saint Lucia, Trinidad & Tobago, Grenada, Dominica, Antigua/Barbuda, St. Kitts/Nevis*).

5.2. Infrastructure initiatives

In recent years, some improvements in the SWM infrastructures have been made, although they are still largely insufficient for the environmental and economic challenges and needs of the Caribbean region. It is important to keep in mind two fundamental aspects of the economy of the island states, which are interrelated, the marine environment and tourism. These two fundamental aspects of the economy of Caribbean countries depend dramatically on proper waste management. It is worth mentioning the following actions:

- Landfills: at an advanced stage of construction in Grenada and Suriname. Design of new landfills underway in Trinidad & Tobago and Antigua/Barbuda.
- Recycling facilities: under development/expansion in Trinidad and Tobago, Guyana, St. Lucia, St. Vincent and the Grenadines; spreading facilities in Antigua. WtE project ideas and proposals in St. Lucia, Trinidad and Tobago, and St. Kitts and Nevis. Barbados is currently examining WtE solutions through an ongoing study supported by the EU (*see **Section 8.2.***).
- Port reception facilities. A feasibility study was conducted by RAC/REMPEITC-Caribe for the possible development of a plan of regional reception facilities for SIDS in the wider Caribbean region. The study includes an assessment and a field visit to port facilities by 16 UN SIDS members and the identification of possible measures to address the inadequacy of port reception facilities in the wider Caribbean region.
- The Cartagena Convention Secretariat hopes to build on this study through a new ACP MEA (*Multilateral Environmental Agreements*) project.

With regards to infrastructure projects, it is important to highlight a few challenges:

1. **Insufficient budget allocated to the SWM sector**. Considering only the current expenditures for SWM, the costs of waste collection systems require, on average, at least 50% more than what is currently allocated by the waste authorities. The income that countries receive through taxes is not sufficient to finance both waste collection costs and plant maintenance. This shortage of funds prevents adequate maintenance, vehicle modernization, and innovation for the SWM systems. In fact, in many countries most of

the equipment is at least 15 years old, so mechanical failures are recurrent and make daily waste collection inefficient.

2. **Capacity of landfills reached or exceeded**. Many landfills in a large part of the Caribbean territories have reached and even exceeded the maximum permitted capacity. Under such critical circumstances, the often-promised improvements to the SWM services have not materialized into new projects; on the contrary the service seems to be in decline. For the moment there are no diversion alternatives considered as part of any projects.
3. **Lack of national strategy for SWM**. In addition to the problem of insufficient budgets for SWM systems, there is a lack of national strategic planning. Many countries lack national strategies or action plans for SWM systems. There is also a lack of feasibility studies to identify technically innovative projects in order to reduce dependence on landfills.
4. Finally, in relation to the tourism sector, **many countries still do not have adequate equipment for the safe treatment and disposal of waste produced by cruise ships**.

The clear urgent need to expand, renovate and build larger and more technologically advanced infrastructures should oblige policy-makers in the region to accelerate efforts for the development of sound and effective action plans. The EU-CARIFORUM Regional Waste Management Programme should help raise awareness of Caribbean institutions and citizens towards long-term holistic SW planning, and the adoption of an integrated approach to WM in the region.

5.3. Private sector participation

All available documentation and recent video-conferences on SWM emphasized the strategic and social role of the private sector. Unfortunately, the participation of private companies/groups is problematic due to the fact that by definition the actors concerned must pursue financially profitable activities. PPP models for waste management are very critical. Such projects must provide incentives and appropriate earnings to a certain level of opportunity cost.

The feasibility studies for SWM-orientated investment projects should always include a financial analysis that considers the cost-benefit of the project, as well as the point of view of the private operator included in the initiative.

The private actor plays an increasingly important role in achieving sustainable a SWM system. However private sector stakeholders in Caribbean SWM infrastructure facilities, such as landfills and transfer stations, recycling facilities or WtE plants, are extremely limited. Beyond PPPs, it is essential to promote inclusive participation of all people, including the poor, women, youth and persons with disabilities, to foster entrepreneurship and innovation.

At present, a number of ongoing initiatives regarding private sector participation in SWM can be highlighted as follows:

- IDB Partnership with the state of Jamaica to implement a Public Private Partnership;
- IDB incubator facilities;
- Opportunity to learn from the experiences of Barbados (see ***Section 8.2***) and Belize;
- Need for more training capacity building related to PPPs.

The increasingly prevalent approach of cost/benefit analysis in the assessment of SWM will contribute to defining an efficient waste management ecosystem in the Caribbean, and thus also contribute to the promotion of a circular economy. This could certainly be improved through the strengthened Public-Private Partnership initiatives.

To date, these PPPs only largely exist between public authorities or international bodies and private operators for collection and disposal services. However, there are many more opportunities for PPPs in SWM in basic projects, such as the development of recycling markets, technical assistances in education with awareness programmes, development and dissemination

of appropriate technologies, and training and capacity building, among others; but also, in more advanced projects related to composting, electronics-waste and plants for the production of electricity WtE.

The promotion of Public-Private Partnerships should therefore be assessed financially, but also socially, as a source of jobs for the future development of urban and suburban SWM systems in the Caribbean. Sources of jobs should be in particular oriented towards women and the youth.

5.4. Financial initiatives

The following initiatives were identified:

- Initiatives carried out by IDB: i) Regional E-Waste Initiative; ii) IDB Lab & Nestle Facilities; iii) GEF Islands Incubators Facilities; iv) PPP Initiatives in Jamaica (*the new Project Proposal under development reflects the need for more sustainable financing, PPPs, waste a resource approach as well as capacity building and training*).
- Existing funding arrangement from donors' agencies: Norway, France, Netherlands.
- Funding of Training opportunities: Japan, USA.
- Opportunities for funding from other donor organizations specifically for SWM: EU Commission.

Two major drawbacks in relation to the SWM financial system as a whole can be highlighted in the Caribbean. The first concerns the financing and implementation of infrastructure projects, and the second concerns the insufficient national budgets allocated for the regular and efficient operation of SWM services. These are addressed below:

Financing and implementation of infrastructure projects. It should be noted that most of the projects or initiatives examined by the consultants were only at the identification or formulation stage, and did not include any economic-financial analysis. Neither do they include the rates of return or appropriate environmental analyses in relation to the economic analysis using appropriate shadow-prices, environmental costs/benefits and mitigation measures. As a general rule, the lack of assessment of investment projects that follow the methodologies adopted by international organizations (*e.g. the World Bank*) makes the specific infrastructure under analysis not sufficiently bankable, as only vague and unjustifiable impacts are often considered.

The consequences are obvious. Potential partners, whether they be international funding organizations or private companies, take note of the essential points of the projects, such as: the project ideas/concept, the "ad hoc" legislative frameworks attributable to the project, the type of participants, the investment components, the technical alternatives/options, investment costs, maintenance costs, and project dimensions, manpower and materials used, the quantities involved, and finally the financial and economic benefits for suitable rates of return during the project span-life. These data will help potential Public Private Partnerships in the evaluation of other points of view, including the environmental variables for the economy as a whole. SWM infrastructures, such as recycling centres, composting plants and WtE, should be assessed by means of a cost/benefit analysis. In fact, it would be useful to consider the cost/benefit analysis for each unit of recycled materials (*e.g., plastics*) and calculate the optimal level of the recycling process able to maximize the well-being expectations of the population using "the willingness to pay" in the economic analysis. Furthermore, the total amount of recycled material sold would be calculated as the benefit of the project.

Insufficient national budgets allocated for the regular and efficient operation of SWM services. One of the challenges in setting economic policies through taxes for waste management is in determining the appropriate level of tax. If the tax level exceeds the marginal social benefit, then consumers have an incentive for tax avoidance by engaging in illegal dumping

and/or littering, with connected higher costs to society in the form of compromised physical aesthetics, and increased public health risks. At the same time, too low a tax level may not provide sufficient incentive for waste reduction and recycling. Moreover, there are circumstances under which taxes as disincentives to unwanted consumer behaviour simply do not work. It is in such situations that subsidies may also be used to encourage alternate waste management behaviour. These are especially useful on the production side of the economy, where companies may receive subsidies to undertake more environmentally safe disposal methods, especially where waste disposed into the environment can pose a serious public health threat. Some examples of waste subsidies include the payment of overtime pay to waste collectors to complete route collections, or the payment of a full day's pay even when employees complete route collections early in the day. Although taxes and subsidies are widely applied to influence the evolution of waste management in developed economies, they have found relatively little application in developing countries, and less in Caribbean SIDS, in particular. Since 1992, several Caribbean countries have enacted generalised environmental legislation in order to promote protection and conservation of the natural environment. However, only a few elements of such legislation have provided for the implementation of fiscal and other regulatory policy in the specific case of solid waste management.

Three Caribbean countries (Barbados, Jamaica and Trinidad and Tobago) have been identified as countries in which waste fees and levies, deposit refunds schemes and taxes and/or tax relief for solid waste management activities were either being implemented or were under consideration. In most Caribbean countries, municipal solid waste collection is undertaken at zero cost to households, with the cost of waste services typically being financed through a budgetary allocation from the central government. The absence of appropriate disposal fees to the household provides no incentive to reduce generated waste. While specific tipping fees may be levied to commercial and, in some instances, institutional waste generators, the application of a regime of waste disposal fees to households should be considered, since it will serve to reduce household waste generation, foster greater reuse of recyclables, and generate income to municipal waste haulers[43].

The economic fallout of the COVID-19 pandemic[44] is very challenging for Caribbean economies, particularly for economies which are highly dependent on the tourism sector and global oil demand, exacerbated the already precarious financial situations; concomitantly COVID-19 tax reliefs caused a significant decline in public revenues in the Caribbean.

Downsizing of activities resulting in falling remittances and a huge toll on international trade are estimated to translate into an approximative loss in service exports of 50% of exports of goods and services related to tourism sector (*with an overall contribution to the GDP reaching 28,5%*), while in major energy exporting Caribbean countries are expected to observe important declines of nominal GDP[45] (*13,5% for Trinidad and Tobago, and 20,5% for Guyana, respectively*).

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43 ECLAC. (2013). Municipal solid waste management in the Caribbean: A benefit-cost analysis, Studies and Perspectives Series – ECLAC Sub-regional Headquarters for the Caribbean, No. 22 (LC/L.3543, LC/CAR/L.349). Economic Commission for Latin America and the Caribbean W. Phillips and E. Thorne. https://repositorio.cepal.org/bitstream/handle/11362/5053/1/S2012122_en.pdf

44 ECLAC. (2021). Economic Survey of the Caribbean 2020: facing the challenge of COVID-19, Studies and Perspectives series-ECLAC Sub-regional Headquarters for the Caribbean, No. 99 (LC/TS.2021/1-LC/CAR/TS.2021/1), D. Alleyne and others Santiago

45 Ibid

Indirect impact on environmental expenses have also been observed; in 2020, for example, Barbados has forced to impose a temporary stop, during COVID-19 curfew, of the implementation of the plastic-ban, because of shortage on world market of biodegradable resin. Commodity exporters suffered the slump in prices, but the crisis has also provided (temporary) opportunities to boost regional integration and value chains within the Americas, sometimes referred to as nearshoring from the perspective of the United States.

Decreasing fiscal revenues from environmental taxes are directly concerned by the COVID-19, mainly through the losses in tourism and energy sectors, which incorporate prices signals giving effect to the polluter pays principle[46]. Moreover, informality (*which characterises a significant part of the SWM sector, and representing about 58% of workers in the region, representing the second highest average level of informality in the world*) is recognized as being exacerbated with the pandemic[47], due to increased insecurities and losses of income generating activities opportunities.

A broader "green budgeting" practice, imposing carbon taxes to combat climate change could be timely and beneficial, with stimulus measures with high climate and environmental impact[48]. The region has ample room to increase fuel taxes (*or alternatively, diminish subsidies*) in a context of relatively low oil prices, and to invest in circular economy incentives, and, in general, in environmental-friendly activities. However, public finance support to green activities will need to attract continuous participation from the private sector, in order to be sustainable.

5.4.1. Technical developments and diversification

The diversification of SWM infrastructures for the Caribbean Countries with respect to municipal landfills represents an important and strategic action. The abandonment of the practice of landfills would have a significant positive impact on the landscape, on the tourism sector and on the environment in general.

At the present time, the following positive initiatives exist in the Caribbean area as follows:

- Promising recycling centres in Barbados, Martinique and Guadeloupe;
- Early stages of recycling in Trinidad &Tobago, Saint Vincent and the Grenadines, Guyana, Suriname, Belize, St. Lucia, St. Eustatius, Aruba, and St. Maarten;
- RePLAST-OECS recycling pilot project currently ongoing in Saint Lucia[49];,
- GEF ISLANDS project;
- The new Cartagena Convention project, funded by the German government, is expected to assist 3-5 SIDS with the aim of reducing plastic pollution.

For small countries, recycling and even treatment represents a very expensive operation by lack of economy of scale. A good example can be seen in Saint Kitts and Nevis.

Currently, the main issues concerning diversification of the SWM include the following:

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46 *OECD et al. (2021), Revenue Statistics in Latin America and the Caribbean 2021, OECD Publishing, Paris, https://doi.org/10.1787/96ce5287-en-es*

47 *IABD. (2021). Opportunities for stronger and sustainable post-pandemic growth. Coordination: Eduardo Cavallo and Andrew Powell*

48 *Environmentally related tax revenues amounted to 1.2% of GDP on average in 2019 in the 25 LAC countries for which data are available, below the OECD average of 2.1%*

49 *Initially, the RePLAST project was to transport the plastic waste collected in Saint Lucia to the SIDREP plant in Martinique; however, the plant closed down because of lack of plastic waste volume compared to the nominal capacity. Currently, plastic waste is shipped to Honduras.*

1. The use of recyclable materials as raw material in production is practically absent;
2. The cost of collecting, processing and transporting recyclable raw materials is considered, on average, high;
3. Informal recycling done through unorganized and semi-illegal operations, affecting over 100,000 households;
4. Public participation, public awareness, educational communication is needed to encourage separation of sources;
5. Trade barriers.

Finally, many recyclers are unable to sell the materials for conversion to a new product either on or off the island. The operators risk accumulating these materials for months and even years because they may not be able to sell these recyclable materials to recover costs.

SWM options are mainly limited to landfilling operations. Landfills are acknowledged to be the most widely-used municipal waste-disposal method in the Caribbean. Other waste-management strategies, such as waste-to-energy, composting and incineration so far, have little or no application in the Caribbean countries.

Given that the most dominant component of the waste streams in the Caribbean is organic waste, waste reduction through a process of composting[50] should be a key strategic approach to Caribbean waste management. One option that could be explored is the development of national and domestic composting programmes with supporting incentives to encourage reduced levels of organic waste landfills. This may be achieved through the promotion of national and community composting programmes. This is especially important since there is a real scarcity of land for landfill sites in the small islands of the Caribbean. Composting has broader social benefits, as noted by the Intergovernmental Panel on Climate Change (IPCC). Composting yard waste yields comparatively the same emissions as landfill operations, whereas food waste composting yields far less emissions than landfill operations.

In the Caribbean, the promotion of recycling centres as a waste treatment strategy continues to be considered the most promising action in SWM. Based on current data, there is an interesting potential for the development of this business. However, there are some drawbacks that have slowed down its development. Such drawbacks are due respectively to: the volatility of the global market, the limited scope of the quantities available at the level of the individual States, and the absence of a political / legislative framework of reference.

The main recyclable materials in the Caribbean include metals, plastics and paper. It should also be borne in mind that small internal markets and high transport costs impose scale limits on the recycling process and might need innovative and participatory approaches in order to overcome the efficiency criteria. In this regard, consideration should be given to a (sub-regional) Caribbean trade in recyclable materials in order to increase volumes and promote the specialization of recycling in the private sector. Ratification of policy instruments, such as deposit refund systems and other fiscal incentives, would provide significant stimulus for the development of recycling in the Caribbean area. The consultants have received a recent publication, *The Global Commitment 2020 Progress Report*, mapping the regional corporate and governmental initiatives aimed at creating a circular economy for plastics. The file is submitted in Excel (and not as an Annex).

[50] *And mainly AA category compost (or other Organic Rules levels), which is the most restrictive in terms of maximum metal limits in order to prevent metal accumulation in soils, preferred composts for intensive horticultural uses. This could be supported by joint initiatives aimed at reinforcing sustainable agricultural practices in the Caribbean.*

6. Context and opportunities for private sector in the SWM in the Caribbean region

6.1. Private Sector Involvement in SWM in the Caribbean Region

In the Caribbean, private companies – mostly local - are substantially involved in SWM being specialized and dedicated to the services required by the responsible authorities. Even in the largest countries, public authorities require the services of the private sector for the operationalization of SWM systems, which usually invest more in new technologies and provides more efficient services.

Mobilizing the private sector, skilled as it is, does not in itself constitute a solution for better waste management. To be effective and appropriate, a waste management system must be accompanied by better financing mechanisms, increased technical and institutional capabilities on the side of public authorities, and a well-structured regulatory framework. Specifically, SWM initiatives must consider the town's socio-spatial structure, the type of waste involved, the resources available, the institutional setting, and whether those involved are from the formal or informal sector. A clearly defined regulatory framework enabling companies to compete equitably is a prerequisite for effective private sector involvement.

In the absence of such an environment, private sector involvement—even if it can temporarily fill public management gaps—may still not be enough to achieve an integrated and sustainable waste management system.

Few local companies were identified as strong enough to invest in the development SWM facilities. One of them is *CEVONS Waste Management*[51] in Guyana, which already operates the largest landfill in the country and leads some recycling projects in the country. In Barbados, a recently[52] approved PPP mobilises the Sanitation Service Authority in collaboration with *Prosource Limited*[53], going to provide new residential waste collection solution, technology-driven, through recyclable bins for recyclables disposal in the island.

Very often, the private sector is involved in collection services and transport to transfer stations. In Jamaica, for example, waste collection service is operationalized through a mixed scheme by public (National Solid Waste Management Authority) and private entities under contract with the corresponding authority. In contrast, in just a few cases (e.g. Trinidad and Tobago and the Bahamas), private sector participation has been observed in the management of final disposal sites. Grenada shows an interesting initiative aimed at collecting used oil by *Texaco* and *Shell* and the shipment back to Trinidad by the importers.

Existing initiatives to collect and export recyclables have also been led primarily by the private sector in various countries (see ***Box 5***[54]).

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51 https://cevons.com/

52 *May 2021*

53 *Prosource Limited* https://www.prosourceltd.co/about *, procurement, logistics and service provider, whose expertise lies in the residential, commercial, and industrial waste sector, is part of the Innotech Group* http://www.innotech-services.com/Home/*, construction company present in most of the Caribbean islands experienced in PPPs schemes, aimed at building and operating infrastructure through LT concession agreements.*

54 *Rodrigo Riquelme, Paola Méndez, Ianthe Smith. 2016. Technical Note Nº IDB-TN-935 Solid Waste Management in the Caribbean Proceedings from the Caribbean Solid Waste Conference, Inter-American Development Bank, Water and Sanitation Division,* https://publications.iadb.org/publications/english/document/Solid-Waste-Management-in-the-Caribbean-Proceedings-from-the-Caribbean-Solid-Waste-Conference.pdf

In-depth documentary study and conducted interviews confirmed some key characteristics of the SW in the Caribbean, such as predominance of organic waste, plastic waste and packaging of imported goods, found relatively similar with the concerns of the sector in the Pacific Islands. This could justify some targeted efforts, at least in the form of awareness raising and trainings for farmers and fishermen (*see IICA on going initiative*), and an increased co-responsibilities of importers who may have a say about packaging of imported goods while influencing requirements of more eco-designed imported goods.

Another challenge for private sector companies is that the local lending conditions are usually (very) unfavourable, thus companies have difficulties to access investment loans. In this regard, there is certainly room for the support from international institutions to contribute to enabling suitable lending conditions which would allow private sector companies further develop their technologies and services.

6.2. Opportunities towards a Circular Economy strategy

The concept of a circular economy is relatively novel and still evolving. Following a recent study, different circular business models can be grouped into five core categories[55]: product-as-a-service, renewability, sharing platforms, product-life extension, and resource use and recycling. Enablers such as **communication and awareness raising efforts** (*i.e. training in sustainable materials management and reverse logistics in the supply chain, raising awareness of the environmental and social impacts of a circular economy, or giving recycling advice, etc*) which aim at creating societal pressure for changes in consumer and production practices, and **circular data management platforms[56]**, offering tools for obtaining and managing information across circular value chains (*i.e. aimed at optimising product and material flows internally and across organisations, ensuring proper recycling of products at the end of their lives, and retrieving materials from products, etc*) are key to the emergence and structuration of circular economy businesses, contributing to waste diversion and sustainable management.

Experiences from the African Circular Economy Knowledge hub[57] that have been geo-located on an interactive map[58] (*e.g. Suame Magazine[59], in Kumasi, Ghana constitutes the biggest informal sector cluster built since 1935 around the colonial armouries, to the Shimbwe Juu Kihamba[60] Agro-forestry Heritage Site in Tanzania, or from the Umuganda gathering[61] of local communities on every last Saturday of the month in Rwanda to carry out specific activities such as the collection of waste*), identify several key elements, contributing to paradigm shift in terms of consumers and production practices across the continent.

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55 *SITRA, Nina Ahola and Ella Tolonen from Deloitte. (2021). The winning recipe for a circular economy – What can inspiring examples show us?* https://circulareconomy.europa.eu/platform/sites/default/files/the-winning-recipe-for-a-circular-economy.pdf

56 *See **CircularLabs** for best practices exchange on circular economy, market opportunities identification, as well for sharing knowledge, products and services and processes. Financed by Interreg Spain – Portugal,* https://marketplace.circularlabstoolkit.eu/marketplace *; CirculEire* https://wks.circuleire.ie/public/site/resource-library

57 *The Circular Economy: Our Journey in Africa So Far, Footprints Africa and African Circular Economy Network (ACEN) Consulted on* https://wks.circuleire.ie/public/artefact/51b9afd9-47df-4e10-a81b-9cb656f0f015

58 https://grid-arendal.maps.arcgis.com/apps/instant/minimalist/index.html?appid=1fd04bafbafc4cb2be8bdf5100382932

59 https://asantemanweb.com/position-kumasi-suame-magazine-for-development/

60 http://www.fao.org/giahs/giahsaroundtheworld/designated-sites/africa/shimbwe-juu-kihamba-agro-forestry-heritage-site/detailed-information/en/

61 https://rwanda.unfpa.org/en/news/rwandas-homegrown-solution-building-road-kigali-nairobi-through-umuganda

Circular systems employ the concepts of reuse, sharing, repair, refurbishing, remanufacturing and recycling to create "closed loops" aimed to design out waste and pollution, to keep products and materials in use for as long as possible and to regenerate natural systems. Based on performance economy, labour intensive, collaborative practices, and technological enablers of innovation, they rely on several principles such as:

- **circular entrepreneurship focuses on waste**, while fostering a paradigm shift towards product-as-service and waste-as-resource approaches, aimed at diverting organic waste to enhance soil and capturing by-products from energy generation, repurposing waste materials as construction inputs, and along the way cleaning up communities
- **entrepreneurial experiences underline the value of rapid prototyping**: start-up approaches may differ from standard ones, and need a fast-track to market rather than fine-tuning products and services; as technologies are usually relatively low tech, low volume and by definition available locally (through equipment improvisation), it is preferred to take the project to the market rapidly, and allow adaptions while running and implementing the project
- **parallel evolution of business models**, working in different geographical settings, such as initiatives of transformation of plastic waste in construction materials (bricks, paving stones and tiles) or black soldier flies farming for production of animal feed, fertiliser and compost, and facing barriers to scaling, explain the local dimension of such circular entrepreneurial initiatives.

One of the characteristics of SWM in most low- and middle-income countries around the World is the fact that recycling is largely a private economic activity based on valorisation and trading, and not a service of cleaning or removal. An important role is played by MSME, either formal or informal, along with larger national or international companies. While the formal private sector includes registered enterprises carrying out all types of SWM services, the informal sector includes "*unregistered, unregulated activities undertaken by individuals, families, groups or small-scale business waste pickers, itinerant buyers, traders in waste materials and non-registered small-scale enterprises*[62]". Informal SWM sector entrepreneurs, usually called scavengers or waste pickers pick up and trade recyclable, reusable materials from mixed waste sifting recyclable items out of waste bound for landfills, under precarious work, health hazard conditions, no social security, carrying out their work often in small scale for daily income or subsistence. Community Based Organizations (CBOs) also included in the informal sector, and lacking access to facilities for waste disposal and treatment, are usually active in maintaining their own environments clean by mainly participating in primary collection and street cleaning. International cooperation initiatives support the integration of informal micro-enterprises from SWM into the formal sector, though, for example (e.g. *Ciudad Saludable*[63], implemented by the Clinton Global Initiative with the support of IADB, a successful case of South-South Cooperation, that replicates Peru's experience in creating a market for integrated SWM in the Dominican Republic and Haiti.

Multiple roles are played by the private sector, be it through local entrepreneurial initiatives (usually small sized, often based on family or community mobilization, either formal or informal) or through international corporations. Partnerships (*public-private, but also multi-stakeholders orientated*) offer competitive mechanisms to leverage resources and competencies in various types of SWM activities (*e.g. collection, recycling and composting, waste-to-energy, waste treatment, or landfill management*). The private sector is considered to contribute fostering

62 *Wilson, David & Velis, Costas & Cheeseman, C.R.. (2006). Role of Informal Sector Recycling in Waste Management in Developing Countries. Habitat International. 30. 797-808. 10.1016/j.habitatint.2005.09.005.*

63 http://skoll.org/organization/ciudad-saludable/?format=pdf

improved performance of the public sector, reducing and stabilizing costs of services, improving environmental protection and compliance, and accessing private capital for infrastructure investment by broadening and deepening the supply of domestic and international capital.

The example of eco-energy, self-reliant and green city experience in Korea, with three pilot sites[64] (*Jincheon of Chungcheongbuk-do, Hongcheon of Gangwan-do and Gwangju Metropolitan City*), shows the role of Community Engagement in Waste-to-Energy Development[65, 66] :

BOX 1. Community Engagement in Integrated Waste-to-Energy

Korea rolled out an Integrated Eco-friendly Energy Community approach, in which benefits from the recovered waste-to-energy initiatives were going back to the communities involved. The initiative aimed at converting unpleasant facilities into green energy production facilities, and the produced energy was either supplied free of charge or exchanged by the residents with public services. The approach was designed to ensure circular economy and sustainable use of natural resources with environmental integrity and included:

- a waste-to-energy component (biomass treatment for food waste and livestock excrement, recovered energy supply including electricity, gas and heat, compost utilization.
- other renewable energy components (solar power, hydropower and geothermal heat).
- other features / components for public benefits (greenhouse for crops using waste resources, environmental mitigation, energy-efficient community center,…).

Barbados-based Caribbean e-Waste Management Inc[67] is a pioneering company collecting, disassembling and processing for the recovery of recyclable raw materials from electronic equipment; recovered materials are shipped to e-Stewards or R2 certified international recyclers to undergo further processing. A selection of best practices is presented in ***BOX 2***:

64 *With the mentorship of the Ministry of Science, ICT and Future Planning, or MSIP, of the Ministry of Environment and of Ministry of Trade, Industry and Energy, or MOTIE, respectively*

65 https://www.unescap.org/sites/default/d8files/knowledge-products/Clean%20final_SINGG_Policy%20Brief.pdf

66 https://www.gtck.re.kr/frt/center/en/tech/green_focus.do?pageMode=View&nttId=3697&nowNum=4

67 http://cewmi.com/about-us/

Since 2020, the Inter-American Institute for Cooperation on Agriculture (IICA) implements a series of workshops[68] in six Caribbean countries (*Belize, Jamaica, St Lucia, Trinidad and Tobago, Guyana and The Bahamas*) to train farmers on how to create entrepreneurship opportunities from managing organic waste. See also ***Annex 9*** on Marine litter Action fiche, which equally recommends the elaboration of guidelines for promoting composting. A selection of relevant best practices is presented in ***BOX 3***.

From *ExxonMobil's*[69] involvement in supporting improvements in plastic waste recovery as a founding member of the *Alliance to End Plastic Waste*[70], to local innovative bio-plastic initiatives offering natural, degradable and compactable alternatives to single-use plastics (*i.e. the student-entrepreneur team of JA Bio Plastics*[71] *from the University of West Indies, initiative incubated by the Branson Center of Entrepreneurship*), best practices in entrepreneurial initiatives for plastic recycling should be disseminated to raise awareness and stimulate the emergence of other local initiatives aimed to tackle the plastic waste issue in the Caribbean.

Some plastic recycling initiatives are shown in ***BOX 4***.

68 *IICA project: "Creating Economic Opportunities through the Adoption of Bioeconomic Models"* https://iica.int/en/press/news/caribbean-farmers-learn-how-turn-organic-waste-economic-opportunities

69 https://energyfactor.exxonmobil.eu/science-technology/advanced-plastic-sustainable-life/?gclid=CjwKCAjwnPOEBhA0EiwA609ReTMrD_QUDL1OrJ90ZSnyC3cZ3IRV4nBPQADffcZZdSHimU3RBpDUjhoCUUgQAvD_BwE

70 https://endplasticwaste.org/

71 *JA Bio Plastics Jamaica, founded by Jordon Freeman with the support of the Branson Center of Entrepreneurship Caribbean* https://bransoncentre.co/project/jordonfreeman/

BOX 3. Bio-waste to compost

LONO Côte d'Ivoire: has developed community-scale, clean technologies to transform agricultural waste and by-products into compost, biogas, animal feed and biofuels; laboratory tests were undertaken in partnership with Yamoussoukro Polytechnic https://www.lonoci.com/

Sabon Sake Ghana produces regenerative soil solutions to help reverse infertile and degraded farm soils. The amendment is produced with agricultural waste from sugarcane, in partnership with agro-waste producing companies, and involves local farmers facebook.com/sabonsake

The Compost Kitchen South Africa collects food waste from its subscriber households on a weekly basis and recycles into vermicompost with the help of earthworms. The business started at neighbourhood level, but is aimed at bringing income opportunities to households https://www.compostkitchen.com/

BOX 4. Plastics Recycling - BioPlastics and Partnerships with International Companies

Mr Green Africa Kenya collects, converts and sells post-consumer fairly traded recycled plastics, with about half of the quantity coming directly from informal waste pickers, providing an income generating source of revenue to marginal workers. The initiative is based on partnerships with large international or regional companies, allowing them to access ethically sourced and locally produced material *(i.e. Unilever, Dow and TOTAL)*. Partnerships include the operationalization of the *Waste Picker Transformation Journey* realized in cooperation with Unilever, and aimed at providing waste pickers with access to benefits, goods and services that improve their quality of life, a *Plastic Plastic Picker Market App*, piloting an app developed with Dow that links drivers with consumers for household pick up of plastic waste or *Aggregation Centers* located at TOTAL petrol stations allowing customers to gain points for bringing their plastics, and redeem those points at TOTAL shops. https://www.mrgreenafrica.com

Hya Bioplastics Uganda proposes a range of packaging materials made from plant-based agricultural waste that are biodegradable and compostable, and can serve as a viable alternative to plastics. They have received support from the Mechanical Engineering department at Makerere University and mentoring advice from Mike Werner, head of circular economy at Google http://hyabioplastics.com

6.3. On the local entrepreneurial ecosystem in the Caribbean

The "entrepreneurial ecosystem" is the prevailing term for promoting entrepreneurship as an economic growth tool[72], and requires active participation from the universities and research centres, business support organisations, financial organizations, as well as the link with the industries and an enabling regulatory and fiscal environment. Over the last few years the

[72] *Meahjohn, Inshan. (2020). The Entrepreneurial Ecosystem in the Caribbean. Journal of Economics and Business. 3. 10.31014/aior.1992.03.03.259.*

Caribbean has gained attention in this respect due to the influx of new start-ups and the boom of entrepreneurship in the region where several hubs for entrepreneurship and innovation in the Caribbean emerge.

Also, technology-related entrepreneurial activities are growing at a rapid rate. However, acceleration programs are a newer phenomenon in the region[73], with the first accelerator program, the Branson Centre[74], launched in Jamaica in 2011. Universities such as the University of the West Indies and the University of Trinidad and Tobago (UTT) are aiming to become leading Entrepreneurial Universities (EU) in the region by building a positive relationship between industry, university, and government, and launching business incubators and/or accelerators. Thus, the University of the West Indies (UWI) introduced BizBooster[75] virtual incubators programs, while UTT initiated uSTART[76] physical incubator, both aimed at catalysing technology transfer initiatives. Initiatives such as Start-Up Jamaica (SUJ)[77] Jamaica, launched in 2012, build on a public/private partnership between the Government of Jamaica through the Ministry of Science, Technology, Energy and Mining (MSTEM) and the Development Bank of Jamaica (DBJ) on the one hand, and local and overseas private investor partners on the other, including the World Bank, IDB and UNESCO.

In order to further inspire and attract new ventures and business ideas, it is important to promote local (regional) success stories at all levels of development (*i.e. ideation, start-up, early stage, acceleration and growth*), to support networking among the local entrepreneurs, and facilitate access to information, resources and support. It is noted that one of the major challenges for incubators / accelerators programs in the Caribbean is the facilitation of the access to finance. The Caribbean Export Development Agency is host to the Regional Angel Network, gathering a hundred angels-members, with the most active located in Jamaica (First Angels), Barbados (Trident Angel Network), Dominica, and Trinidad and Tobago. While some accelerators' initiatives (*such as the SUJ Jamaica*) take equity in start-up technology companies in return for seed capital, training and mentorship, pitching entrepreneurial initiatives to equity investors ("Angels" or "Venture Capitalists") is key. Entrepreneurs need support in terms of communication, mentoring for scaling up their business and interacting directly with angel investors.

The Caribbean Youth Virtual Business Incubator[78] undertook a first exercise aimed at mapping the entrepreneurial ecosystem in the Caribbean, gathering actors providing financial (further divided into debt, equity and grant funding) and technical services (*capacity development, technical or operational support*) to entrepreneurs. The exercise could be further detailed and propose a comprehensive pan-Caribbean entrepreneurs' portal, identifying among other incubation and acceleration opportunities, thematic networks and financing opportunities.

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73 *The concept of business incubator (launched in 1959 by Joseph L. Mancuso in Batavia Industrial Centrer, New York, US) expanded to Europe under various forms such as innovation centers, pépinières d'entreprises, technolopoles, science parks and other research centers, centered on hallmark business assistance services*

74 https://bransoncentre.co/

75 http://bizbooster.com/

76 https://utt.edu.tt/index.php?wk=48

77 https://www.genglobal.org/startupnations/start-jamaica

78 *Inter-American Institute for Cooperation on Agriculture (IICA) and Caribbean Agricultural Forum for Youth (CAFY) through funding provided by the Technical Center for Agricultural and Rural Cooperation (CTA).* http://www.caribbeanvbi.org/resources/entrepreneurial-ecosystem-map

International donors' efforts should be coordinated to enhance and boost investment in innovative initiatives in the sector of solid waste management, and related matters. For example, launched in September 2020, the OECS Blue Economy Investment should contribute to the reinforcement of the waste management related activities (*such as conversion of fish waste to fertilized, waste-to-energy and renewable energies, or sustainable tourism initiatives development*). The forecasted Blue Economy Incubator and Accelerator programme should help build regional approaches and boosting technology-transfer and servicing an integrated waste management.

Initiatives to collect and export recyclables, primarily led by the private sector all over the Caribbean (*as shown in* ***Box 5***[79]) could be supported through targeted business support services, provided by incubation and acceleration programmes, which could operationalize recycling materials trade and logistic platforms.

BOX 5. Examples of Private Sector Recycling Initiatives in the Region

In Jamaica, Recycle Now Jamaica is a PPP between two private entities (Wisynco and PepsiCo), and the Government of Jamaica, focusing on the recycling of PET. Jamaica Recycles is a private entity – subsidiary of an international company that identifies markets all over the world for the recyclables – that collects plastics, cardboard and paper for export from hotels, other business establishments, the Retirement Disposal site and community groups. At this site the materials are baled utilising two baling machines and they are temporarily stored until they are collected for transportation to Kingston to be exported to markets overseas. Some of the hotels have been provided with balers by Jamaica Recycles so that the volume of the recyclables is reduced at source, thereby reducing the storage space on site and facilitating easier transportation.

In Trinidad and Tobago, the Solid Waste Management Company Limited (SWMCOL) has the Port of Spain Recycling Depot and focuses on recycling glass bottles and jars, plastic beverage bottles, beverage cans and milk and juice tetra-pak cartons. In 2015, SWMCOL launched a Beverage Container Recycling Facility, which processes post-consumer beverage containers into high quality material for producing new products. In addition, the private initiative PlastiKeep provides special bins for plastics which can be dropped off at their facility.

The operationalization of **Business Incubators and Accelerators** in the Caribbean region should be supported; through collaborative programs those structures would be aimed at enhancing the entrepreneurial capacities and innovative spirit of local entrepreneurs, supporting technology transfer, start-ups and early stage development initiatives. By their structure, as they often involve the participation of local authorities (*SMEs support, innovation, research and development*) and universities, they have a powerful anchorage into the territorial eco-system. They also gather and propose support from innovation (*green / circular*) funds and other public and private financing sources, and partnerships and mentorships from large companies.

[79] *Rodrigo Riquelme, Paola Méndez, Ianthe Smith. 2016. Technical Note Nº IDB-TN-935 Solid Waste Management in the Caribbean Proceedings from the Caribbean Solid Waste Conference, Inter-American Development Bank, Water and Sanitation Division,* https://publications.iadb.org/publications/english/document/Solid-Waste-Management-in-the-Caribbean-Proceedings-from-the-Caribbean-Solid-Waste-Conference.pdf

Atlanpole[80] Eco-Innovation Factory

Atlanpole, Technopole[81] and Business Innovation Center[82], partners with ADEME Pays de la Loire[83], Banque Populaire Grand Ouest, EDF, Go Capital[84], and Demeter[85] to implement acceleration programs targeting entrepreneurs (*start-ups and SMEs founded less than 2 years before*) aiming to boost their development through innovation.

The companies accelerated by the Eco-Innovation Factory tackle major environmental challenges in the energy, environment and sustainable city sectors, including specific circular economy and short circuits initiatives such as biomaterials, waste reduction and waste-resources management, waste-to-energy and energy efficiency.

80 https://www.atlanpole.com/

81 *IASP International Association of Technopoles, Science Parks, Incubators and Areas of Innovation* https://www.iasp.ws/

82 *EBN European Business and Innovation Centers Network* www.ebn.eu *, RETIS French National Innovation Network* https://en.retis-innovation.fr/

83 *L'Agence de l'Environnement et de la Maîtrise de l'Energie (ADEME)*

84 *https://www.gocapital.fr/*

85 *Demeter-Emertec is a management company dedicated to investing in energy and environmental transition through partnerships with local innovation representatives, and aiming for a value changes approaches to regional eco-systems. European leader in the sector, they support industries and sectors (innovative start-ups, growing companies or infrastructure) that contribute to reducing the environmental impact of human activities in many areas, including waste, agritech, new materials, and (renewable) energy transition*

Surabaya Ocean Plastic Prevention Accelerator (OPPA)

BOX 7. Ocean Plastic Prevention Accelerator – Support Services

The Waste Community Accelerator (WCA) 6-months Programme: focuses on developing the capacity of East Java-based innovators on improvement of SWM practices specifically related to handling plastic waste and recycling / upcycling. Additionally, the program emphasizes the development of market (trade) connections in order to strengthen local plastic feedstock value chains. After graduation, the participants receive continued support through OPPA's Waste Systems Change Community group, with an aim to further strengthen the capacity and connections between the actors of the Greater Surabaya waste management ecosystem.

- **Bank Sampah Induk – Central Waste Bank : hub for waste banks, buying from smaller waste banks and selling waste feedstock to large aggregators or recycling operations. Locally acting as convener for smallest collection and sorting units towards larger aggregators, with the support of Unilever Foundation**
- **Peduli Sungai Surabaya (River Care): educating communities through the identification and training of a key person or "champion" to scale the impact**
- **APSI (Asosiasi Pengusaha Sampah): association of MSME in SWM, with a specific focus on capacity building for aggregators (informal waste collection and sorting businesses).**

Surabaya Access Pad (SAP): a three-month landing pad program designed for venture that are creating innovative ocean plastic pollution preventing products or services already implemented in one or several markets.

Waste Action Network (WAN): gathers more than 70 members, around waste management topics.

Digital Waste Innovation & Research (OPPA): aimed at improving waste data management and transparency in the region.

The Indonesia National Plastic Action Partnership (NPAP) is collaborating with UpLink[86] crowdsourcing innovation platform and the Ocean Plastic Prevention Accelerator[87] (OPPA), a social innovation ecosystem builder powered by The Incubation Network[88] (TIN). Together, they are calling for innovative approaches that address better supply chain(s), better knowledge and support visibility to/of informal waste sector. They also facilitate networking, partnership building and mentorship from major Indonesian waste management stakeholders. Surabaya is the first OPPA pilot project location.

6.4. On the informal sector in solid waste management

Informal sector workers in solid waste management (*generally called scavengers or waste pickers*) or informal waste sector (*IWS for short*) includes unregistered, unregulated, labour-intensive, low technology and low-paid activities undertaken by individuals, families, groups or small-scale business waste pickers, itinerant buyers, traders in waste materials and non-registered small-scale enterprises. Informal waste collectors are not regulated or controlled by

86 https://uplink.weforum.org/uplink/s/
87 https://www.oppa.id/about
88 https://www.incubationnetwork.com/ *funded by the Circulate Initiative (TCI) and the Global Affairs Canada (GAC)*

government agencies, and do not have trading licenses nor benefit from any social welfare schemes[89, 90, 91]. IWS includes also people carrying out their works or services in small scale for daily income or subsistence.

Several studies by UN-Habitat[92] suggest that informal recycling may be recovering 15-35 percent of generated waste in cities in low-and middle-income countries, while an estimated percentage of 2 percent of the urban population in developing countries makes a living in the IWS, through informal micro-entrepreneurship initiatives. Albeit the varying degrees existing depending on the country and the region, informal waste pickers play thus a central role in the collection of recyclables. Professionalizing collection and increasing the scale of recycling activities would improve working conditions of informal sector workers, and the national authorities should put in place supportive measures (*i.e. "pricing" waste by means of landfill taxes, landfill bans and specific measures for Extended Producers' Responsibility*), aimed at dynamizing the market of collecting and processing recycling materials.

IWS includes several types of activities related to solid wastes, such as (i) informal waste collection[93], especially in low-income neighbourhoods not served by municipal waste collection service, (ii) informal recovery of recyclables for reuse or recycling, the most common IWS activity, with a trend of incorporation of waste pickers in recycling programs involving separation at the source, (iii) manufacturing activities using recovered materials as raw materials (*see Kumasi, Ghana, biggest informal – metal - sector cluster*) and transformation of organic waste into compost, or (iv) provision of waste management services (*such as street sweeping and cleaning of facilities such as bus stations*). The informal recovery of recyclables (ii) and the manufacturing activities using recovered materials (iii) are activities that have direct linkages with the formal economy.

IWS populations, generally vulnerable and marginalized, are targeted by international donors' initiatives[94] aiming to reduce gender inequalities within the segment of the population that works in informal collection.

Community Based Organizations (CBOs) are also included in the private informal sector; often, IWS include in this case primary collection and street cleaning aimed at improving their environmental conditions, when access to utility services is scarce or inexistent.

Among others, a GIZ study[95] investigates the ways of integrating the informal sector into SWM. The starting point for the private sector would be the establishment of partnerships with informal

89 *Ahmed, Shafiul & Ali, Mansoor. (2004). Partnerships for Solid Waste Management in Developing Countries: Linking Theories to Realities. Habitat International. 28. 467-479.*

90 *Wilson, David & Velis, Costas & Cheeseman, C.R.. (2006). Role of Informal Sector Recycling in Waste Management in Developing Countries. Habitat International. 30. 797-808.*

91 *ILO. (2014). The informal economy of e-waste: The potential of cooperative enterprises in the management of e-waste / International Labour Office, Sectoral Activities Department (SECTOR), Cooperatives Unit (COOP)*

92 *Wilson, David & Rodic-Wiersma, Ljiljana & Scheinberg, Anne & Alabaster, Graham. (2010). Comparative analysis of solid waste management in cities around the world.*

93 *In Ciudad Nezahualcoyotl, near Mexico City, informal collectors earn five times the minimum wage, which is more than factory workers*

94 *IDRC in cooperation with the GIZ. (2010). Acción-investigación e influencia en políticas: La dimensión de género en la gestión de residuos sólidos en las áreas urbanas y peri-urbanas de las ciudades de América Latina y el Caribe. Funding IDRC 105183-001.*

95 *GIZ. (2011). Recovering resources, creating opportunities Integrating the informal sector into solid waste management*

workers while improving IWS's linkages to industrial value chain; support from the civil society is needed, as well as putting corporate social responsibility (CSR) policies into action. The organization and formal recognition of informal waste workers goes inevitably through support actions aimed at providing them with ID cards, helping them to get structured in associations and cooperatives or launch entrepreneurial initiatives.

BOX 8. Support to Informal Recyclers of Electric and Electronic Waste

Pilot projects to support informal recyclers of electric and electronic waste conducted in India.

Studies on e-waste recycling showed that 95% of electronic waste was recycled by the informal sector, but that the formal and the informal recycling sector partly intervened in the same domains. The studies concluded that a division of labour might be more efficient.

The informal stakeholders should assure collection and dismantling of devices, while recycling should be reserved to formal recyclers with appropriate equipment and processes.

Informal dismantlers and recyclers were brought in contact with formal recycling facilities to which they could provide pre-processed materials.

On state level, an e-waste agency (EWA) was founded that regroups informal and formal recyclers as well as government bodies along the value chain.

Measures to support the formalization and upgrading of informal e-waste recyclers, including mainstreaming into the national Environment Policy and national Guidelines for the sound management of e-waste.

Private organisations in the field of international cooperation, like the Clinton Foundation or the Bill and Melinda Gates Foundation, are already committed in supporting the integration of informal recyclers as a first step to the formalization of micro / small entrepreneurial initiatives out of informal ones.

To tackle the issue at the heart of SWM[96], it is necessary to tackle the following aspects: the mismanagement of landfills such as the ones in Santo Domingo (with more than 350 informal and open dump sites), establishing large partnerships, mobilizing public sector, local administrations but also international organizations, along with a strong presence of the private sector (*formal, informal, at entrepreneurial level and at corporate level*). Initiatives like the flagship programme Clean Cities – Blue Ocean of USAID[97] recognize the significant role of informal waste collectors (IWCs) and aims to enhance the livelihoods and the women's economic empowerment and entrepreneurship in SWM and recycling.

96 *Edelman, D. J. (2019). Managing the Urban Environment of Santo Domingo, the Dominican Republic. Current Urban Studies, 7, 76-142.* https://doi.org/10.4236/cus.2019.71005

97 *implemented by Tetra Tech* https://www.tetratech.com/fr*, through partnerships and multi-stakeholder alliances, in consortium with the International City/County Management Association (ICMA), The Manoff Group, and Ocean Conservancy*

6.5. On the role of international (large) companies

The presence of international companies in the SWM sector in the region is very scarce, at least in the classic way of utility companies' involvement. Further investigations should help mapping the presence and interests of large corporates in the SWM in the Caribbean. The team has found for instance, both the French groups SUEZ and VEOLIA[98], as well as the Spanish URBASER[99] have undertaken studies but currently have no significant operations in the region. However, their interest and responsible engagement justify considering them as potential partners in regional initiatives. While the lack of (limited) volume and the distribution of waste streams on the diverse Caribbean islands may slow down the investments in the region, the global involvement of the corporations as champions leading the way for downsizing the waste streams, notably by reducing the plastic pollution, in recycling and reusing materials and paving the way to a circular transition should not be forgotten.

As founding partner of the *Alliance to End Plastic* and of the *CircularChain – the Circular Economy blockchain* – supporting the agricultural transformation including the organic waste return-to-soil activities, SUEZ could be mobilized as a leading champion for plastic recycling[100], as well as for leading the way in compost and waste-to-energy generation from food scraps and agricultural / green waste in the Caribbean.

The presence of the French utilities' giant in Latin America and the Caribbean is still weak, but the company is expanding its footprint in the region, which accounts for 7% of its turnover. SUEZ group is already covering waste management operations in Colombia and has a larger presence in the agro-food sector where its interventions are aimed at optimizing water management in the beverages and sugar production processes (*Brazil, Mexico and Costa Rica*).

Veolia, through Veolia Environmental Services LLC, has a transhipment facility in Gurabo, Puerto Rico, which ensures the logistics of the collected waste (*mainly pharmaceutical and biomedical companies*) and transportation to its New Jersey processing plant with a rate of 80% of the waste reused as material to produce energy, while e-waste is dismantled at its facility at Port Washington facility in Wisconsin. Veolia is also actively involved in the Caribbean, through its subsidiary company Batrec Industries AG, with UNIDO, in enhancing mercury waste management.

The global waste management services provider, URBASER[101] is present in Dominican Republic's capital Santiago under URBASER Dominicana, where it provides collection services and in Chile, through KDM, a holding company of Spain's Urbaser and USA's Danner Company,

98 *Which announced in April 2021 an agreement to merge*

99 *World leader in environmental management and responsibly involved in circular economy transition* https://www.urbaser.com/en/

100 *SUEZ confirmed in 2020 its involvement in a plastic recycling plant (Circular Polymer Plant in Bang Phli, Thailand) will have the capacity to convert 30.000 tons per year of plastic film into recycled-content pellets, with innovative equipment and technology imported from Europe. SUEZ also entered into a strategic partnership with Chemicals Business (SCG) an integrated petrochemical company, for the distribution of recycled plastics in South Asia. SUEZ is equally part of Thailand's Public Private Partnership for Sustainable Plastic and Waste. Suez also runs an organic waste treatment facility in Hong Kong with more than 70.000 metric tons of annual capacity, generating compost and enough electricity to power its own operation and sell excess electricity to the grid.*

101 *URBASER participates to several R&D projects on innovative technologies for waste treatment, such as SEALIVE financed by Horizon2020 (aiming at reducing plastic waste along with marine and land-based pollution through sustainable bio-based plastic solutions and biodegradable materials) or EIB financed project on waste management RDI and investment (aiming to optimize waste-treatment processing technology, in order to achieve greater efficiency and recovery of as many by-products as possible).*

providing residential and industrial collection, waste treatment and recycling, and construction and operation of sanitary landfills and waste-to-energy plants[102].

As part of corporate actions on plastic waste, organizations like PetStar, working in The Coca-Cola Company value chain, turn old bottles into new bottles, through high rates of collection (21% in the Caribbean), they produce bottles with 100% recycled content. The Coca-Cola Company is one of the five inaugural corporate members having launched *ReSource initiative*[103], and contributed to the establishment of a baseline of plastic use based on 2018 figures (published in the 2020 report), to be used for tracking the companies' plastic footprint and publicly report on the progress of their plastic waste commitments. Actions are aligned with the goals set by the Trash Free Seas Alliance[104] and the New Plastics Economy Global Commitment[105] led by Ellen MacArthur Foundation, in collaboration with UNEP.

Throughout the development of this assignment, discussions were held with representatives from some of these international firms. The following aspects were highlighted during the discussions to justify their limited presence in the region:

- low volume of solid waste production / collection: in most countries, and in line with their population and tourism, the volume of solid waste is far too low to justify investments in a facility or even in commercial means;
- lack of trust in the country governments: the local governments suffer from a poor image in terms of payment for services provided, which discourages any potential investment;
- financial costs of transfer from one country to another: because of the high costs of transportation, and in the absence of smart logistics arrangements, it seems to be financially unsustainable for the companies to have a centralized sorting or treatment centre.

Larger countries, like the Dominican Republic, nonetheless seem to be of interest for these companies.

According to an interview with the regional director of SUEZ[106], the minimum volume for a treatment unit would be 30,000 tons per year, which roughly corresponds to the waste production of 100,000 inhabitants, if all household waste is collected, or 200,000 inhabitants, if only half of it is collected. Strategically, the following additional aspects were also mentioned as key issues that hinder their involvement in the region given the company's standards:

- the existing low level of fees to be paid by the users and therefore by the municipalities to their service provider;
- the low standards of social and environmental concerns/requirements, as opposed to commitments in the Corporate Social Responsibility (CSR) strategy of the company;

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102 *KDM Santiago de Chile: KDM inauguró su planta de generación eléctrica con biogás (KDM starts its biogas power generation plant), Grupo URBASER-KIASA.* http://www.kdm.cl/index.php/escondidos/46-noticiasportada/272-kdminaguraplatageneracionelectrica.html

103 *The reported metric tons of plastic of each of the five founding principal members rank The Coca-Cola Company first (3 milion metric tons), followed by Procter & Gamble (605.000 metric tons), Keurig Dr Pepper (208.000 metric tons), Starbucks (190.000 metric tons) and McDonald's Corporation (153.000 metric tons).*

104 https://oceanconservancy.org/trash-free-seas/plastics-in-the-ocean/trash-free-seas-alliance/

105 https://www.newplasticseconomy.org/projects/global-commitment

106 *Cf interview held in November 2020, with Vincent Decap, Commercial Director SUEZ Latin America, in charge of developing the complete portfolio of SUEZ (Water and Solid Waste Management) for the Central America and Caribbean region*

- the limited technical capacity and equipment (*e.g. personal protective equipment*) of local partners.

There seems to be some level of interest in the region, in relation to plastic recycling, provided that some of the previous conditions improve. The strategy will be opportunistic according to the company requirements, that is, it would not involve a pro-active development of an investment strategy in the region from their end but rather a response to potential opportunities that could emerge through tendering processes.

Based on the discussions held with SUEZ representatives, it is important to highlight that the reluctance of large international companies to collaborate and partner with local companies (*e.g. through sub-contracting*) seems to stem from the perceived low standards of local companies. Apart from that, there is recognition of the potential benefit that such collaboration would bring to them, especially if the fees remain low.

Assuming that the position of SUEZ is representative of international companies, an improvement on the following key aspects is recommended in order to attract potential investments from these key corporate actors:

- trust in the country governments: financial support for facilities and services from an international organization could contribute to change the opinion of these bigger players/major companies;
- fee level: optimization through the development of feasibility studies could result in an increase of fees per ton for collection and treatment services, which could improve the attractiveness for investment in some countries;
- social and environmental requirements: through sensitization campaigns and capacity building exercises, local standards could be improved, allowing international firms to comply with their CSR strategies;
- local partners: encouraging private joint ventures would build and improve the technical capacity of local companies.

Technical Assistance from the EU addressing some of the previously mentioned aspects could certainly contribute to strengthening the operationalization of SWM services by the private sector.

Once a potential initiative is identified, either at the national level in one of the larger countries or at a regional scale, the largest international companies could be contacted to explore opportunities for collaboration. Some of them could probably get involved under the form of a PPP with the guarantees provided by the framework of the international agencies.

SWM corporate investment in the Caribbean SIDS is challenged by the geographical isolation, the fragility of the islands environment and natural resources together with the high risks of regular occurrence of natural disasters, the limited responsibility of producers as SIDS relay heavily on imported goods, along with lack of remanufacturing technology and improper waste-material collecting system and limited industrial developments other than tourism, agriculture or fisheries. The landscape of investments in the solid waste management is relatively complex, but large companies are present in the region, either through smaller subsidiary companies, or through large partnerships involving public actors, but also investment funds.

However, the willingness of large regional or global utility and environmental management players to contribute to responsible actions (*such as the Alliance to End Plastic, the New Plastics Economy Global Commitment or the Trash Free Seas Alliance*) and voluntarily commit to contribute to the transition to a circular economy creates opportunities for their involvement in the region. They may play a limited role, but they enhance the dynamics of the local entrepreneurial eco-system, and help attract innovative sources of financing and foster partnerships.

For most of the islands, buying and implementing the necessary technology and processes are extremely difficult, without substantial external support from private sector, international development agencies and governments or investment funds. Financing sanitation / utility infrastructure and recovering its costs is a challenge throughout the region; hence, more efficient subsidies are needed, at least for transition periods. However, the sector should not rely only on conventional financing without taking advantage of market conditions and incentives to enhance sustainability and support transition towards circular economy.

In order to attract innovative investment and support from international companies, a repository of bankable projects should be managed as a matching portal or a project-pipeline at the regional level; the portal should allow large companies connecting with entrepreneurial initiatives (*in early stage or start-up stages*), along with other mobilization tools such as the greening value chains (***Chapter 6.3.1****.)* or Extended Producer Responsibility *(**Chapter 6.3.2.**)***.** Resource recovery can help leveraging new revenue streams of cost savings, reducing thus the financial risks of infrastructure projects, improving the rate of return and creating a more attractive environment for the private sector; this requires the identification of new markets for bioenergy and for by-products. Moreover, innovative blended financing schemes such as public private partnerships (PPPs), incorporate a mix of subsidies or concessional fiancé from government and partners, plus private equity and debt finance. A recent World Bank study recognizes subsidies[107] – ideally based on incentives, such as result-based financing schemes - as particularly relevant for early state reuse and resource recovery projects, at the stage of proof of concept and market development.

There is also a need to identify recycling consumers in the region (*see **Sections 5.4.2.** and **11.2.3.***), in order to build and improve recycling logistics. As in SIDS countries (i.e. in the Pacific) or other remote regions, recycling-ports with reverse logistics and hub-and-spoke transport modalities (***BOX 18***) could create a critical mass for waste treatment, in one or several regional or sub-regional integrated facilities to be developed. Recycling plants exist around the Caribbean, and specific waste stream partnerships could be envisaged for regional or sub-regional collection and shipping to those centres. Some examples include the three-in-one recycling multifunctional plant in Dominican Republic launched in 2018 constructed and operated by ANDRITZ MeWa[108], Cadwell Inc[109] providing SW services 19 Caribbean islands and having established exclusive contracts with major shipping companies for exporting (collecting) landfill waste as recyclable resource, and Tobago first recycling plant, launched in 2020 as a pilot project which is the joint initiative of the Tobago House of Assembly and Recycling Waste and Logistics Limited[110] (RWL).

6.5.1. The role of large companies in greening value chains

Micro, small, and medium enterprises (MSMEs) are major sources of natural resource consumption and environmental impacts such as greenhouse gas (GHG) emissions. Cooperation upstream and downstream improves small firms' efficiency, and being part of one or more value chains helps them to expand their businesses and gain stability. As MSMEs are a large part of

107 *World Bank. (2019). From Waste to Resource: Shifting paradigms for smarter wastewater interventions in Latin America and the Caribbean. Background Paper V: Financial incentives for the development of resource recovery projects in wastewater. World Bank, Washington, DC.*

108 *ANDRITZ MeWa* www.andritz.com *, a part of international technology Group ANDRITZ, has received an order from Cibao Metal Recycling CIMER Srl, a subsidiary of the YeYo Ochoa Group, Dominican Republic*

109 https://www.cadwellinc.com/about-cadwell-inc

110 *Present also in Anguilla, Dominican Republic, Honduras, Saint Kitts and Nevis, USA*

the value chains of local large companies, multinationals and other publicly traded companies, greening value chains efforts are part of circular supply transition, as communities of practice or of joint responsibility of "coalitions of the willing[111]" to reduce waste, to consider waste as a resource and to improve value chain environmental management practices through eco-efficient chains.

Some of such coalitions develop their own platform (*such as Netherland Circulair[112], the matching platform of circular entrepreneurs*), while ideation and structuring support might be needed in more challenging environments, such as the Caribbean SIDS. The facilitation (or brokering and support) of business linkages between SMEs and large local (or locally implemented) companies can and should be eased[113] by Business Support Organisations and other Business Investment Agencies in the Caribbean (*i.e. in Uganda, a Business Development Services Centre lead facilitator, namely Enterprise Uganda, facilitated the agreements between Uganda Breweries and the barley growers' association or the one between Kinyara Sugar Works Limited and the Kinyara Sugarcane Growers Limited, both associations mobilizing, respectively more than 2.500 farmers*).

Involving MSMEs for shared responsibility along the value chain of local (regional) suppliers of large companies would imply a focused impact on environmental implications regarding inputs (natural resource use) and outputs (environmental impacts) from production processes. This would need a thorough understanding of value chain impacts and definition of strategic priorities, making MSMEs aware of their responsibilities and creating incentives for them to meet environmental performance requirements; traceability or transparency of value chain and progress reporting and communication of waste reduction / circular / environmental champions of the value chain may be considered. The public sector should play a proactive role, facilitating "incentive" models that provide new and emerging opportunities (*for example for greening food value chains*), aimed to re-capture value from waste with reverse channels (*for example recapturing sub-products to be sold in animal feed markets*) or enhance adoption of voluntary standards (*as market opportunities creators through differentiation*).

A recent IABD study showcased best practices and lessons learnt from experiences in Latin America and the Caribbean in greening value chains, influencing natural resource use and environmental impact managing; sectoral examples are summarized in the following table:

SECTOR	EXAMPLES OF VALUE CHAIN SUSTAINABILITY AND MSME INITIATIVES
Cross-sectoral	▪ Developing and implementing strategies to identify good sustainable value chain management practices and implement opportunities amongst suppliers, including prioritizing community relationship building and local economic development, particularly in sourcing regions ▪ Selecting suppliers according to sustainable criteria, including certifying and promoting improvements in environmental performance ▪ Implementing value chain monitoring programs to identify and minimize environmental impacts and disseminate sustainability guidelines ▪ Partnering with research institutions to minimize environmental impact in the production chain ▪ Promoting MSME (*green*) procurement

111 *KPMG. (2018). Let's help SMEs to go circular. Boosting the circular economy amongst SMEs in Europe. A project financed by DG Environment. Realized in collaboration with MVO Netherlands and Circle Economy.*

112 *https://www.circulairondernemen.nl/*

113 *OECD. (2018). Enhancing the Role of SMEs in Global Value Chains.*

Food products	▪ Providing small farmer suppliers access to seeds, fertilizers and support to implement agricultural best practices; replacing conventional refrigerant gases, promoting of fuel-efficient vehicles among logistic suppliers ▪ Procurement of cardboards boxes with recycled content
Soft drinks	▪ Reducing water consumption through implementing water efficiency initiatives ▪ Reducing GHG emissions through energy efficiency gains and appropriate disposal of CFC refrigerants
Personal products	▪ Procuring production process inputs such as fiber, fabric, cartons, plastics and packaging from post-consumer materials; requiring recognized sustainable forest certifications is materials from virgin sources ▪ Building and developing community relationships in areas from which ingredients are sourced
Chemical manufacturing	▪ Reducing purchased energy through implementing energy efficiency initiatives ▪ Reducing GHG emissions through purchasing and using alternative feedstocks (*i.e. biomass*), through a process of "green chemistry"
Broadline retailers	▪ Encouraging local suppliers to commercialize environmentally friendly products ▪ Developing and implementing initiatives that have potential to significantly improve the sustainability of distribution channels

Table 9: Examples of value chain sustainability and MSME initiatives at sectorial level[114:]

The foundations of the green food value chain concept[115], developing and extending the collective responsibility along the organic agriculture value chain, are increasingly gaining recognition, both through the concepts of sustainable development, green growth and circular economy as applied to the agricultural and food sector, and the food value chain development approach.

The approach could be extended to Caribbean bottling and soft drink manufacturers, some with local franchises for international brands of soft-drinks (i.e. Coca-Cola or Pepsi) and also known for indigenous beverages. Major players in the region are Barbados Bottling Co Ltd[116], Coca Cola Caribbean Bottlers Trinidad & Tobago Limited, subsidiaries of CC1, the Caribbean Bottling Company Ltd in Bahamas[117, 118], or the Coca-Cola bottling facility in Kingston, Jamaica. The approach aimed at greening the value chain could be extended to specific local partnerships, such as the one of Coca-Cola in Jamaica, through their partnership with the fast food chain Mothers aimed to revert the outselling position of Pepsi on the Jamaican market[119].

114 *IADB. (2016). Greening value chains: how large companies in Latin America and the Caribbean can influence natural resource use and environmental impact management in their value chains: case study / James Salo; editors, Michael Hofmann, Elizabeth Terry. In partnership with TruCost and MIF. Consulted at* https://publications.iadb.org/publications/english/document/Greening-Value-Chains-How-Large-Companies-in-Latin-America-and-the-Caribbean-Can-Influence-Natural-Resource-Use-and-Environmental-Impact-Management-in-Their-Value-Chains-Case-Study.pdf

115 *FAO. (2014). A knowledge exchange forum for the Development of Green Food Value Chains. In partnership with the Research Institute of Organic Agriculture FiBL.* http://www.fao.org/fileadmin/user_upload/rust/docs/Report%20GFVC-FAO.pdf

116 *Coca-Cola bottling partner, KOSCAB Distribution (Barbados) Ltd. ("KOSCAB") purchased the Barbados Bottling Company Ltd. (BBC) from local Coca-Cola bottler in 2018;* http://www.thebhlgroup.com/page.cfm?p=subsidiariesbarbadosbottling

117 *Servicing the Bahamas since 75 years and, since 2013 the Turks and Caicos Islands through the acquisition of the T&C Refreshments www.cbcbahamas.com*

118 *Servicing the Bahamas since 75 years and, recently (2013) the Turks and Caicos Islands through the acquisition of the T&C Refreshments*

119 *Dated back to 2004*

Among the best practices showcased in the IABD (2016) study, the one of Coca Cola FEMSA[120] is particularly relevant to the context of several of the Caribbean islands (*see* ***BOX 9***).

BOX 9. FOMENTO ECONOMICO MEXICANO (FEMSA) and Coca-Cola

FEMSA is a Mexican company, founded 125 years ago, engaged in bottling and distributing Coca-Cola's trademark beverages in Latin America, the Caribbean and the Philippines. It also operates a convenience store OXXO, as a network of small retail businesses and has its own logistics division.

Top 5 sectors in the company value chain (as a % of total procurement spending) identified as:

- **flavouring syrup and concentrate manufacturing (19,7%)**
- **aluminium product manufacturing from purchased aluminium (10,4%)**
- **plastics bottle manufacturing (9,4%)**
- **management of companies and entreprises (6,9%)**
- **paper board container manufacturing (4,7%)**

These categories of suppliers represent significant contribution of FEMSA's value chain environmental impact efforts, including incorporation of social and environmental responsibility and community development into business strategies aimed to improve efficiency of energy and waste management.

"Cadenas Eco-eficientes" program, supporting MSMS part of the value chain of FEMSA, Walmart and Banorte aims at building and implementing sustainable waste, energy and water management actions.

6.5.2. On Extended Producers Responsibility[121] and Social Responsibility

An increased emphasis on innovative private sector initiatives where EPR systems gain more and more weight drives the uptake of circular economy, even if most EPR policies in the LAC region are at an early stage of drafting or implementation and require further efforts to be fully operational. In some cases, they are complemented by voluntary initiatives by the private sector[122]. A good practical example is the private sector-led initiative of ECOCE, leader in Corporate Social Responsibility in Mexico, which set up a *voluntary EPR plan*, initiated by several multinational and regional consumer good companies for PET bottles. ECOCE supports proper collection, sorting and recycling through education and awareness raising, and implements socially responsible actions for the communities along defined collection corridors, where habitants exchange selectively collected recycling materials against basic consumption products.

While previous evidence suggested that voluntary EPR programmes, often known as "**product stewardship**" schemes, were confined to a few, specific products or product categories, firms have an incentive to take back products because it is profitable to do so (*i.e. consumer electronics,*

120 *Coca-Cola FEMSA. (2015). Sustainability Report 2015.* https://img.coca-colafemsa.com/assets/files/es/Sostenibilidad/Coca-Cola-FEMSA-Sustainability-Report-2015.pdf

121 *OECD. (2914). The State of Play on Extended Producer Responsibility (EPR): Opportunities and Challenges. Global Forum on Environment: Promoting Sustainable Materials Management through Extended Producer Responsibility (EPR). Issues Paper. OECD Global Forum on Environment carried out with funding by the EU*

122 *OECD (2016), Extended Producer Responsibility: Updated Guidance for Efficient Waste Management, OECD Publishing, Paris,* https://doi.org/10.1787/9789264256385-en

rechargeable batteries or mercury thermostats). The Replast-*OECS* model[123] aiming at creating a Plastic Waste Recycling Value Chain in the Caribbean is a good practice of voluntary EPR implemented through partnerships with private sector; the approach has already been adopted by several partners[124] who accept RePLAST Collection Point (RPC) vouchers in exchange of purchases, and recently by representative hotels and hotel chains in Santa Lucia[125].

Figure 3: *Equivalence for waste against food programme*

The experience of the EU shows a strategic choice for implementation of EPR schemes (*packaging including beverage containers, lead-acid batteries, End-of-Life Vehicles (ELVs) and Electrical and Electronic Equipment (WEEE)*), while a number of additional schemes for products were addressed directly at the level of Member States (*i.e. for tyres, graphic paper, oil and medical waste*). In terms of costs sharing, and in line with the polluter-pays-principle, it is generally agreed that producers should at least bear the net costs of waste management for their products (*i.e. collection/recycling costs minus revenues from recovered materials*).

A recent report[126] shows for example the leading role taken by the Dominican Republic in implementing EPR schemes with relation to Used Lead Acid Batteries (ULAB) and products with

123 https://unite-caribbean.com/public/replastoecs/About.html

124 *including Massy Grocery Stores, Heineken SLU, Domino's Pizza, Felly Belly, Peoples Discount Pharmacies or Rawr Restaurant or Rodney Bay Diagnostic Centre Medical Center*

125 *Sandals Resorts Saint Lucia, Bay Gardens Resorts, Hotel Chocolat and Harbor Club have partnered with the RePLAST-OECS to lead by example and champion environmental stewardship among employees and guests (cf publication 10th May 2021)*

126 *Advances of the report: "Extended Producer Responsibility (EPR) Schemes on Used Lead Acid Batteries (ULAB) in Latin American and the Caribbean Region". 2020 Webinar on the Sustainable and Environmentally Sound Management of Used Lead Acid Batteries in Latin America and the Caribbean. Facilitated by UNEP Chemicals and Health Branch, UNEP Regional Office for Latin America and the Caribbean and the Basel Convention Regional Centre for the Caribbean.*

ULAB assembled (*i.e. vehicles*). EPR in the Caribbean should ultimately be envisaged at a regional level and through sectoral (*or value chain*) voluntary agreements; it should foster increased collection and recycling rates, and conversion of collected used products into resources, resulting into significant reductions of public spending on waste management.

6.5.3. On Waste-to-Energy development opportunities in the Caribbean

Recognized as a regional thematic priority during the 1st Caribbean Waste-to-Energy (WtE) Technology Expo and Conference[127], Waste-to-Energy (WtE) with an emphasis on SIDS-Appropriate Technologies is estimated to gather a USD 2 billion indicative projects' pipeline with RE&EEC projects, at various stages of development. The need for setting up a regional programme to help upscale investments was suggested by the participants and mobilization of large international utility companies as a key milestone. SWECO, actively involved in searching technical solutions environmentally friendly and economically advantageous to generate energy from waste adapted to the Caribbean SIDS, Alquimini Renewables[128] in partnership and co-developer agreement with ICL/EnerG LLC[129] are currently developing WtE projects in Haïti and Trinidad, with an emphasis on engineered hurricane resistance, using ReGreen fully scalable waste processing system, while in Barbados the Cahill Waste-to-Energy plant at the Mangrove Pond Green Energy Complex will be the first in the kind power plant in the island.

Currently, organic waste to energy (OWtE) technologies potential in Latin America and the Caribbean (LAC) countries is "*still far away to significantly contribute not only to treat the ever-increasing waste volumes in the region but also to supply the regional energy demand and meet national carbon emission goals*" [130]. The challenges lie not only in the complexity of technologies, but also in the lack of (regional) research aimed at developing locally adapted technological solutions, the high investment costs and the regulatory and legislative deficiencies not enabling (or attracting) OWtE initiatives in the region.

A GIZ-funded study assessed the attractiveness of Caribbean member states for private investment in Bioenergy development opportunities in the Caribbean islands. The study[131] considered, along with the individual national frameworks (*most of the CARICOM member states published or were working on energy policies and setting domestic targets for the adoption of renewable energies*, specific issues related to grid-access and power purchase agreements are still needed), the sub-regional settings. While CARICOM passed the regional Energy Policy (2013) and commissioned the Caribbean Sustainable Energy Roadmap and Strategy (C-SERMS), the OECS structured the regional body providing regulatory oversight to the energy

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127 *Hosted in 2016 by the Government of Grenada, with the financial support of CARICOM Secretariat, GIZ REETA – German Federal Enterprise for International Cooperation (GIZ) Renewable Energy and Energy Efficiency Technical Assistance Programme (REETA), Caribbean Community Climate Change Centre (CCCCC)/SIDS DOCK, the United Nations Industrial Development Organization (UNIDO), the Swedish Energy Agency (SEA) and the World Intellectual Property Organization (WIPO).*

128 http://www.alquimirenewables.com/

129 *ICL/EnerG LLC is the US operating group of ICL Industries of Gurgaon, India* http://icl-india.com/Home/AboutUs

130 *Rodolfo Daniel Silva-Martínez, Alessandro Sanches-Pereira, Willington Ortiz, Maria Fernanda Gómez Galindo, Suani Teixeira Coelho, The state-of-the-art of organic waste to energy in Latin America and the Caribbean: Challenges and opportunities, Renewable Energy, Volume 156, 2020, Pages 509-525, ISSN 0960-1481,* https://doi.org/10.1016/j.renene.2020.04.056.

131 *Supporting Institutional Structures to promote Renewable Energy and Energy Efficiency in the Caribbean Region. Study under Activity: Assessment of bioenergy resource potentials, framework conditions, technology options and development of bioenergy investment projects in the Caribbean GIZ ID VN: 81176707 PN: 10.2262.3-001.00*

sector in 2013 through the World Bank funded project Eastern Caribbean Energy Regulatory Authority (ECERA) based in St. Lucia.

The study offers an overview of the attractiveness of specific Caribbean countries in terms of private sector investment (*i.e. mentioned as IPPs Independent Power Producers*) in renewable energies in general, and in Waste-to-Energy in particular, as summarized in the following table.

Country	Electricity Offtake	Biomass Supply Chain	Enabling Environment	Ranking
	Ability to sell power produced at a bioenergy facility in terms of the legal and regulatory framework: (i) assessing the electricity distribution grid (ii) setting of feed-in tariffs (FITs) (iii) obtaining Power Purchase Agreements	Availability of critical feedstocks for, and ability to dispose of organic outputs from bioenergy facilities in terms of the legal and regulatory frameworks: (i) WM and WM practices (ii) accessing various organic waste streams (iii) using organic fertilizer and ash in agriculture	Business climate and likely support for bioenergy projects in terms of policies and regulations conducive to projects' development: (i) governmental support for the bioenergy industry (ii) access to land and ease of obtaining permits (iii) doing business ease [132]	**1 to 4**
Jamaica, Belize & Barbados	Most attractive regulatory and legislative environments (in all three constructs) in the region for potential bioenergy projects			**1**
Dominican Republic, Guyana & Grenada	Legislative arrangements likely offer good opportunities for grid offloading bioenergy power	Legislative arrangements that are likely to support the development of biomass supply chains	Governmental policies to encourage the development of a bioenergy industry appear to be lacking	**2**
Antigua & Barbuda[133], Bahamas, Dominica, St. Lucia and St. Vincent & the Grenadines	Lacking in clear legislation that would ensure electricity offtake	Legislative environments supportive of biomass supply chain / bioenergy industry development	Lacking in clear legislation that would ensure the bankability of utility scale bioenergy projects	**3**
Haiti, Montserrat, St. Kitts & Nevis, Suriname and Trinidad & Tobago	Countries having a limited legislative framework that may prove to be restrictive to bioenergy project development			**4**

Table 10: *Summary of Renewable Energies Enabling Environments in the Caribbean Countries*[134]

A detailed table, adapted from the same report on legal framework and its appropriateness for bioenergy projects spanning 16 countries in the region is presented in ***Annex 11***. The study also provides a report (not publicly disclosed) containing six concepts (up to pre-feasibility) for promising bioenergy projects, together with a country specific collection of stakeholders including contact data and categorization, e.g. authority, biomass provider, plant operator.

[132] The ease of doing business is based on findings from the World Banks' 2013 'Doing Business' study, and individual country rankings take the following figures (i) Starting a Business, (ii) Dealing With Construction Permits, (iii) Registering Property, (iv) Paying Taxes and (v) Enforcing Contracts

[133] A new analysis based on the Renewable Energy Act (2015) in Antigua & Barbuda could show a more attractive ranking of the country for bioenergy project developers, depending on the government extending industry support to bioenergy, until then provided for the development of wind and solar; see planned review of biomass resources

[134] Adapted from GIZ. (2015). Bioenergy Assessment in the Caribbean. Report on Legal Framework Conditions. Lincoln, E. and Schaubach, K. GFA Consulting Group and Deutsches Blomasseforschungszentrum. It is noted that an update of the latest development on both national and regional (CARICOM / OECS) legal and regulatory frameworks is needed, as the figures date back in 2015.

BOX 10. Modular Waste WOIMA® Waste-to-Energy Power Plant

WOIMA Corporation is a Finnish supplier of best-in-class waste-to-value products, projects and services worldwide, transforming and recycling waste stream into raw materials and energy. Solutions are based on Finish experience (where less than 1% of Finland's waste ends up in landfills), supporting the circular economy ideology.

The modular wasteWOIMA® waste-to-energy / waste-to-fuel power plant (incineration technology) prefabricated into standard sea-container-sized modules and thus easy and fast to deliver anywhere in the world were used to support St Lucia United Nation's Clean Seas Campaign.

The power plant recycles the waste into raw materials and energy in the most efficient manner reducing the waste quantity by over 95%, and can be dismantled and relocated elsewhere leaving just the concrete base slab behind. Burn residue, the so called 'bottom ash', is compacted for landfilling or utilized in e.g. infrastructure construction, cement production or fertilizers. The technology allows to simultaneously produce electricity, thermal energy (heat, hot water or cooling) and potable water (water purification or desalination systems).

All of the WOIMA Ecosystem solutions are fully scalable to cater to the needs of both small communities and large metropolises, modular and pre-fabricated and offer a high ROI and short payback time. www.woimacorporation.com / https://www.recomill.com/

6.5.4. On Voluntary agreements and the Caribbean Tourism

Given the fact that waste from tourism can be generated at nearly twice the rate of local waste production[135], and the generally limited capabilities for managing wastes in the Caribbean, it is an evidence that SWM is critical in small islands destinations. SWM should be thought as partnerships[136] involving collaboration between accommodation and leisure actors, the tourists, community-based organisations and environmental NGOs, and be defined as integrative approaches including source separation, expansion of collection services, revised collection fees, material reuse charts, education and awareness raising.

Based on a pilot study[137] on Sandals Emerald Bay, Exuma, Bahamas, about half of waste generated in all-inclusive resorts is likely to be compostable, while the kitchen and hotel operations contribute to almost 40% of all solid waste generated on the island. Percentages might vary slightly according to resorts and locations, but food waste recycling, in parallel with food waste reduction are key to meet Earth Check green resort certification[138] requirements. Under the Plastic Waste Free Islands[139] project, IUCN recently (2021) published a series of zero plastic

[135] *Shamshiry, E.; Nadi, B.; Bin Mokhtar, M.; Ibrahim, I; Saadiah Hashim, H.; Yahaya, N. (2011). Integrated Models for Solid Waste Management in Tourism Regions: Langkawi Island, Malaysia, Journal of Environmental and Public Health, vol. 2011, Article ID 709549, 5 pages*

136 *Lacey WILLMOTT and Sonya R. GRACI, « Solid Waste Management in Small Island Destinations: A Case Study of Gili Trawangan, Indonesia », Téoros [Online], 31, 3 (HS) | 2012, Online since 01 September 2012*

137 *Sullivan Sealey, K.; Smith, (2014). Recycling for small island tourism developments: Food waste composting at Sandals Emerald Bay, Exuma, Bahamas, Resources, Conservation and Recycling, Volume 92, 2014, PP 25-37*

138 https://earthcheck.org/

139 https://www.iucn.org/theme/marine-and-polar/our-work/close-plastic-tap-programme/plastic-waste-free-islands

waste toolkits[140] for the tourism sector in the SIDS, targeting different stakeholders in the tourism sector: hospitality actors, cruise ships and tour operators and destination managers.

A detailed Action Fiche proposing the way forward in voluntarily involving tourism sector actors in an integrated SWM process is detailed in ***Annex 9***.

6.6. Forging transformative alliances

Forging productive partnerships and transformative alliances[141], both within and between countries in the LAC region, is crucial for a successful transition to a circular economy, while waste management is an essential service in Latin America and the Caribbean. COVID-19 outbreak has shown significant weaknesses in waste treatment facilities and mainstreaming disaster or emergency waste management preparedness[142].

The regional Forum of Ministers of Environment (2019) recognized the need of cooperation at the regional level to coordinate and scale up initiatives through a regional circular economy alliance and roadmap, aimed at sharing best practices and to pool technical and financial resources. Initiatives such as the Circular Economy Platform of the Americas[143] , Circular Economy Coalition for Latin America and the Caribbean[144], or Circular Economy Forums[145] pave the way for sharing knowledge and experiences.

The Caribbean could seize the momentum and position themselves as leaders in sustainable circular bio-economy by creating sustainable value chains for new goods and services derived from biodiversity assets, and considering waste resources as secondary resource.

With the support of the Caribbean Development Bank (CDB), Trinidad and Tobago plans to enter into a public/private partnership to develop a waste-to-energy project[146]; the feasibility study on the potential of a biogas supply chain, in line with national decarbonisation and waste-reduction efforts, is currently implemented by Proman in cooperation with the University of Western Indies.

Another significant initiative in the sector of cleantech has been announced in November 2020 as an alliance led by SWECO[147], aimed to make Barbados the green leader in the Caribbean; a feasibility study is ongoing on most appropriate waste incineration technologies aimed at generating energy from waste.

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140 *With the support of the Norwegian Agency for Development Cooperation (NORAD), targeting 3 Caribbean SIDS (Antigua & Barbuda, St Lucia and Grenada) and 3 Oceania's SIDS (Fiji, Vanuatu and Samoa)*

141 *Economic Commission for Latin America and the Caribbean (ECLAC). (2020). Building a New Future: Transformative Recovery with Equality and Sustainability (LC/SES.38/3-P/Rev.1), Santiago, 2020.*

142 *UNEP. Policy Brief: Waste management as an essential service in Latin America and the Caribbean.*

143 https://www.cep-americas.com/

144 https://www.coalicioneconomiacircular.org/en/elementor-7/inicio-english/

145 https://www.sitra.fi/en/projects/wcef/

146 *Ministry of Planning and Development. "Government aims to reduce capital expenditure through public private partnerships", 2019, https://www.planning.gov.tt/ content/government-aims-reduce-capital-expenditure-through-public-private-partnerships-0. Accessed on 4 November 2019.*

147 *https://www.sweco.se/en/news/articles/2020/waste-to-energy-sweco-set-to-make-barbados-green-leader-in-the-caribbean/*

6.6.1. On Best Practices from the PPPs

PPPs involving a build-operate-transfer contract are the most common and involve a system of direct payment to the private operator by public authorities, based on a management cost per metric tonne. This rate not only covers operating costs but also, in some cases, investment in initial infrastructure and upgrading works. As it is difficult for municipalities in SIDS to pay private operators enough to cover the cost of all waste management services, the central government often has to provide additional funding. The private network is therefore split between primary collection, organized by a very active informal service, and the rest of the waste management chain, including global corporations as well as local operators.

Comparable to the Caribbean region, SWM services[148] in Pacific island countries include five broad activities: collection, recycling and composting, waste-to-energy, waste treatment, and landfill management. In most urban areas in the Pacific, these functions are the responsibility of the municipal authorities with a major part of services financed through public budget, and an only limited contribution from users' paid fees. The private sector involvement in the Pacific's solid waste sector concerns mainly waste collection[149] and/or disposal services.

Most of the waste collection agreements are implemented through Service Contracts, while disposal services (privately managed landfills) are mostly undertaken through Management Contracts; waste-to-energy projects are put in place through independent power production (build-operate-own), mostly for biomass energy generation and where producers of biomass are selling their excess energy to electricity utilities. The multiple forms of public-private partnerships under which performance based public procurement arrangements can be organized to provide assets and/or service management in SWM are presented in ***BOX 11*** (based on Pacific islands experiences).

PPPs, together with the transition from public to private provision of services requires a substantial and challenging increase in public procurement and contract management skills. Relying on PPPs without providing the necessary legal and institutional framework will not produce the desired results in effective SWM.

Initiatives supported by Sustainable Entrepreneurship for Economic Development[150] (SEED) during the last ten years emphasize how multi-stakeholder partnerships and fostering local ownership can transform the SWM sector into an engine for green and inclusive growth. ALMODO SWM model, based on partnerships between businesses, civil society organisations (CSOs) and city councils and mutual benefits, aims at collecting, centralizing and ecologically recovering waste further transformed into products useful for the local community; technical equipment is mostly locally sourced. The initial model developed for Niamey has been replicated by 50 city councils in Niger, Mali, Togo, Congo, Cameroon, and Côte d'Ivoire.

148 *The Pacific Private Sector Development Initiative is a regional technical assistance facility cofinanced by the Asian Development Bank, the Government of Australia, and the Government of New Zealand*

149 www.theprif.org

150 https://seed.uno/

BOX 11. Forms of PPP to provide Assets and/or Service Management in SWM

PPP's are performance based public procurement arrangements, and usually involve construction of infrastructure (i.e. landfill and/or recycling infrastructure) and operation of assets for a limited period of time. PPPs can take different forms, following the type of services provided, such as:

Service contracts, as simplest form of PPP related for services such as waste collection (household garbage, green waste, commercial and/or medical), imply the provision of a specified level of services, with no operation of public assists, for a limited period of time, usually 2-4 years (i.e. Suva green waste collection http://suvacity.org/green-waste)

Operation and maintenance contracts (Management Contract), involve the operation of public assets (such as landfill facilities) and imply the payment to the private partner of a performance-based management fee, and sometimes, a profit-sharing incentive (i.e. Baruni landfill in Port Moresby, Papua New Guinea, see Eco- Tan-Kun Plant)

Waste-treatment and Carbonisation Plant Eco-Tan-Kun) (based on a Japanese Innovative Technologie) Launched through a feasibility study was funded by JICA, a waste treatment and carbonisation pilot plant was launched in 2018, with the aim to produce producing charcoal and vinegar from waste of coconut husks, coconut shells, cardboard and betel nut skins. Products can be used either as fertilisers, or for sanitisation and treating animal diseases, for the local agriculture sector or for export. The investment has brought with it employment opportunities for the surrounding disadvantaged communities.

Build-operate-transfer contracts, involve investment by the private partner, who builds and operates (over long periods of time, such as 30 years, allowing a fair return on investment) the infrastructure required to provide the service. Usually power plants, including waste-to-energy facilities, are built using this PPP structure.

Conversion of biomass waste (wood waste and sugarcane waste) to energy initiatives Tropik Wood Industries https://www.tropik.com.fj or Fiji Sugar Corporation https://www.sugarsoffiji.com

Concessions. These are the most complex PPPs. They involve the rehabilitation and expansion of an existing asset as well as its operation over time, under an exclusive license. Concessions require careful structuring and monitoring if the public good is to be protected, and for the PPP to deliver the appropriate value for money.

6.6.2. On potential trade opportunities for the circular economy in the Caribbean

SWM offers valuable pathways to a green economy[151], as it has the potential to be an engine for growth by creating new value chains, employment and innovative products while addressing social and environmental issues. According to the Green Economy Initiative the global waste market, from collection to recycling, is estimated at US$410 billion a year[152].

[151] *Bymolt R. et al. 2015.* Shaping sustainable development through eco-entrepreneurship. *SEED Policy Report. Berlin: SEED*

[152] *UNEP. 2011. Waste: Investing in energy and resource efficiency: Towards a green economy.*

The role of global and regional trade in the circular economy is, so far, however, little understood[153]. More countries are developing national circular economy strategies but these strategies and policies exist in the context of a global economy and international value chains. A clearer understanding of traded waste products, secondary resources (recyclable waste materials) and their physical trade flows across a range of sectors is needed to design effective national and international trade policies that support the circular economy.

Developing countries are key players in the global plastics economy[154]. They are not only among the world's largest producers and consumers of plastics and plastic products but also key suppliers of feedstocks used in plastics manufacturing, the main destination for plastic waste exports, and an important source of plastic leakage into the environment. Since 2018, China has banned imports of most scrap plastics[155] (*and other waste materials*), which has created shockwaves on international markets. Trade clusters for specific secondary material seem to be due to number of factors (*observed regionally*) such as commercial routes, reverse logistics, geographic proximity or trade agreements. Rules for responsible governance of plastic trade are included in the Basel convention amendment[156], as well as in global actions on plastic drafted by the WTO Committee on Trade and Environment (CTE).

Mechanisms in support of responsible governance, at regional level, should encompass[157] the definition of principles for effective and coherent trade-related measures, capacity building to regional and national authorities to support a sustainable plastics circular economy (i.e. through Aid for Trade A4T and the Enhanced Integrated Framework EIF), as well as setting targets for reducing trade in single-use non sustainable plastics in a regionally coherent and WTO compatible manner, and establishing a monitoring mechanism to track relevant trade-related measures, identifying policy innovations and best practices.

Global materials stewardship is the flagship approach leading international gatherings of year 2021 and 2022 (*i.e. BRS convention[158], UNEA-5[159], ICCM5[160] etc*), while from the private sectors several (*global, with regional chapters*) initiatives are emerging (*i.e. Alliance to End Plastic Waste[161] and the Platform for Accelerating the Circular Economy PACE[162]).*

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153 *Chatham House. (2020). Building Transformative Alliances for an Inclusive Global Circular Economy. Research paper funded by the MAVA Foundation. ISBN: 978 1 78413 415 0*

154 *UNCTAT. (2021). Plastic Scrap Trade in Latin America and the Caribbean – Related Policies and Regional Comparisons. Henrique Pacini for UNCTAD and Tze Ni Yeoh for World Bank. https://unctad.org/es/node/32039*

155 *Since 1992, about 45% of all internationally traded plastic waste stream was imported by China*

156 *http://www.basel.int/Implementation/LegalMatters/BanAmendment/Overview/tabid/1484/Default.aspx#:~:text=The%20Basel%20Convention%20Ban%20Amendment&text=Parties%20agreed%20that%20Parties%20listed,OECD%20to%20non%2DOECD%20States*

157 *WTO – CTE. (2020). WTO Informal Dialogue on Plastic Pollution and Environmentally Sustainable Plastics Trade. Building on the work at the WTO Committee on Trade and Environment (CTE)*

158 *http://www.brsmeas.org/2021COPs/Overview/tabid/8395/language/en-US/Default.aspx*

159 *https://www.unep.org/environmentassembly/unea5*

160 *http://www.saicm.org/About/ICCM/ICCM5/tabid/8207/Default.aspx*

161 *https://endplasticwaste.org/*

162 *https://pacecircular.org/about*

International trade is considered to be a key enabler[163] of the transition towards a circular economy, providing opportunities to improve the balance between local, regional and global trade, with a reinforced need of redrafting, renegotiation and enforcing certain chapters free-trade agreements.

UNCTAD is currently developing a database measuring "*trade in plastics across their entire life cycle*", and its prototype (released in December 2020) suggests the importance of trade at all phases in the life cycle of plastics. High value market opportunities for the Caribbean should be searched in certain sub-sectors of the plastics trade where they could potentially offer non-plastic alternatives. These market opportunities include plastic textiles such as nylon or polypropylene and clothing (*where alternative products such as cotton fabrics could bring a comparative advantage to SIDS like the Dominical Republic, Fiji and Mauritius*) and plastic packaging (*where alternative bioplastics could further develop competitive advantages for countries like the Dominican Republic, Malta, or Trinidad and Tobago*).

In this context, the Caribbean nations should also look "*at the after-ban scenario – including enforcement measures and waste management – and to explore the type of materials that could be used to substitute single-use plastics, whether of a durable, disposable or biodegradable nature*". Moreover, as the COVID-19 pandemic has severely impacted supply chains and trade, in terms of both imports and exports by disrupted global supply chains[164], and in the context of a global transition to a circular economy[165], Caribbean regional and national efforts should focus on identifying and developing local solutions for the production of bio-degradable materials.

The (new) market of substitutes and alternatives for plastics of vegetable of mineral origin is the meeting point between private sector initiatives, technology transfer and regional trade opportunities. Moreover, at the global level, many large beverage and consumer goods companies such as Nestlé and Coca-Cola have already cut virgin plastic and promote the use of recycled PET for packaging.

The following table[166] illustrates potential plastic substitutes in the Caribbean SIDS. However, further criteria should emphasize the complex environmental impact (on the model of a life-cycle analysis from cradle to grave) which would take into consideration such as carbon footprint, energy consumption or water consumption, among others.

Product	Origin	Main uses	Properties	Health impact	Environmental impact
Glass	Sand-based	Food and pharmaceutical products containers, construction material	Solid, fragile, flexible, insulating, microwavable, heavy but tradable	Very good insulating material and non-toxic	Does not contain chemicals or carbon (only minerals), reusable, very slow degradation by erosion, recyclable
Pottery and ceramics	Mineral and water-based	Tableware, container and ornamental uses	Solid, fragile, flexible, supports heat, heavy but tradable	Non-toxic material	Reusable, very slow degradation by erosion, recyclable

163 WTO – CTE. (2020). Communication on Trade and Environmental Sustainability, Committee on Trade and Environment CTE. WT/CTE/W/249 (20-8239) of 17th November 2020.

164 See Barbados who had to suspend the application of the plastic ban because of the global disruption in the supply of biodegradables replacing plastics during the COVID-19 pandemics

165 Barrowclough, D and D Vivas Eugui (2021), 'Plastic Production and Trade in Small States and SIDS: The Shift Towards a Circular Economy', International Trade Working Paper 2021/01, Commonwealth Secretariat, London

166 UNCTAD (2020). Communication on Trade in Plastics, Sustainability and Development by the United Nations Conference on Trade and Development (UNCTAD)". Submitted to the WTO Committee on Trade and Environment, JOB/TE/63, 10 June 2020. https://unctad.org/system/files/information-document/wto_unctad_CTE2020_en.pdf

Natural fibres	Plant-based (i.e. jute, cotton, coconut, palm)	Textiles, packaging, ropes, clothes, furniture, …	Strong, flexible, light, fully tradable	Non-toxic, production can allow carbon storage	Reusable, biodegradable, recyclable
Paper and cardboard	Cellulose-based	Bags, boxes, packaging, decoration, inputs to industrial products	Flexible, light, fully tradable	Non-toxic	Reusable, biodegradable, recyclable but increase in use may generate pressure on timber extraction unless from managed or certified forests or from recycling
Organic waste	Bagasse, rice and corn husks, other organic wastes	Cups, cutlery, dishes, construction components, inputs for composite materials	Flexible, light, fully tradable	Non-toxic, with some insulation properties	Biodegradable

Table 11: Potential plastic substitutes in the SIDS

As most of the countries in the region rely on imported consumer goods produced in particular in North America and Asia, and in order to enable more circularity of materials in trade agreements and reduce pressure on local waste management systems, there is a strong case for including clauses about EPR (*in terms of end-of-life products*) for local waste streams associated with imported goods in existing and new FTAs. Materials derived from goods imported, as well as various secondary materials, paper, cardboard, scrap (ferrous metals) and waste products could be traded on the regional market. Better opportunities to increase the valorisation of waste at regional level should be searched (*i.e. e-waste should be collected and consolidated to achieve critical mass for recovery facilities, rather than just dismantling the products and exporting the valuable fraction, including gold, lithium and cobalt*).

Trade promotion is viewed as conducive to a circular economy transition, on line with the Green Deal Diplomacy guidance and the revised Circular Economy Action Plan. EPR provisions to further regulate the trade of waste and tariff reductions on secondary materials and remanufactured goods should be part of trade agreements. Greater involvement of the private sector could (should) be facilitated by systematic market research and market studies (*e.g. for recycled electronic waste, tyres,* …). A regional platform exploring and matching market opportunities and logistics solutions would be an excellent tool to foster entrepreneurial initiatives in SWM.

7. Additional tools and initiatives developed and implemented in the Region

This section presents a brief inventory of additional tools and initiatives recently developed and implemented in the region.

7.1. Collection bag as financial instrument (Haiti)

A central problem of SWM is financial sustainability because of the large expense represented especially by the collection and transfer of waste. The State usually has to contribute to these expenses at a local level, even if a local specific tax is implemented because it usually is not properly recovered.

However, there are ways to make people pay for the collection and treatment services in direct relation to the waste they produce in order to avoid some financial drift from source. It could even be implemented in poor areas and has shown some good results in the region.

In an intermediate neighbourhood of Port-au-Prince (Carrefour Feuilles), the international NGO GRET has initiated a pilot project which is relevant in this respect: it proposes to use the collection bags as an instrument to make people pay for the services by selling them at a higher price, so the amount collected is proportional to the waste volume. In the case of Port-au-Prince, which is a poor city, the NGO financially supported the operation but it is probably possible to make it sustainable without any grant in other contexts and calculate the price of the collection bag according to the corresponding services[167].

7.2. PPP model from NUVI (Dominican Republic)

NUVI, "Nueva Vida para los residuos" (new life for waste), is a non-profit organization aimed at leading the circular economy objectives and supporting integrated waste management systems for waste recovery in the Dominican Republic.

The first integrated management system created by NUVI is an initiative that promotes the separation of PET plastic bottles and the placement of points for the collection of bottles in different parts of the capital city. This initiative, created for the self-regulation and reduction of PET, which ensures the storage, collection, transport and recovery of plastic bottles, is being implemented with the collaboration of big companies from the private beverage sector. The collection of bottles is financed by those companies which then take care of their treatment by selling them to recycling partners generally based abroad.

This scheme is actually a form of collaborative Extended Producers Responsibility and should be generalized in other countries. Similar initiatives are being developed in St. Lucia through the RePlast project, and also in Barbados and St. Vincent. All these projects could serve to showcase and promote normative and policy harmonization. As the various companies might belong to the same groups, all these projects could possibly be joint within some regional initiative.

7.3. Financial tool to recover various waste tariff configurations (joint and several liability for the payment of the waste fee)

The waste tax is now a widespread payment all over the world. In particular, in the Caribbean area, a fundamental duty of the citizen for tourism development, the protection of the coasts and the environment in general must be considered. Today, in most Caribbean countries, municipal solid waste collection is undertaken at zero cost to households. The absence of specific disposal fees to the household provides no incentive to reduce generated waste. While specific tipping fees may be levied to commercial and, in some instances, institutional waste generators, the application of a regime of waste disposal fees to households should be considered, since it will serve to reduce household waste generation, foster greater reuse of recyclables, and generate income to municipal waste haulers. This recommendation is, however, made with the warning that an a priori comprehensive assessment of the elasticity of waste fees on households be undertaken since, in the absence of efficient collection and regulation, imposed fees may lead to increased illegal dumping and littering.

In addition, it will be important to assess the direct and indirect cost of waste management. In Caribbean countries this information may be more readily available, as centralized agencies operate the SWM service. However, in some countries where local authorities are responsible for

167 A similar initiative is undertaken in the Para District (Surinam), where yellow bags are sold to residents to pack the waste for collection by garbage trucks. Waste operators only collect the yellow bags. This initiative is not subsidized, but is the result of important local political leadership and communication campaign, and this is working very well.

this service in areas that are not the capital city, the service is funded by the general budget, and the detailed costs are unknown; therefore, the specific cost elements to be internalized in a waste fee are not identified.

Transitioning from a zero-payment baseline to a waste fee to households' system, which internalizes the different cost of the service, can take a few years. As such, such a process needs to be accompanied by permanent education, awareness raising and communication campaigns, as well as an incentive system and the involvement of all key stakeholders, in the light of the polluter pay principle.

While not intended as a recommendation but merely for information purposes, a system that has given promising results (for example in the poor neighbourhoods of Santo Domingo) to enforce the payment of utility bills such as electricity, is based on the joint and several liability of users[168].

It is to be hoped that Caribbean governments find a common legislative framework and efficient systems for tax recovery as well as adequate penalties for non-compliant citizens.

7.4. Cost and benefit analysis as a tool to formulate an infrastructural action

The RePLAST project developed in St. Lucia for the treatment and recycling of plastic is an excellent best practice to be replicated as a pilot concrete action in support of national efforts either in terms of infrastructures or in terms of process and logistics (*see further information under* ***Section 11.2.1***).

The consultants propose an appropriate use of the cost-benefit analysis approach as a methodological tool. The particular economic, social and environmental circumstances of the Caribbean have emphasized that SWM is particularly critical for medium and long-term sustainability development. In particular in SWM, the collection, treatment and recycling of plastic has become a vital priority for the Caribbean economy as a whole. A cost-benefit analysis of investments in a concrete infrastructure project and waste management systems in the Caribbean would be very significant and emblematic to evaluate the net economic effects for the improvement of SWM and to identify opportunities in implementing concrete projects within the Action Plan that give greater economic benefits through an optimization of the financial resources available in SWM. The consultants during their mission have identified a series of action items that express the stakeholders' needs as shown below:

- Develop a toolbox for the selection of investments
- Assess the financial and economic benefits (including indirect benefits) of investments in the framework of potential regional WM
- Assess additional funding to improve efficiency and cost recovery with appropriate taxes and tariffs for any environmental sustainability
- Create databases of capital costs related to the various options in developing SWM infrastructure and facilities.
- Evaluate how regional and global SIDS finance their SWM systems.
- Assess the investment in a WM system by improving the cost-benefit ratio of the operation

[168] *In summary, the approach is as follows. Groups at risk of non-payment are selected and established in urban neighborhoods or in rural communities where there is SWM service. The appropriate tariff to the economic possibilities of the group is linked to an indispensable utility, such as the electricity supply service. If an element of the group does not pay the bill, the service to the entire community or city district is cut. The same method could be applied to illegal dumping, particularly in rural areas or remote islands, where public control is quite absent but social control is generally very strong among members of the same community. In the event of excess illegal dumping, the entire community is penalized by cutting electricity or other essential services. Even if the culprits are not identified, it will be the community itself to clean up wastes dispersed into the environment.*

- Identify the mechanism to increase the cost-benefit ratio by operating in the development of SWM systems.
- Develop bankable projects with suitable criteria for receiving loans and grants from multilateral development banks and relief agencies, as well as for attracting private investors.
- Identify a tentative legislative framework of reference that allows the implementation of SWM infrastructures at regional or sub-regional level, subsequently to be approved at political level.

In this context, the consultants propose and recommend elaborating in the Final Report an ad-hoc economic and financial analysis with the cost and benefit method for an investment of a collection, treatment and recycling centre for plastic (to be located in, e.g. Santo Domingo). This centre will represent a concrete pilot project in which the major action items requested, both during the conferences, from the available documentation and from the stakeholders, are met.

This proposed project will be developed using the methodological approach of cost / benefit analysis recognized by major international funding organizations.

The components will be as follows:

(i) Project idea. Identification and formulation of the project based on the information and data collected as stakeholders' needs.
(ii) Description of the project. Selected location, technical components, logistics, material flow, operational area, lifespan, potential replicability.
(iii) Investment cost. Main components of the project such as: land, machinery, various materials, vehicles, equipment, technical assistance, authorizations, start-up, etc.
(iv) Maintenance costs. Materials, energy, manpower, technical assistance, etc.
(v) Running cost. Personnel, energy, fuel, spare parts, materials, etc.
(vi) Direct benefits. Various contributions, incentives, waste taxes and tariffs, other benefits.
(vii) Financial analysis. Cost-benefit assessment using the cash-flow method with a convenient annual discount rate. Situation with / without project calculated at market prices. Analysis of any technical alternatives.
(viii) Economic analysis. In the case of the Caribbean area, the economic analysis is of particular importance for the inclusion of the environmental variable and the "willingness to pay". In this case, the economic costs and benefits will be estimated through suitable conversion coefficients on market values. In the case of the economic analysis, any externalities of the project and indirect benefits will be calculated.
(ix) Performance rates and investment convenience. Financial IRR and economic IRR, Cost-benefit Ratio, NPV.
(x) Sensitivity analysis. The switching values will also be calculated to estimate the stability of the project due to changes in appropriate costs and benefits.
(xi) Socio-political analysis, which takes into consideration that the infrastructure is designed to import waste from other territories.

8. Lessons learned drawn from the results of sector studies and conferences

8.1. Lessons learned

The in-depth assessment undertaken as part of the present assignment has revealed a number of lessons learned. The main lessons learned refer to the following aspects and are further described in the following sub-sections.

- A lack of regional agreements for a holistic approach to SWM;
- A lack of a Waste Systems pricing policy.
- A high presence but weakness of the private sector in the SWM sector, and therefore the need for increased investment and involvement of the private sector;
- The trend to have a very centralized organization;
- Some risks brought by some WtE systems.

8.1.1. The lack of regional agreements for a holistic approach to SWM

The most important lesson learned concerns the absence of regional agreements for a holistic approach to SWM. A first step in this direction would be the elaboration of a common policy (*a vision, intermediary steps and timeline*), followed by a process of implementation of such policy, considering appetite for subsidiarity, and the creation of SWM infrastructures by implementing synergies and economies of scale. Such drawbacks of a political nature will have to be overcome through concrete SWM projects with bilateral, sub-regional, and eventually regional agreements.

Achieving converging or harmonized national legislations for SWM in the region would be an ambitious undertaking and would constitute a significant breakthrough. Such harmonization would be necessary if a regional legislative framework for SWM is sought. For such a long-term goal, the development of the economic agreements in the EU (step by step from the 1950s to today), could be an interesting case study for the Caribbean region.

8.1.2. The lack of a Waste System pricing policy

Deposit refund systems are used as incentives to encourage the recycling of beverage containers, thereby reducing the occurrence of illegal dumping. The systems operate by imposing a special 'frontend' charge or deposit on consumers at the time of purchasing goods sold in reusable containers. In the same way, the lack of a tariff policy has created imbalances in SWM and a lack of financial means necessary for the adequate operation and renewal of equipment and systems, and for the construction of new and modern infrastructures.

8.1.3. The high presence but weakness of the private sector

In almost all of the countries approached, the local private sector is very well represented and even the strongest responsible public organizations rely on it for collection or treatment services. The collection is usually mixed between public and private stakeholders, the recycling could be operated either by one or the other, while the final treatment is usually operated by a private company under contract.

In some countries like Guyana, there are a few quite big companies operating in the SWM sector, while in some others like the small islands, there are multiple rather small companies. However, the private sector seems currently quite challenged, considering the efforts that are still to be made if the working conditions remain the same.

Indeed, they sometimes are not timely or correctly paid by the public stakeholder for their contracted services, or they have not made a sufficiently good profit from the recyclable waste in the past few years because prices were low along with the oil price. Overall, they are generally not in a good position to make any investments.

In this regard, it would be worth investigating PPP opportunities among international companies. However, it should be noted that to date, big international companies have often been reluctant to invest in the region because of lack of volume for amortization and potential risks.

8.1.4. The trend to have a very centralized organization

Most likely because of the relatively small size of most countries in the region, the organization responsible for SWM is usually a national entity/agency from a Ministry. In some countries like Jamaica, the city council does not even share the SWM responsibility, while in others like Guyana, the responsibility for SWM falls on the city, with assistance from the National Solid Waste Management Authority for planning.

Taking into consideration the local community in the SWM planning process is very important for some countries, given that potential disparities exist between the capital city and other (sometimes remote) areas of the countries, where most of the tourism sites are often located. It is therefore key to promote the sharing of responsibilities among national and local organizations, for example transferring the responsibility for collection to a local authority, given the intrinsic local dependency, while keeping the responsibility for treatment at the national level, given that it has to be planned on a large scale and could imply coordination with local communities for the gathering of waste material.

8.1.5. Risks brought by some WtE system

A WtE system could be attractive especially in the context of a small island because it takes less space than a sanitary landfill. However, this system usually involves high-level technologies which require a high initial investment as well as high maintenance costs if the system is to be operated in good conditions. In addition, it would be essential to have reliable waste composition information and waste sorting processes in the country to ensure the cost-competitiveness of this alternative.

It is important to distinguish the following techniques that may be considered as WtE:

- Recovery of landfill biogas;
- Anaerobic digestion (or methanization);
- Production of RDF (Refuse Derived Fuel);
- Gasification technologies;
- Combustion with energy recovery;
- Pyrolysis technology.

They are classified by order of technicity and investment and are definitely more or less appropriate to the encountered local context.

BOX 12. Turning plastic waste into a source of energy and employment in developing countries: Chrysalis 40

The Chrysalis 40 is a low-tech pyrolizer created by the Earthwake start-up, capable of turning plastic waste into energy. The device combines two technologies: pyrolysis and distillation. Pyrolisis is combustion without oxygen that melts plastic waste. Once distilled and cooled, plastic is turned into diesel, gasoline, and gas. Gas is then reused to power the machine. The Chrysalis only recycles polyethylene and polypropylene, which represent 70% of non-recycled plastics. Therefore, Earthwake's solution is complementary to mechanical recycling. Chrysalis 40 represents a mobile, self-sufficient, and profitable alternative able to transform 40 kg of plastics per cycle into 40L of diesel fuel. Chrysalis 40 aims to create a local circular economic model, by providing alternatives to landfilling and incineration, especially in communities that need it most.

On the islands of Kerkennah, in Tunisia, Earthwake is developing a project in partnership with the NGO SMILO – and supported by the French Facility for Global Environment (FFEM) – to find a solution to the abandonment of plastic fishing traps at sea. The installation of a Chrysalis 40 would encourage fishermen to bring back their waste to turn it into fuel.

8.2. Best practices in the region

In this section, the team would like to highlight some best practices that have been undertaken in the region. In particular, two relevant systems being implemented or planned in Barbados, an environmentally friendly disposal facility which includes technology to convert waste into energy, and countries' approach to Recovery, Reuse and Recycling of waste and its transformation into useful material. Additional best practices are included through several other sections of the report, to illustrate some of the recommendations provided by the team.

8.2.1. Development of environmentally friendly disposal facilities

In Barbados, the main landfill in use, the Mangrove Landfill, is an engineered landfill. The government of Barbados plans to develop another environmentally sound facility which will be properly designed, with stormwater and leachate collection systems. There will also be a leachate treatment plant with a standard tertiary level.

The Mangrove Landfill receives around 1000 tons of garbage per day. The tonnages for household waste have not increased significantly in recent years; in contrast, construction and demolition waste has significantly increased due to various large demolitions undertaken and the recent construction boom. To accommodate this recent activity, two satellites quarries have been opened to receive construction and demolition waste and relieve pressure on major sites.

There is a new waste management facility in Vaucluse, St. Thomas. It includes a transfer station with materials recovery facility, composting plant and a chemical waste storage facility, which the government is likely to transform into a chemical waste management facility. This new WM facility receives all waste previously brought to the Mangrove Landfill. There is a significant amount of waste that is diverted - around 70%, and this includes construction and demolition waste, green waste, wooden pallets and other recyclable materials including plastics, glass and metals. The Sanitation Service Authority also handles liquid waste, such as blood and grease. These are

managed at the Lonesome Hill waste disposal site. Other non-sewage waste, such as effluent from the paint industry, is disposed of at the Mangrove Landfill.

8.2.2. Recovery, Reuse and Recycling of Waste and its Transformation into Useful Material

Under the Returnable Containers Act (1987), all beverage containers in Barbados, whether plastic or non-plastic, have a return on deposit. The fees received encourage high collection and return rates. Given the success of this initiative, the Government of Barbados is looking into applying this principle to other recyclable items.

8.2.3. Actions Taken as part of Regional Disaster Response

Disaster Risk Reduction in the Caribbean Region is often supported by the GFDRR (*Global Facility for Disaster Reduction and Recovery*), a global partnership, aimed at helping developing countries better understand and reduce their vulnerability to natural hazards and climate change, informing policies to mainstream resilience and improving disaster preparedness levels[169]. However, while significant research and initiatives target disaster resilience with special emphasis on infrastructure resilience across different phases of the disaster management cycle (*i.e., mitigation, preparedness, response, and recovery phases*), post-disaster materials and environmental management for debris and waste mobilize fewer efforts.

The Caribbean Disaster Emergency Management Agency[170] (CDEMA), should be part of the regional alliances aimed at managing the debris and waste in the aftermath of major disasters. While in case of such events, priority is given for search and rescue efforts, preparedness efforts should tackle the constraints associated with the available disposal, treatment, recycling or reuse infrastructure, the transport of waste, access to waste management facilities and optimal disposal, including waste-to-energy conversion, among others.

The development of post-disaster recycling markets[171] and market matching mechanisms, which could also integrate processes of matching up forward and reverse supply chains, is of outmost importance. The Sendai City Model[172] could guide the classification scheme for the composition of disaster wastes, as well as the MeHSIP model dealing with pollution hotspots (***BOX 13***).

8.2.4. Actions Taken as part of the Barbados Integrated Solid Waste Management Program

The Project Management Coordination Unit is responsible for the implementation of the Integrated Solid Waste Management Program (ISWMP), which focuses on waste minimization and the 3Rs, Reduce, Reuse and Recycle. The Government of Barbados is currently examining the feasibility of recovering energy from waste, which would then introduce the fourth R, i.e. Recovery. Through TA support provided by the EU, the Government of Barbados has engaged the services of a firm tasked with examining various waste incineration technologies with the aim of identifying the most environmentally friendly and economically advantageous solutions for generating energy from waste, in an effort to continue strengthening the country's sustainable development.

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[169] *World Bank. (2018). Disaster Risk Management in the Caribbean.*

[170] *https://eecentre.org/partners/caribbean-disaster-emergency-management-agency-cdema/*

[171] *National Science Foundation. (2019). Workshop on Post-Disaster Materials and Environmental Management. Virginia, US, May 2019. Reporters Derrible, S., Yesiller, N. and Choi, J.*

[172] *GFDRR, WB, JICA. (2012). Debris Management – Recovery Planning. Sakai, S. and Bettencourt, S.*

BOX 13. From pollution hotspots to bankable projects: the MeHSIP initiatives in the Mediterranean Sea

The Mediterranean environment is one of the richest and at the same time most vulnerable in the world with its marine and coastal environments being exposed to a combination of pressures of which 80 % of pollution comes from land-based sources (agricultural wastes, airborne particles and river run-off, carrying nutrients, pathogens, heavy metals, persistent organic pollutants, oil and radioactive substances). In particular, 80 % of landfill sites in the South and Eastern Mediterranean countries were not subject to supervision when MeHSIP was launched.

Focusing on human activities, 131 "pollution hot spots" were identified in the frame of the Strategic Action Programme of UNEP (with reference with pollution sources or points, which may affect human health, ecosystems, biodiversity, sustainability, or economy).

At the occasion of the 10th Anniversary of the European Mediterranean Process (November 2005), the partners committed to a program of targeted de-pollution of the Mediterranean Sea (in principle by 2020), with the support of EU (under Horizon 2020), and encouraging co-operation and synergies with well-established processes such as those implemented by UNEP in the framework of the Barcelona Convention in the region.

The European Investment Bank (EIB) launched a study to assess the potential of a pipeline of pollution prevention investments addressing pollution Hot Spots in the Mediterranean countries and the need for a Mediterranean Hot Spot investment programme (MeHSIP). Criteria for determining the project potential is their bankability, considering issues e.g. national and regional priority, significance of the de-pollution effect, sustainability of operations, loan repayment capacity of the project promoter, and required external funding amounts.

The aim has been for the EIB to develop a pipeline of projects, by building on and strengthening existing forms of cooperation in order to deliver the best possibilities of creating synergies and leverage of environmental pollution prevention investments. It has contributed additionally to develop transfer of best practices in project development and finance of major investments in environmental infrastructure addressing Hot Spot pollution. Another major output of MeHSIP is to promote a process ensuring close collaboration between the EIB and the other donors active in the region.

A total of 44 projects appearing bankable were initially identified for possible funding under the MeHSIP, with 57% of projects related to urban wastewater, followed by municipal solid waste projects (18%), industrial emissions (14%) and projects in other sectors (11%).

The identified main obstacles for transforming hot spots into bankable projects are (i) the frequent multitude of institutional responsibilities for project implementation, as the environmental problems in the hot spots are often related to various sectors, (ii) the frequent high volumes of financing required, (iii) lacking enforcement of existing laws related to environmental protection, (iv) lacking willingness of central governments to extend guarantees for loan repayment, and (v) lacking inclination of project promoters to take up loans for project funding, given the frequent availability of alternative grant funding possibilities.

See also Horizon 2020 Mediterranean – Toward shared environmental information systems. EEA-UNEP. No 6/2014.

9. Summary of Gaps to be bridged

Following on from the context described in the previous sections, in particular the main gaps and needs identified in the region for the various typologies of countries (***Section 3***), namely, small islands, medium islands, large islands, and continental Caribbean, this section presents an overview of the main gaps to be bridged to strengthen SWM in the region for each of the main SWM systems (See ***Figure 4***), which served as the basis for the preparation of the recommendations provided in ***Section 10 and 11***.

	GAPS TO BE BRIDGED	PRELIMINARY ACTIONS
REDUCTION	•Waste reduction is starting to be developed mostly in small islands (through changes in consumption patterns – reduction of non-recyclable goods – and ban for single-use plastics). •However, despite the dependency on imported products, there is room for improvement, in particular in the large countries where it is more relevant.	Regional awareness campaigns on sustainable consumption and increased local tax for SWM, in order to reduce waste and improve its management. It could possibly be undertaken by the EU with its advanced experience in Europe.
RECYCLING	•Recycling is a common gap in all countries, in particular in relation to plastic waste. •Even if there is no local market for recycled materials, a lot could still be done in relation to material preparation. This would contribute to employment generation in the country among others. •Plastic waste is easy to convert and could reach regional markets.	Recycling is a key field for action. AFD & GIZ projects are very relevant. It is proposed to connect the ongoing and upcoming initiatives with a regional project to improve plastic recycling.
RECOVERY	•Composting and waste-to-energy are key waste diversion schemes (organic waste is dominant in waste composition in the region). •However, almost no composting initiatives were identified in the region. Some methanization and other WtE projects were reported.	Actions could be directed towards supporting household waste composting at a large scale for organic fertilizer production. This should be a locally managed project, in line with local needs and contexts (lack of space and resources for a usually not very profitable activity).

	GAPS TO BE BRIDGED	PRELIMINARY ACTIONS
LANDFILLS	•Landfills do exist in the region but almost none of them is sanitarily managed (with a treatment of leachates and possibly of biogas). With the increase of pollution, in particular associated to tourism, this is an urgent issue to address.	Improvements to existing landfill sites as well as new landfill projects should be considered. A national landfill assessment should be developed, including the corresponding feasibility studies for specific sites.
HAZARDOUS WASTE	•Hazardous waste should be collected and treated separately, but it is barely the case in the region. At least, it should be locally trivialized into common waste to prevent any harmful impact and possibly treated the same way as household waste.	Trivialization would have to be implemented nationally, because the Basel Convention prevents them from being exported. Regional management of hazardous waste is therefore difficult to consider.
CAPACITY BUILDING	•There is a general gap on capacity building of the public authorities responsible for SWM, in relation to the new schemes and new facilities to be implemented. •Once a SWM Master Plan or Strategy is developed, depending on the category of the country (less in small islands and more in large islands), staff will need to be trained and assisted, ideally for each step of the process, as well as in relation to management principles.	Capacity building initiatives should be planned and implemented at the national level in line with the specific needs of the countries. Financial support from funding partners like JICA or IDB could be considered for this purpose.

Figure 4: *Summary of Gaps to be bridged (Continued from previous page)*

10. Recommendations

Paving the way towards a circular economy also means identification of a number of initiatives that could be of particular relevance in the Caribbean context. This section presents a comprehensive set of recommendations that encompasses suggested actions for policy and institutional development, technical interventions and private sector involvement among others, which will be then accompanied by another set of specific recommendations provided on the EU Programme "Support to the effective and sustainable management of Solid Waste in the Caribbean" (***Section 11***) and the three Action Fiches developed for potential additional pilot activities (***Section 12*** and ***Annex 9***).

10.1. Recommendations for Actions at the Regional Level

10.1.1. Recommendations for Policy/Regulatory and Institutional Development

10.1.1.1. General recommendations

National waste management initiatives are often influenced by international agreements[173]; it is noted that multilateral environmental agreements (MEA) ratification in the Caribbean has the lowest rate[174] (61%) compared to other SIDS regions seas / basins; while regional initiatives seem to have a higher uptake (*i.e. Cartagena Convention has an 86% ratification rate*).

Implementation (of the MEAs) is furthermore a fundamental process, that lacks enforcement measures and means in the region. For the situation to improve it would be beneficial for the Caribbean Member States to develop a **regional (or sub-regional) approach[175]**, on the model of Cleaner Pacific 2025[176] "*which aligns waste and pollution activities to other priority development areas that are common across many SIDS, such as climate change, biodiversity conservation, agricultural development and tourism development. This alignment is a proven way to advance waste management with the added benefits of cross-sector and multi-stakeholder engagement, increasing understanding and buy-in towards waste initiatives*[177]". **National Integrated Waste Management Strategies and Action Plans** should be drawn (or adapted) based on the regional framework and guidelines. **Remediation of dumpsites**, along with **measures' enforcement** and **waste characterization, waste data collection and monitoring** should also be defined at the (sub)regional level.

The assessment of the regulatory and legal framework and administrative arrangements related to (solid) waste management in general and to plastics regulations in particular, in the Caribbean, present a highly heterogenous landscape. Therefore, as applicable to the context of SIDS in general[178], the chapter related to regulatory and legal framework recommendations refers more

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[173] *United Nations Environment Programme (2019). SIDS Waste Management Outlook. Nairobi*

[174] *Multilateral environmental agreements (MEA) ratification in the Caribbean has the lowest rate (61%), compared to Pacific SIDS (67%) and the "Atlantic, Indian Ocean, Mediterranean and South China Sea region" SIDS (83%),*

[175] *The first Regional Waste Management Conference organized by the Caribbean Member States in July 2017, set the principles of shaping the design of a regional waste management action plan.*

[176] *Secretariat of the Pacific Regional Environment Programme (2016). It contains 14 guiding principles, four strategic goals and associated targets to be achieved between 2016 and 2025.* *https://sustainabledevelopment.un.org/content/documents/commitments/1326_7636_commitment_cleaner-pacific-strategy-2025.pdf*

[177] *United Nations Environment Programme (2019). SIDS. Nairobi*

[178] *Regulating plastics in Pacific Island Countries: a guide for policymakers and legislative drafters. Apia, Samoa: SPREP, (2018)*

to a **"policy narrative" of regulatory aims, provisions and principles for further consideration**, than to specific legal advice. Moreover, enacting defined priorities and defining enforcement mechanisms needs to follow-up an interactive process and agreements between policymakers and legislative drafters; the complexity is increased by the regional (or sub-regional) agreements and engagements taken by the Caribbean Member States. Voluntary agreements have a forerunner role to play in the process of homogenization, consistency and joint action of regulatory and legal frameworks amongst the Caribbean nations.

Plastics regulations and legislative drafting have to be incorporated into solid waste management approaches, but also into product stewardship, extended producer responsibility (including deposit schemes), along to marine litter reduction, lifecycle assessments and waste profiling to identify priority issues and sectors.

The underlying principles identified for the regulatory and legal frameworks should be twofold:

(i) **Design principles** including:
- **Circular economy model**,
- **Sustainable materials management** (*reduction / prevention of waste, prioritization of regulations according to 5Rs Reduce, Reuse, Repair, Recycle, Recover*),
- **Extended producer responsibilities** best to be approached at a regional level, to increase bargaining power (*for the treatment or disposal of post-consumer products*),
- **Polluter-pays principle** *(with reference to the cost of containment, avoidance or abatement)*,
- **Sustainable consumption and production** *(supply chain / life-cycle approach)*, **smart regulations** *(using policy mix principle based on complementary tools and mechanisms addressing a single issue, i.e. economic – container deposit schemes, information based - inventories and awareness raising and self-regulation – voluntary standards),*
- **Environmental democracy**[179] *(i.e. fundamental rights acknowledged by Principle 10 of the Rio Declaration: access to information, access to public participation and access to justice)*[180], while

(ii) Directing principles including precautionary principle and the harm prevention principle.

Among the tools and mechanisms needed to achieve regulatory and legislative goals and operationalize principles, the following should be included:

- **Product bans and restrictions**[181] *(i.e. for high environmental impact, single-use, substitutable products, phase-out periods, enforcement and penalties, etc.)*
- **Economic instruments and behavioural incentives based on polluter-pays principle**[182] *(i.e. product levies, deposit / refund schemes, or service levies that internalize costs, etc.)*
- **Licenses and permits** *(i.e. licenses granted to bottle manufacturers, recycling companies or plastics importers, permits for lawful dumping of organic waste, etc.)*

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179 *Neglected: Environmental Justice Impacts of Plastics Pollution (2021). UNEP and Azur Ocean Justice. Available at www.wedocs.unep.org*

180 *UNEP Guidelines for the Development of National Legislation on Access to Information, Public Participation and Access to Justice in Environmental Matters (2010). Adopted by UNEP Governing Council, decision SS.XI/5, part A of 26 Feb 2010. Available at www.wedocs.unep.org*

181 *Tackling Plastic Pollution: Legislative Guide for the Regulation of Single-Use Plastic Products. (2020). UNEP, World Resources Institute.*

182 *Waste Management and the Circular Economy in Selected OECD Countries. Evidence from Environmental Performance Reviews. (2019). OECD*

- **Technology design and product specification standards[183] certification and labelling or marking** *(i.e. need for standard for plastic contents, recycled or recyclable materials, monitoring, enforcement and compliance, etc.)*
- **Prohibition on harmful practices** *(i.e. disposal of shipping garbage or dumping of land-based plastic waste at sea, etc.)* and **enforcement of international conventions on hazardous substances use, movements or disposal**
- **Reporting requirements** *(i.e. pollution and incident reporting, annual returns for container deposit schemes, etc.)*
- **Integrated management plans** *(i.e. for collection, recycling or shipping garbage)*
- **Clear penalties and enforcement** (*such as warning letters, fines, confiscation of banned products, vessel impoundment and imprisonment, etc.)*
- **Community rights[184]** *to information access, to bring legal challenges*

Overpassing the challenges of the heterogenous legal systems and regulatory frameworks of individual Member States in the Caribbean can be achieved through **non-mandatory tools and mechanisms** (that are outside the countries' legislations), such as:

- **Voluntary reporting** for the purposes of strengthening a company's "social license to operate" (in line with the concept of Corporate Social Responsibility);
- **Education and awareness** raising programs;
- **Voluntary industry commitments;**
- **Government-backed voluntary programs** and **voluntary product certification.**

Supporting measures, mirroring policy mix, are aimed to enhance and support other legislative and non-legislative measures to reduce and manage waste management, and can include:

- **Expanding municipal waste collection** providing additional opportunities to expand contained deposit infrastructures (such as collection points);
- **Environmental levies**, as potential funding source for waste collection;
- **Up-cycling solutions, value-adding to the collected material,** though, potentially, PPPs including cooperation with research centers and universities;
- **Establishing per capita waste reduction targets** for cruise liners and other tourism sectors where waste is measurable;
- **Establishing a voluntary certification programme** for large resorts, cruise liners, large ferries and airlines to encourage plastic waste reduction actions.

10.1.1.2. Specific recommendations

Specific objectives of an adequate policy should be able to finalize a SWM Action Plan to identify regional initiatives and strategies to support: i) collaborative communication, ii) a common financing system for bankable investment infrastructure projects; iii) a strategy of prevention of waste pollution through precise rules that can be seriously sanctioned; iv) people's awareness of environmental protection; v) the increase in landfill diversion and recycling; vi) the participation of the private sector and PPPs in general in the WM.

Specific recommendations for policy/regulatory and institutional development at the regional level include:

183 i.e. core standards are ISP 9001, ISO 14001 and ISO45001 or EU regulations aimed at ensuring that waste is managed in an environmentally sound manner, including reusing of the secondary material

184 Neglected: Environmental Justice Impacts of Plastics Pollution (2021). UNEP and Azur Ocean Justice. Available at wedocs.unep.org

1. With regards to Strategic Planning

- Share strategic planning experiences across the region.
- Establish a regional policy to encourage strategic planning (see Action 1 and 2).
- Convene stakeholder-based planning and implementation committees.
- Identify the strategic plan monitoring mechanism and key performance indicators.

2. With regards to landfills diversion

- Establish performance standards for the design and operation of composting plants, as well as for the sale of composting plants and for the sale of compost as a soil improver.
- Adopt policies to ensure that all recyclers are treated with dignity and respect for their well-being and well-being.

3. With regards to waste pollution

- Support the development and implementation of relevant agreements, conventions and protocols.
- Establish island-specific task forces to enact regulations to prevent pollution.

4. With regards to marine litter

- Building on the Draft Caribbean Community Environment and Natural Resources Policy Framework and Action Plan being developed at the CARICOM level, increase harmonization of legal provisions throughout the region as a support to the common objective to preserve marine and coastal environment. Greater harmonisation and coordination of policies – involving CARICOM Secretariat where appropriate - and relevant legislations in the region would definitely boost the efficiency of efforts to combat marine litter.
- Implement the 2012 amendment to the MARPOL Annex V and implementation of Annex V Special Area status for the Wider Caribbean region (see Action 3).
- Expand ratification and promote effective implementation of MARPOL Annex V and the LBS Protocol of the Cartagena Convention by ALL States in the Wider Caribbean Region (see Action 4).

5. With regards to Caribbean Ports

- Provide support to enable Member States that have not yet done so to sign up to the relevant IMO instruments that would yield improvements in waste management at ports.
- Increase harmonization of waste management by Caribbean ports. In order to reach a level playing field in the region, interested countries could give a mandate to the CARICOM Secretariat to pave the way for such a harmonization.

6. With regards to circular economy

- Promote the move towards circular economy of the entire region.
- Explore the possibility of creating a Caribbean Circular Economy Stakeholders Forum (under the CARICOM leadership, if appropriate), which could be inspired by the European Circular Economy Stakeholders Forum.

7. With regards to financial aspects

- Collaborate with each island nation to adapt a "wage pollution policy".

Some of these actions are further described next.

ACTION 1: Development of a regional policy framework

One of the first actions to be recommended for the Caribbean region is the development of a regional policy framework. As a first step, an environmental policy for bilateral/multilateral agreements between Island States could be developed around a common goal, which could

realistically be the collection & recycling of plastics through an adequate legislative framework and common infrastructures. From a first group of nations adhering to such a consortium, agreements with other Caribbean countries could evolve. The treatment and recycling of plastics could then be extended to other SWM infrastructures such as composting, E-Waste, and Waste-to-Energy.

This action would support approximation of national legislative frameworks toward an integrated solid waste management approach in adhering States. Furthermore, the setting up of such a regional policy structure would contribute to the development and implementation of sub-regional and Caribbean wide actions in environmental protection in general, and in SWM in particular. Through bilateral policy dialogue, an action plan with a solid political basis can provide support not only to the SWM sector but also to the development of an effective circular economy approach, and to local and regional legislation for sustainable consumption. Finally, by fostering the strengthening of a policy framework, the action would also support the creation of a favourable environment for green investment, research and innovation.

ACTION 2: Establishing a regional legislative framework for SWM

In the long term, following the development of a regional policy framework, the region could aim at developing a comprehensive regional legislative framework for SWM. The importance of having a legislative framework at a regional level in the Caribbean area has been highlighted by all stakeholders in official documents and CARIFORUM conferences as a key action without which a true strategy for the SWM sector would become very difficult if not impossible. Moreover, even a sufficiently advanced comprehensive legislation capable of helping the development of the circular economy in the Caribbean has not yet been drawn up at the national level by individual countries.

Establishing a regional legislative framework for SWM presents many political and organizational difficulties, which could be gradually overcome by sub-regional legislative frameworks or by multi-national agreements on particular actions that can offer clear and immediate benefits to two or more countries. Alternatively, it could be developed in the framework of a large SWM infrastructure project implemented between several Caribbean countries, as part of which precise synergies between several interested nations would be envisioned. This “ad hoc” legal framework would emerge from the implementation of such investment project, on the basis of the technical-economic agreement reached between the participating nations. For example: a plastic recycling and processing centre, a top priority for the Caribbean.

ACTION 3: Implement the 2012 amendment to the MARPOL Annex V and implementation of Annex V Special Area status for the Wider Caribbean region.

For those countries which have ratified Annex V, marine litter and other relevant laws should be modified according to the recommendations of the 2012 amendment of MARPOL Annex V.

ACTION 4: Expand ratification and promote effective implementation of MARPOL Annex V and LBS Protocol of Cartagena Convention by ALL States in the Wider Caribbean Region.

Assess and renew efforts for MARPOL Annex V ratification and enforcement throughout the Caribbean region. Currently 3 States (*Costa Rica, Haiti and Grenada*) have not yet ratified MARPOL Annex V; and 11 countries (*Antigua and Barbuda, Bahamas, Belize, Dominican Republic, France, Grenada, Guyana, Jamaica, Panama, Saint Lucia, Trinidad and Tobago, UK, and USA*) have acceded to the LBS Protocol.

10.1.2. Recommendations for Technical interventions

10.1.2.1. Specific recommendations

The analytical framework for the regional outlook of SWM considers the holistic approach of an integrated sustainable waste management system, from prevention, minimization, reuse, recycling and other recovery (including energy recovery), to landfill and controlled arrangement, mixing available instruments and facilities following the specific situations.

Specific recommendations for technical interventions relevant to the Caribbean region are presented next.

1. With regards to data collection activities and assessments

- Collect data on waste and resources (see Action 1).
- Undertake a regional (country by country) or sub-regional assessment and mapping of hotspots, including for example, the illegal dumping sites (localization, surface, type of waste, impact on water resources, etc.).
- Undertake waste characterization assessments.

2. With regards to landfills and landfills diversion

- Develop a hub and spoke system for the transport of recyclable materials within the Region, modelling a system similar to the one set up in the Pacific region (see Section 11) the North Sea resource roundabout that allows recyclable materials to cross national borders.

3. With regards to waste pollution

- Develop recycling schemes as starting points for (sustainable) resource management (see Action 2).
- Develop a regional infrastructure to support plastic recovery systems in each island nation.
- Establish a cooperative among Caribbean island nations to bargain for the processing of SWM materials that tend to be open landfills, such as tires.
- Design cradle-to-grave standards for automobile registration.

Some of these actions are further described next.

ACTION 1: Collection of data on waste and resources

An important element for consideration towards an integrated sustainable waste management system is waste related data and indicators, their availability and the norms and standards to define comparable indicators, facilitating the analysis of the state of performance indicators and monitoring their progress over the time. A regional initiative supporting the collection and provision of credible, comparable/benchmarkable and updated data on waste and resources is strongly advised; it should also support the definition of indicators for monitoring waste management (e.g. *per capita waste generation, the amount treated using different methods, the number of treatment facilities, the final disposal and their capacities, the amount of hazardous waste and non-hazardous industrial waste, import or export of waste or hazardous waste*, etc.) but also the incipient issue at regional level of resource management (*covering indicators measuring resource use efficiency such as total waste per specific stream plastic, card-board, glass, paper; share of renewable energy in energy supply; share of raw materials consumed relative to the GDP; etc.*).

ACTION 2: Recycling schemes as starting point for (sustainable) resource management

Recycling is central in a circular economy model and nowadays should be enhanced in most countries. It is especially important to foster it in the Caribbean region because countries have to face the following difficulties:

- Quite small amount of available materials depending on the local population;
- Possible dispersion of the materials depending on the size of country;
- Lack of local markets for recycled material depending on the local industries;
- Lack of available technologies and related maintenance.

Some support should be brought to recycling, starting by some separate collection and going further to bring the most added value to the countries. This subject might be considered at a regional level for a better efficiency thanks to economies of scale by material.

The waste stream related to compost, waste-to-energy and reuse / recycling of building materials will see potentialities growing in the future years.

10.1.3. Recommendations for Financial Interventions

Specific recommendations for financial interventions relevant to Caribbean region include the following actions:

- Evaluate how regional and global SIDS finance their SWM systems.
- Explore the execution of a regional memorandum of understanding under which all island nations in the region will commit to allocating the proceeds of SWM withdrawals to fund SWM programs.
- Specifically, with regards to landfilling, working towards the reduction of landfilling and the increase of recycling, an inventory and a harmonized increase of gate fees (and other landfill tipping and pas-as-you through costs) is highly advised in the region, through a process that could be led by CARICOM.

10.1.4. Recommendations for Knowledge Exchange within the region

At the regional level, a regional platform to share research and positive experiences and lessons learned for modern waste treatment technologies could be created, for example for landfill diversion technologies, WtE technologies, etc.

10.2. General Recommendations at the National Level

Some needs related to the absence of SWM infrastructure, such as a sanitary landfill, a composting platform, methanisation plant or recycling centre have been identified, in particular in the focus countries. Also, institutions should be improved through some specific measures, for instance, through actions targeting the reduction of the production of waste in quantity or quality.

The first need is often to design and adopt a real National SWM Master Plan that will define all the mentioned needs in a logical way.

In parallel, the GHG emissions of the various scenarios could be estimated in order to demonstrate that the adopted schemes really allow some level of mitigation of climate change impacts. For SWM, it is not always the case indeed.

10.2.1. General Recommendations for all countries based on their typology

At the national level, some general recommendations applicable to the context of most of the countries included in the present regional assessment can be suggested. These include:

- Assist the small islands states to find economies of scale for recycling, for example through the development of a regional project for the recycling of plastic waste;
- Support medium islands states to better plan and monitor the achieved facilities through a master plan and capacity building activities;
- Support the large islands states and continental countries to improve their SWM systems through the development of both master plans and feasibility studies for collection, recycling and treatment facilities.

10.2.2. Recommendations for Policy/Regulatory and Institutional Development

In order to ensure the sustainability of the sector, governments of Caribbean nations need to ensure that SWM policies are integrated into national policies and given the priority they require. Specific recommendations for policy/regulatory and institutional development at the national level include:

1. General recommendations

- Establish effective institutional frameworks for SWM to ensure the achievement of the policy objectives of protecting public health and avoiding environmental pollution. SWM policies should therefore aim at waste minimization. Separation at source should be a clear SWM goal, promoting reuse and recycling and therefore minimizing the amount of solid waste ending up in final disposal sites (i.e. reducing waste generation).
- Revisit existing institutional structures to ensure that there is a clear definition of the entities involved in SWM and the roles and responsibilities of the different stakeholders involved (i.e. government, private sector and public society);
- Revise the legal and regulatory frameworks to define remedial actions. Clear definition of the authority that will enforce the regulation and the actions to be taken in case of offense should be encouraged, together with the definition of the appropriate funding mechanisms. Enforcement capacity should also be strengthened[185].
- Finally, in order to achieve the sectoral transformation needed, the legal and regulatory frameworks should also define a sustainable mechanism that allows for continued funding and adequate accountability of SWM functions (i.e. collection, waste treatment, disposal, public awareness and monitoring and enforcement).

2. With regards to waste diversion and recycling

- In relation to the diversion of recyclables and reusable components from municipal disposal sites, given the price fluctuations that recycled materials are exposed to in the Region, it is important to develop contingencies to mitigate eventual drops in world recyclable prices.
- Revise/update policies, guidelines and regulations to put more emphasis on composting, recycling and proper disposal, rather than in waste collection. In particular, in many countries there is a need for developing or updating policies and regulations that foster the recycling sector and define tipping fees and licence fees in contracts.

3. With regards to Waste to Energy

- Develop the necessary institutional and governance analysis to determine a country's policy readiness and technical capabilities.

4. With regards to marine litter

- Evaluate existing legislation, regulations and enforcement practices that deal with marine litter and strengthen or enact new legislation/regulations as appropriate (see Action 1).
- Establish and/or enhance government sponsored "litter wardens or patrols" in coordination/collaboration with municipal police/security forces and establish the infrastructure for compliance (see Action 2).

Some of these actions are further described next.

185 *In Jamaica, for instance, through the Fixed Penalty Notice (Litter Ticket), the NSWMA has the power to ticket and charge offenders with fines as high as 10,000 Jamaican dollars per violation. (National Solid Waste Management Authority, 2015. http://www.nswma.gov.jm/publicinfo.php)*

ACTION 1: Evaluate existing legislation, regulations and enforcement practices that deal with marine litter and strengthen or enact new legislation/regulations as appropriate.

Existing waste management legislation needs to be evaluated for its effectiveness and level of enforcement. In most cases, substantial legislation and regulations do exist, but are poorly enforced. Some of these laws or policies are still in draft phase, some of which for several years, and are yet to be approved. They need to be approved with urgency in order for them to be efficiently implemented and to curb the marine litter impact.

A review of existing legislation at the national level is proposed for amendments to determine if these regulations need to be updated or revised to provide support for marine litter prevention and monitoring efforts. Enforcement practices should be reviewed at the national and local levels to determine how to better address compliance with existing litter laws by both the public and private sectors. The introduction of new legislation, where necessary, dealing specifically with marine litter management is proposed and their effectiveness periodically evaluated.

ACTION 2: Establish and/or enhance government sponsored "litter wardens or patrols" in coordination/collaboration with municipal police/security forces and establish the infrastructure for compliance.

Establish or re-establish government agency-sponsored "litter wardens or patrols" in order to enforce anti-litter regulations at public beaches and parks using educational and outreach campaigns to foster compliance. These agents could also be responsible for conducting public education efforts to help address activities that produce litter problems. Specialized programming would be needed for public beaches and maritime activities engaging boaters, yachters, fishermen and coastal communities. Incentive programmes for community-based enforcement schemes e.g. community litter rangers can also assist in primary level enforcement.

10.2.3. Recommendations for Institutional Arrangements to accelerate the circular economy transition

In order to accelerate the adoption and implementation of a circular economy in the region, there are several institutional and governance aspects that are needed in relation to SWM. These include:

- Harmonize waste management policies with the circular economy concept and align them with local and national government policies. In particular, policies across the circular economy, sustainable development and climate change agendas need to be harmonized; in addition, there is also a need for integrating policy measures that support the circular economy into other cross-cutting national-level policies, such as infrastructure development.
- Integrate GHG mitigation strategies needed to meet the targets of the Paris Agreement in waste management policies, adopting a shared responsibility principle.
- Further promote the adoption of EPR, to provide incentives to minimize waste at the source, promote more environmentally conscious product design, and support public-sector management of waste (*e.g. product categories: e-waste, batteries and tyres*[186]).
- Given that the circular economy model is not solely an environmentally sustainable model, but cuts across sectors and institutional boundaries, promote a multi-sector approach, involving not only environment ministries but also the industry ministries in the promotion and hosting of circular economy initiatives (e.g. through the promotion of inter-ministerial

186 *Some countries in the LAC region (i.e. Brazil, Colombia, Chile, Costa Rica, Honduras, Mexico, Peru and Uruguay) have established an EPR scheme to some degree for a number of product categories, incl e-waste, batteries and tyres.*

cooperation to facilitate policy coherence[187], or through other ministerial institutions – e.g. Offices of the Prime Ministers – that have a stronger planning mandate but can still give strategic guidance for implementation at the sectoral or ministry level).

- Develop dedicated circular economy roadmaps or strategies, and include circular economy elements in the national development plans and/or the environment and climate programmes (*incl targets for recycling and reuse of waste materials and for linking circular economy and climate action, processes to bring together important national stakeholders*).
- Develop public fiscal policies, such as tax incentives (e.g. clean technology tax exemptions) or subsidy removal, to provide support to industries and business that aim to shift to the circular economy model[188] that may complement other policy measures that support the circular economy.
- Promote public relations and marketing campaigns to improve the understanding of the value that the circular economy may bring to private sector companies through efficient resource usage and by generating value out of waste[189].

10.2.4. Recommendations for Technical interventions

10.2.4.1. Specific Recommendations

The following specific recommendations are applicable to many of the countries included in the current assessment.

1. With regards to collection

- Set up transfer stations that can serve as sorting stations towards final treatment (see Action 1).

2. With regards to landfills and landfills diversion

- Eliminate dumpsites (see Action 2).
- Upgrade existing facilities to sanitary landfills or create new facilities (see Action 3).
- Creation of infrastructures for the collection of waste separated at source[190].
- Manage composter master programs whereby different individuals from each community would be certified as composter master.
- Establish “gate fees” applied to landfilling in each country, to pave the way for a regional deterrent approach where alternatives exist.

3. With regards to waste pollution

- If necessary, establish SWM authorities on each island nation.
- Distribute a white opinion on the environmental and social costs deriving from the lack of sufficient regulations to govern the SW.

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187 *The government of Chile created a circular economy unit within the Ministry of the Environment, which has forged strong links with the state economic development agency (Corporación de Fomento de la Producción – CORFO) and the Sustainability and Climate Change Agency (Agencia de Sustentabilidad y Cambio Climático – ASCC). This has resulted in a successful inter-agency collaboration to develop a circular economy roadmap, as well as a programme to finance innovative circular opportunities in Chile.*

188 *In Uruguay, a tax exemption for machinery and premises intended for lead-acid battery recovery and recycling operations was introduced in 2003. The banning of plastic bags in Antigua and Barbuda was accompanied by tax exemptions for reusable bag imports in 2016, and a yearly incremental tax allocation for single-use plastic bags was implemented in Peru in 2018.*

189 *In some countries, the private sector has already proved an important driving force behind the adoption of the circular economy (e.g. in Argentina, a private-sector coalition led by the Association for the Study of Solid Waste has developed a National Strategy for the Circular Economy, inviting the government to strengthen the regulatory framework to support businesses in transitioning towards circularity).*

190 *Among the actions mentioned by Ronald Roach at the SWM conference on 3-4 November 2020*

4. With regards to Waste to Energy

- Conduct the necessary assessments to determine the feasibility of WTE plants, including environmental, health and social impacts.
- Develop a financial analysis to define the plant's investment and operating costs, looking also for case studies in similar environments.
    1. With regards to hazardous waste
- Develop systems for separation of hazardous waste at source and first treatment facilities (see Action 4).

5. With regards to disaster waste

- Develop specific systems to deal with disaster waste (see Action 5).

Some of these actions are further described next.

ACTION 1: Set up transfer stations

Another issue in the region, especially for the largest countries such as Guyana, Dominican Republic or Jamaica, is the way collection is run. It is mainly about SWM economy for the responsible organizations, knowing that collection represents the largest part of the expenses.

A solution that could be adopted, taking into consideration both distance to treatment facility as well as amount of waste, is to implement transfer stations at strategically and centrally located sites, from which larger trucks can leave to the final treatment location. In some cases, they can also be used as sorting facility and be connected to an MRF and also be good for solid waste diversion.

ACTION 2: Eliminate dumpsites

The elimination of dumpsites, because of the threat they represent to both human health and environment, is also a matter of regional priority, knowing that 2 of the identified world's biggest active dumpsites[191] are located in Haïti and in Dominican Republic, while 3 others are neighbouring the Caribbean Sea (*Guatemala, Honduras and Nicaragua*). Expanding the concept of "waste management" to become "waste and resource management" is the way forward, and includes waste prevention and minimization and also aspects of resource efficiency and sustainable consumption and production.

ACTION 3: Upgrade existing facilities to sanitary landfills or create new facilities

In general, a sanitary solution for final treatment is always necessary because there will always be some solid waste not able to be recycled or recovered. Apart from that, landfills are quite convenient for final treatment in the countries of the region which are not so densely populated and usually have some remaining space.

A first look at the regional situation shows that most of the dumpsites in the regional countries are not operated as sanitary landfill for a design or a cost reason and it seems common to see some leachates going straight to a river or the Caribbean Sea. As a matter of fact, it is quite important from an environmental point of view, either to upgrade the sites or to implement new sites to have them properly managed.

ACTION 4: Develop systems for separation of hazardous waste at source and first treatment facilities

Quite a common subject to all of the countries in the region is the treatment of hazardous waste such as health care waste and domestic waste (e.g. oil); in some countries even the separate

[191] *Waste Atlas Partnership (2014). Waste Atlas: The World's 50 Biggest Dumpsites, 2014 Report*

collection of this waste is also an issue. In some countries there is no available treatment, while in others just a first treatment implemented, and this could be very damaging for the environment.

The most important step is the separate collection that has to be planned nationally and then a first treatment aimed at getting sterilized waste could be performed locally. Some further treatment could possibly be considered at a regional scale.

ACTION 5: Develop specific systems to deal with disaster waste

Due to the geographical location of most of the CARICOM Member States in the hurricane belt, they are highly exposed to extreme weather events (*over 90 percent of natural disasters in the insular Caribbean*), primarily storms and hurricanes, followed by flooding and landslides.

Depending on their nature and severity, disasters[192] can create large volumes of debris ranging from 5 to 15 times the annual waste generation rates of the affected community. The financial cost of managing disaster waste following a major event is also spiralling and has crossed the billion-dollar mark in recent years. The nature and composition of disaster waste differs based on the type of disaster and the built environment that has been affected. In most cases, the bulk of disaster waste is construction and demolition material such as concrete, steel, and wood. Disaster waste may also include natural debris such as trees, mud and rocks, food waste, damaged vehicles and boats, hazardous waste, and municipal waste. The IMF has estimated[193] that based on current trends, climate change could increase storm costs to the Caribbean by as much as 77 percent by 2100. Moreover, these events worsen marine pollution by increasing the vulnerability of ecosystems and the amounts and dispersal of waste and pollutants.

Disaster waste[194] should therefore be considered, and specific systems should be developed at the national level to deal with this sporadic, but often annual type of waste stream.

10.2.5. Recommendations for Public-private participation

For a sustainable Action Plan, it is essential to find and reinforce the participation of the private sector with activities that include i) Funding waste systems, and ii) Circular economy strategy.

Specific recommendations for public-private participation that can be implemented at the national scale include:

- Establish a mentorship programme where local Chambers of Commerce assist SWM authorities in designing the business plan;
- Finance ministries approve public sector funding requirements before publishing tender documents;
- Explore innovative PPPs to address high costs of transporting waste and recycling materials from the island and new innovative schemes (e.g. tack-back, rent instead of buy)

In addition, informal recyclers that are repeatedly seen in disposal sites in the Caribbean, collecting and sorting materials from urban solid waste to commercialize, could be organized into cooperatives for more efficient and effective operations[195].

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192 *What a Waste 2.0. A Global Snapshot of Solid Waste Management to 2050, World Bank Group, 2018*

193 *Marine Pollution in the Caribbean: Not a Minute to Waste, World Bank Group, 2019*

194 *Waste Management in LAC – page 103 UN Environment. Several organizations have prepared manuals or guidelines for waste management in case of disasters or emergencies, such as the Disaster Waste Management Guidelines published by OCHA/UNEP and the Swedish Civil Contingencies Agency (OCHA-MSB-UNEP, 2011). In the region, PAHO prepared in 2003 the document Gestión de residuos sólidos en situación de desastres [Solid waste management in disaster situations] (CEPIS-PAHO, 2003)*

195 *During the sector reform in Colombia, the status of the informal recyclers was recognized so that they could form organized groups and be a formal part of the SWM value chain.*

10.2.6. Recommendations for financial interventions

Specific recommendations related to financial interventions that may be implemented at the national scale include:

- Create database of capital costs related to various SWM equipment.
- Establish a minimum dollar / capital ratio that the island could use as a guideline for the national budget.
- Collaborate with each island nation to adapt a "wage pollution policy".
- Create a favourable environment to attract more private investments into the SWM system, for example, offering incentives to promote greater levels of reuse/recycling.
- Specifically with regards to landfilling, market instruments and incentives should be designed in order to effectively reduce landfilling and increase the recycling, for example through: i) taxes and tax differentiation , ii) increased landfill tipping, gate fees and pay-as-throw (PAYT), which are effective in reducing waste material (e.g. Estonia); iii) tax credits for the use of solid residues in manufacturing processes (e.g. Brazil); and iv) deposits-refund systems contributing to high container return rates.

10.2.7. Recommendations for Awareness Raising and Capacity Building

Public awareness is essential for environmental protection. To achieve the overall objective of improving SWM systems in the region towards integrated sustainable systems, the implementation of awareness raising campaigns (*both in terms of outreach and education*), targeting especially the population, are imperative. These campaigns must include social support taking into account the involvement of women and youth, the involvement of the tourism sector, and the involvement of remote islands and isolated communities.

Of course, these campaigns have to be aligned with the strategic decisions made, and therefore should be implemented after comprehensive SWM Master Plans or Strategies are developed.

A baseline for such awareness campaigns may already be available in some countries with more advanced SWM contexts. Such baselines could be shared with the rest of the countries in the region and serve as a basis for the finalization of the design of the corresponding sensitization campaigns adapted to the specific context of each country.

Public relations and marketing campaigns should specifically be made to overcome the existing resistance to the adoption of new technologies for waste treatment. It is important to have key organizations (public and private sector) and individuals recognize the need for cost-effective and sustainable solutions.

In order to address the general gap on capacity building of the public authorities responsible for SWM, capacity building initiatives should be planned and implemented at the national level in alignment with the specific needs of the countries. Staff from the corresponding national and local authorities of each country will need to be trained and assisted on the implementation of the SWM Master Plan or Strategy, ideally on each step of the process, as well as in relation to management principles. The number of staffs in need of capacity building will depend on the specific context of the country (less in small islands and more in large islands).

Financial support from funding partners like JICA or IDB could be considered for this purpose.

11. Recommendations on the EU Programme "Support to the effective and sustainable management of Solid Waste in the Caribbean"

11.1. Overview of the action

Despite efforts from national governments, waste management systems in Caribbean countries remain highly unsustainable and underperforming. The average waste generation is about 14 million tons per year, with a per capita generation of 1.3/kg/cap/day, which is higher than the LAC overall average generation of 1kg/cap/day. The region also counts on very limited concrete recycling and treatment solutions. Overall, the region lacks the holistic strategic planning, innovation and funding for effective solid waste management. This added to the present context of an increasing level of waste production results in SWM being one of the major challenges to sustainability in the Caribbean region.

It is in this context and in the framework of the Joint EU-CARIFORUM Partnership Strategy, that the EU is providing support through the Annual Action Programme 2020 in favour of the Caribbean Region: *Support to the effective and sustainable management of Solid Waste in the Caribbean*, financed under the 11th European Development Fund. This action aims to support the strengthening of national legislative frameworks, the establishment of a regional policy structure to support sub-regional and Caribbean wide action, and the piloting of innovative technologies and methodologies in order to support the operational elements of waste treatment and recovery in the region, while at the same time contributing to the visibility and communication efforts of the EU-CARIFORUM partnership towards a sustainable and environmentally friendly development throughout the Caribbean. The basic information of the Action is included in ***Table 12***. The action is expected to promote EU global actions on circular economy, stimulating multilateral dialogue, aiming at global environmental action through innovative business models, as well as aiming to opening of new business opportunities for the Caribbean and European private sector.

In order to ensure a tangible impact, the action puts forward initiatives that reflect the priorities of the partner region and countries, in line with the external priorities of the new EU Circular Economy Action Plan, and tackles the problems in a highly integrated manner. Thus, concrete solutions will be promoted to improve the regulatory and legal context (including through mainstreaming of resilience and climate adaptation) on the one, hand and the related business environment on the other hand – including involvement of the population, private sector and civil society. The action is expected to achieve four main results, as depicted in the **Action Document for Support to the effective and sustainable management of Solid Waste in the Caribbean** (*ANNEX of the Commission Decision on the Annual Action Programme 2020 in favour of the Caribbean Region to be financed from the 11th European Development Fund*).

Its implementation will be undertaken by three implementing partners, the United Nations Environmental Programme – UNEP, the Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH and the Agence Française de Développement (AFD). UNEP will mainly concentrate on strengthening the legal, policy and strategic framework related to solid waste management in the region, therefore the specific activities implemented by UNEP will focus on the achievement of ER1; while GIZ and AFD will provide their expertise in managing the implementation of technical interventions in the area of solid waste management, with a key focus on options for possible public or private investments in the area of SWM in the Caribbean, as such focused on the achievement of ER2 and ER3. ER4 will be achieved through the procurement of consulting services for the implementation of communication and awareness activities. Further details of the involvement of each of the partners, as well as recommendations for the implementation of project activities are included in the following sections.

The Annual Action Programme is summarized hereafter (***Table 12***):

DESCRIPTION OF THE ACTION	
EU Action Title	Annual Action Programme 2020 in favour of the Caribbean Region: *Support to the effective and sustainable management of Solid Waste in the Caribbean*, financed under the 11th European Development Fund
Programming Document	11th EDF Caribbean Regional Indicative Programme (CRIP) Support to CARIFORUM Role in Regional Cooperation and EPA Implementation
Overall Objective of the Action	To strengthen the EU-Caribbean partnership for cooperation in the field of circular economy in general and of solid waste management in particular, and improve the resource efficiency of Caribbean economies
Specific Objective	To better align solid waste management systems in Caribbean countries with circular economy principles and NDC and make them more able to attract investments
Zone benefitting from the Action	The action shall be carried out at the following locations: CARIFORUM MS: Antigua and Barbuda, The Bahamas, Barbados, Belize, Dominica, Dominican Republic, Grenada, Guyana, Haiti, Jamaica, St. Kitts and Nevis, St. Lucia, St. Vincent and the Grenadines, Suriname, Trinidad and Tobago and Cuba[196]).
Financial details Total estimated cost: 9.7M€	Total amount of EDF contribution: 8.7M€ ▪ Communication and visibility related to EU-CARIFORUM partnership: 500k€ ▪ Evaluation: 100k€ Amount for the implementation of the action: 8.1 M€Co-financing by GIZ: 1.0M€
Implementing Agencies	1) The United Nations Environmental Programme - UNEP; 2) Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH; 3) Agence Française de Développement.
Implementation period	60 months
Current Status	Contribution Agreements under preparation

Table 12: *Description of the Action. Annual Action Programme 2020 in favour of the Caribbean Region: Support to the effective and sustainable management of Solid Waste in the Caribbean*

The expected results are summarized hereafter (***Figure 5***):

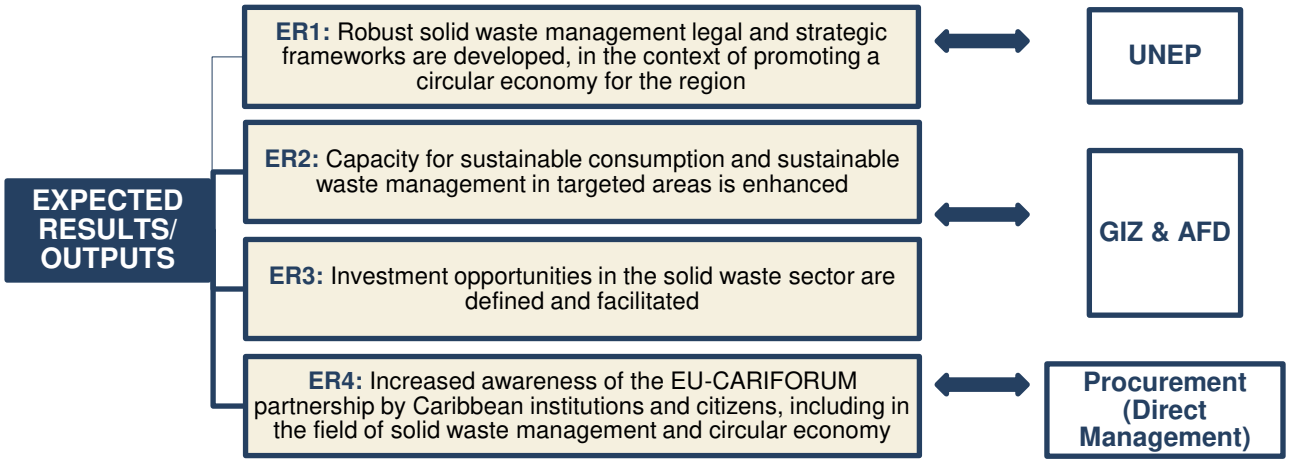


Figure 5: *Expected Results EU Support to effective and sustainable management of Solid Waste in the Caribbean*

196 *Cf Art. 17 of Council Regulation EU 2015/322 and cf 11th EDF CRIP, the participation of ACP countries not members of Cotonou Agreement (i.e, Cuba), could be allowed if jointly agreed between CARIFORUM and the EU*

11.2. AFD Action - Replication of plastic waste management pilot project, RePLAST in the OECS Region

11.2.1. Background – RePLAST Recycling Plastic Waste Pilot Project – Saint Lucia

While the OECS countries have made improvements in their SWM systems in the last decades, there are still major elements that pose a challenge for many governments to move towards effective waste management systems. For the most part there are gaps in the existing legislations, particularly with respect to hazardous waste streams, a lack of national SWM strategies to implement a long-term sector investment plan, weak enabling environment for attracting investment in the sector, no source separation or collection of recyclables, no readily accessible local markets for recycled waste, aged equipment that results in frequent breakdowns, and, in general inadequate financing for implementation of investments (*exorbitant costs for managing waste*).

Plastic Waste Context in the Caribbean Region

Plastic waste represents a serious global threat to the environment as a whole, with devastating effects on the environmental integrity of coastal and marine systems and the economy, in particular on the tourism sector. Declared as the largest per capita polluters in the world (Forbes magazine), today the Caribbean Islands face an increasing presence of plastic in their waste; especially plastic bottles have been a major source of environment degradation for decades. In most OECS countries, plastic waste is neither being sorted and recycled, or even collected. This increased presence of plastic coupled with the difficulties of exporting waste inherent to insularity, represent a major issue for tourism-based economies such as these.

The lack of plastic waste treatment and management systems, lack of sound plans for the disposal and recycling of plastic waste, or the increasing dispersion of plastics in the environment with consequent hindrances for waterways, favouring floods, are some of the challenges faced by Caribbean countries in relation to the management of plastic waste.

In May 2019, the Regional Cooperation Program at the French Embassy in Saint Lucia to the Organisation of Eastern Caribbean (OECS) States and Barbados, as part of its continued support to sustainable development, and specifically to address the impact of plastic waste on the environment, public health and economic development in the sub-region made a grant towards a project for **Recycling Plastic Waste in the OECS (RePLAST - OECS)**. RePLAST aimed at providing support for the setting up of an OECS-wide plastic waste collection and recycling system with a pilot phase between Saint Lucia and Caribbean recycling plants, in order to promote a circular economy model in the region, serving also as best practice towards the drafting of a comprehensive recycling policy for St Lucia and the rest of the OECS countries. RePLAST is being implemented by UNITE Caribbean Ltd. in Saint Lucia, around four main project components (see ***Figure 6*** *hereafter*)/

Component 1	1.1. Development and implementation of communities, schools and hotel collection system 1.2. Development and implementation of incentive schemes and digital platform.
Component 2	2.1. Development and implementation of the logistics masterplan and of the supply and supply chain economic model; 2.2. Development and implementation of the capacity-building program; 2.3. Export flow: development and implementation of an experimental and commercial shipping plan.
Component 3	Awareness of the public and replicability of the project
Component 4	Management, monitoring, evaluation

Figure 6: *RePLAST project components*

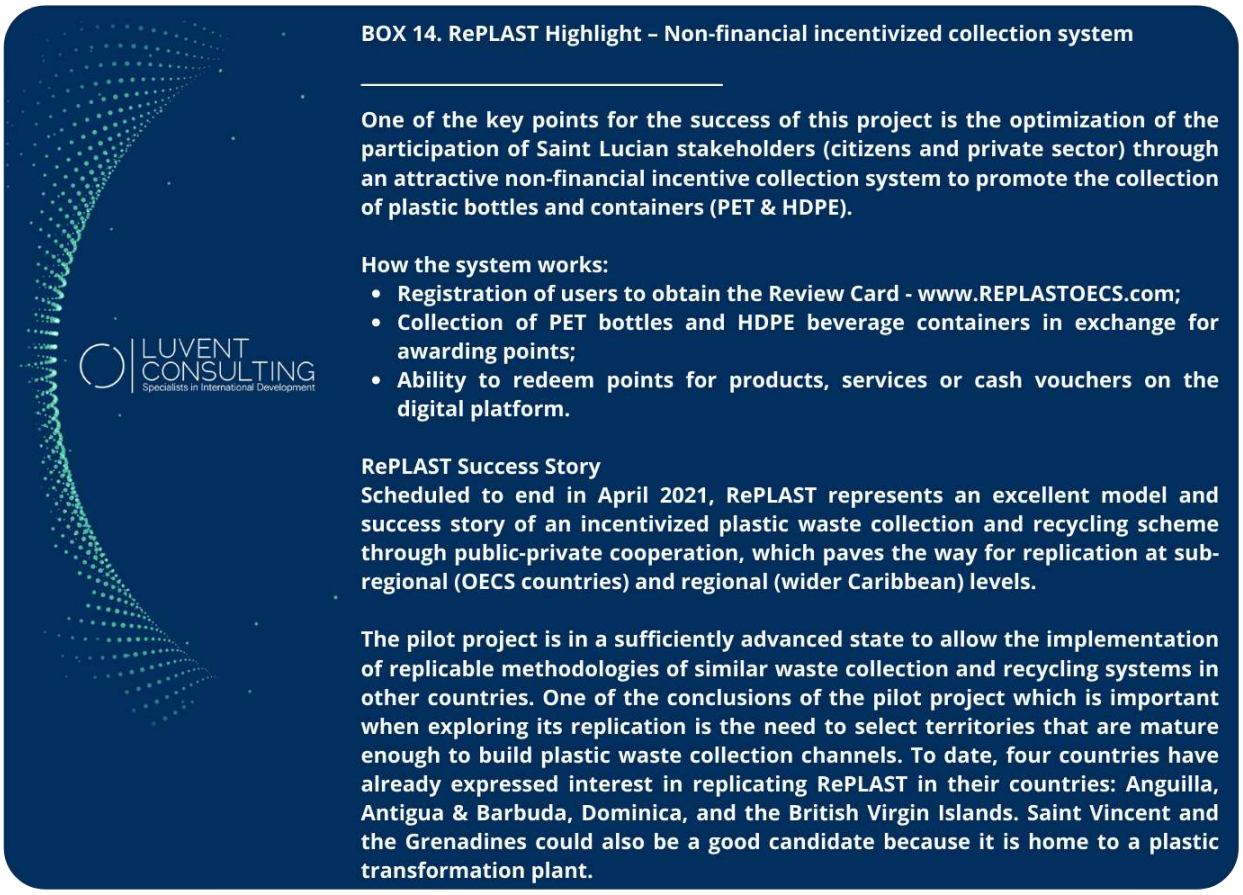
RePLAST aims to achieve the following outcomes:

1. An end-to-end flow facilitating the collection and management of plastic waste (involving public, private and local stakeholders) is set up and operational in Saint Lucia;
2. Used plastic bottles from Saint Lucia are exported to the wider Caribbean for recycling;
3. Saint Lucia's population is aware of the ecological issues surrounding managing and sorting recyclable waste;
4. Other territories in the Eastern Caribbean (OECS) are ready to replicate the pilot action undertaken.

The RePLAST Project is summarized hereafter (***Table 13***):

Project Summary: RePLAST Recycling Plastic Waste Pilot Project – Saint Lucia	
Project Objective	To put in place an inclusive plastic waste management approach and draft a comprehensive recycling policy for St Lucia in order to promote a circular economy model in the country.
Funding Source	Government of the Republic of France (*Solidarity Fund for Innovative Projects*) in partnership with the Government of Saint Lucia (GOSL), the Public and Private Sectors and Civil Society.
Target country	Pilot project in Saint Lucia to be replicated in other OECS countries
Project Budget	€973k
Implementing Agency	UNITE Caribbean Ltd.
Implementation period	2 years (May 2019 – April 2021)
Implementation challenges	Initial recycling plant in Martinique (SIDREP) closed down in October 2019 because of the inability to capture the expected volumes of plastic. Currently, plastic bottles are being shipped to Honduras as a pilot location (*UNITE Caribbean wanted to test other alternatives to identify the best option*).
Specific Objectives	1. Create a replicable plastic recycling pilot model. 2. Create a sustainable circular economy model for the management and recycling of plastic waste that can be extended to the Caribbean. 3. Create an innovative approach to PP for the collection and recycling of plastic waste 4. Establish a digital industry platform 5. Transforming plastic waste into an economic mechanism of local development for the population and the private sector.
RePLAST Highlights	▪ Cartographic study of the potential flow of plastic waste ▪ Mapping of the quantities of PET waste in local communities ▪ Logistic masterplan and economic model of the supply chain ▪ Evaluation of recycling facilities in the Caribbean ▪ Development of the incentive program and associated digital platform ▪ Experimental expedition to Honduras (*26,000 lbs*) ▪ Training of volunteers for RePLAST collection point communities (*over 100 volunteers*) ▪ Preparation for the construction of RePLAST collection points: communities, schools and hotels. ▪ Involvement of potential private sector decision makers (*sponsors, awards, partners*) ▪ Public awareness development and public education campaign design. REUSE AND RECYCLE PLASTIC BECOME A HERO.

Table 13: *RePLAST – Project Summary*



The project has so far established collection points in several communities around the island (*Vieux Fort, Gros Islet, Laborie, Castries, Micoud and Soufriere*), and diverted over 26,000 pounds (11,783 kg) of plastic from Deglos Landfill, exporting them from Saint Lucia to Honduras (*as a pilot location*), and is currently conducting a parallel study to assess different logistical options for collection and export that can be proposed to the government of Saint Lucia.

11.2.2. Proposed activities under the EU funded AFD Project

Building on the success of the RePLAST pilot project in Saint Lucia, AFD proposes to extend the actions and activities carried out as part of this pilot to other countries in the region through the proposed EU financing (*see **Table 14** for the details of the AFD action under the proposed EU financing*). AFD plans to recruit a consultant for the implementation of the project, and proposes to develop the project around the following main components (Source: AFD):

1. **Replication of the pilot project in the Caribbean.** The proposed project plans to move to the regional level and replicate pertinent activities in the most relevant neighbouring countries/islands. Specifically, it will structure the collection of plastics on two islands to be selected by AFD in consultation with the OECS. Project locations will be selected on the basis of an analysis and selection process to be undertaken by the consultant.
2. **Prevention and extension of the collection system to all plastics.** AFD plans to go beyond the PET[197] and HDPE target in the Saint Lucia pilot, and examine the feasibility of collecting and treating other forms of plastic waste. Several factories burning Refuse-derived fuel (RDF) to create energy are planned to be created in the region (e.g. Martinique, Guadeloupe, and

197 *PET globally represents only 10% of the consumed plastic.*

Saint-Martin) in the coming years, therefore, the collection of non-recyclable plastics which could be used as RDF could also be a good avenue to extend the project to other types of plastics.

In parallel, the project intends to develop preventive actions by promoting the reduction of plastic waste production. This will be done through communications and environmental awareness raising campaigns, and sustainable partnerships with the tourism and restauration industries. In addition, AFD would also like mobilize the OECS to facilitate institutional communication with the governments in the areas.

3. **Structuring of logistics sector(s) for the export of plastic for processing in the Caribbean area.** Given that there is no plastic waste recovery plant in the Caribbean islands (the closest plants identified are in Honduras (2), and in Mexico), the pilot projects will study the export possibilities for the Caribbean collected plastic, extending their prospect to North America (United States/Canada), and will also aim at refining the logistic model, exploring the technical and economic viability of transforming the collected plastics into granules or pellets, thereby reducing the density of the collected volumes and, consequently, the costs per ton of plastics exported.
4. **Modelling and financing a recycling plant in the Caribbean.** Through its own financing, AFD intends to complement the previous activities with the financing of a study to assess the pertinence and technical and economic opportunity/viability of setting up a processing and recycling plant for plastics in the Caribbean region

The AFD Action through EU financing is summarized hereafter (***Table 14***):

Project Summary	
Project Objective	To fight against pollution in the Atlantic Ocean linked to the proliferation of plastic waste
Project Specific Objectives	▪ Replicate plastic waste management pilot project (RePLAST) undertaken in Saint Lucia in neighbouring islands (OECS) ▪ Organize plastic waste collection channels and verify the possibility of massifying volumes in the area
Project Financial Viability for transformation/recycling plant	▪ A structured plastic collection sector ▪ Guaranteed upstream plastic volumes
Funding Source	11th EDF Envelope
Project Budget	€2.6M
Implementing Agency	French Development Agency (AFD)
Implementation arrangements	AFD to contract consultant/s for project implementation
Project Areas	OECS countries that are eligible for AFD financing (TBD; i.e. on the OECD list)
Main Project Activities under EU financing envelope	1. Replication of the pilot project in the Caribbean: plastic waste collection pilot projects in two countries (locations TBD) 2. Prevention and extension of the collection system to all plastics: 3. Structuring of logistics sector (s) for the export of plastic for processing in the Caribbean area
Supplementary activities financed by AFD	4. Modelling and financing a recycling plant in the Caribbean: Study aiming to analyse the relevance of setting up a plastic processing and/or recycling plant in the Caribbean region
Expected Starting Date	September 2021

***Table 14**: Summary of AFD Action through EU financing (Source: AFD proposal and EU Action Document)*

11.2.3. Specific recommendations for practical implementation of the AFD project

Several meetings were held with representatives from AFD throughout the development of this assessment. The recommendations provided herein aim to respond to key concerns raised by AFD during these meetings, and provide examples of best practices that could be implemented in the target countries.

11.2.3.1. On prevention of plastic consumption – single-use plastic bans

As presented in ***Sections 3 and 4***, the region has made important developments on the use of single-use plastics over the last decade, that reflect the region's commitment to address the high levels of single-use plastics found in its waste streams.

Within the Caribbean sub-region, as many as twenty-seven countries and territories have already legislated or proposed some form of policy controls on reducing the use of plastics over the past decade. ***Section 4.2.2. Table 7*** showed the CARICOM countries currently having policy and/or legislative controls on single-use plastics

At the regional level, CARICOM should continue promoting the development of specific policies to accelerate the reduction of plastic pollution in the region. But putting the regulations in place is just part of the solution. It is imperative to ensure that these regulations are not only tackled in an integrated way in each country (systemic approach), but are being implemented and enforced in all Caribbean countries.

The global approach to SWM with multiple levels actions (targeting both financial instruments and enforcement measures) have proven their effectiveness in the Seychelles and Mauritius (*see also* ***BOX 15****, on the next page*).

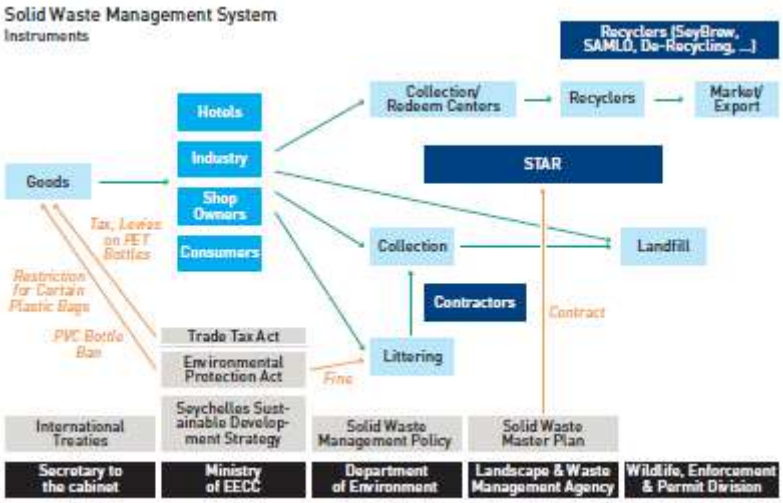


Figure 7: *Overview of financial instruments and enforcement implemented in the WMS*[198]

The sea green arrows (in ***Figure 7***, below) indicate the flow of waste from goods, the orange arrows indicate the flow of money from the government to respective processes or stakeholders (varia financial instruments). Grey sections indicate specific regulatory and/or legislative documents and their enactment governmental bodies (in black).

[198] *Meylan, Grégoire & Lai, Adelene & Hensley, John & Stauffacher, Michael & Krütli, Pius. (2018). Solid waste management of small island developing states—the case of the Seychelles: a systemic and collaborative study of Swiss and Seychellois students to support policy. Environmental Science and Pollution Research..*

BOX 15. Solid Waste Management in the Seychelles and Mauritius

The case presented by the recent transdisciplinary study realized through the collaboration of University of Seychelles (Un-iSey) and ETH Zürich shows a global approach to SWM process, the importance of multilevel actions, clear responsibilities allocation and tackle with the lack of incentives and enforcement measures.

The Case Study highlighted a list of regulatory tools and supportive initiatives such as increasing education and awareness, tax reduction or exemption on biodegradable goods, levies on waste collection at households and businesses, introduction of the levy system for more goods (e.g. glass bottles, …), banning more products (e.g. Styrofoam take-away boxes, …), setting standards for imported product quality, incentivise investments in waste management, introduce a bed fee for tourism that could go into the waste management system.

Enforcement can be a significant barrier and the case of Mauritius shows a success story in implementing container deposits on PET bottles and enforcement of a levy on hazardous substances to finance the cost of managing wastes and obsolete stocks. This is implemented through the adoption of a dual approach that uses environment police working in combination with enforcing agencies (local government and the Department of Environment) providing a coordinating role, while a specifically dedicated division within the Department ensures that environmental offences are prosecuted.

Moreover, environmental education, regulations and enforcement mist complement financial incentives to support producers to think "circular" (whereas the Extended Producer Responsibility is an important cornerstone in the process, should it be at the collection level, pre-treatment e.g. sorting, dismantling or de-pollution or preparation for reuse, recovery including recycling and energy recovery or, finally, at the final disposal).

Enforcement measures exercised by (environment) authorities could cover for example directives, suspension orders or compliance notices, administrative penalties and fees, criminal prosecution or recovery of remediation or clean-up costs. Moreover, compliance monitoring inspection (with standards for collection, treatment and disposal) and administrative enforcement steps, such as the issuing of pre-compliance and compliance notice, as well as directives, are generally the most common initial enforcement measures. Penalties could also play a vital role on discouraging littering and illegal dumping. Feedback on enforcement steps taken and prosecution that have proceeded can be followed through a number of indicators such as: the number of criminal dockets registered, the number of admissions of guilt fines issues (admission of guilt fines paid for less serious environment offences), number of compliance-monitoring events in which facilities are inspected to ascertain compliance with relevant legislation and authorities, number of pre-directives issued confirming an activity is causing pollution or degradation of the environment, number of compliance notices issues, the total amount of administrative fines paid for rectification of activities undertaken without necessary authorisation, or rectification – corrective initiatives.

Non-government organisations, environmental associations and interest groups should be also actively involved in monitoring and reporting on environmental performance and waste management.

In parallel to the implementation and enforcement of single-use plastic bans, other measures should be put in place to accelerate the moving away from the consumption of single-use plastics. In this regard, some of the specific aspects that should be considered include:

- The promotion of regional and sub-regional cooperation involving public and private sector stakeholders encouraging sustainable tourism initiatives and policies. For example, banning single-use plastics in hotel chains, through green charts and other voluntary agreements.
- The development of incentives programs, voluntary agreements and private sector partnerships to foster the recognition of environmental stewardship. For example, through green awards or green certifications.

11.2.3.2. On promoting local innovation and entrepreneurship

Plastics (*with waste plastic making up to 80% of all marine debris*) represent an underestimated and insufficiently addressed issue in the Caribbean. Combating plastic pollution, in particular ocean plastic pollution, is a massive challenge on a global scale, but in particular for the Caribbean Region. The region lacks the infrastructure, technologies, resources and capacity for effective plastic waste management, and also has difficulties to reach out plastic recycling markets.

While some progress is being made by national governments to improve waste management services so that more plastic gets recycled and less ends up in waterways and the ocean, public resources will not solve this problem alone. The involvement of the private sector is key to combat plastic waste reduction. Developing countries need the financial resources, technical expertise, and global networks of the private sector to help drive innovation, catalyse investment in needed infrastructure, and create more sustainable business models.

There is an increasing number of innovation and entrepreneurship success stories all over the world. Regional accelerator programs should support local entrepreneurial initiatives to bring to the market innovations based on technologies and knowledge available on site.

Some of these success stories are presented hereafter.

BOX 16. SUCCESS STORY: Partnership with the Alliance to End Plastic Waste

Innovation, Entrepreneurship and partnerships with impact investors and research centres

The Alliance to End Plastic Waste is an international organization focused on bringing together industry, government, communities, and civil society in the fight to end plastic waste. Based in Singapore, their projects span the globe with specific focus on areas most vulnerable to plastic leakage. They focus on supporting communities to build sustainable waste management systems that fit their needs, catering to different social and geographical circumstances, but they also work on innovating at the earliest stages of product design to facilitate reduction, reuse and recycling of plastics in support of sustainable models.

The Asia Pacific programme is designed to focus on three areas: collecting, managing and sorting plastic waste; recycling and processing technologies; and creating value from post-recycled plastics.

The imbedded accelerator programme helps selected start-ups seek funding from companies and investors, along with a range of global resources to address these focus areas with the aim of cleaning up the Great Pacific Garbage Patch reducing plastic waste and keeping it out of the oceans https://theoceancleanup.com/

- **Partnerships with impact investors to mobilize private capital** for example trying to incentivize additional investment in infrastructure and businesses for waste management and recycling, with a view to reducing the flow of plastic waste from its source into the environment by redirecting it into circular supply chains and sustainable waste and recycling systems (*see **BOX 16** for details on the work being done by the Alliance to End Plastic Waste*)

BOX 17. SUCCESS STORY: EcoPlastile LtD – Waste2Build

Waste Management Alternatives / Waste Management Insurance: Innovation & Entrepreneurship, Locally Available Technologies & Community Engagement
EcoPlastile / Entrepreneur Franc Kamugyisha is a registered Ugandan social enterprise established to tackle the challenges of post-consumer plastic pollution https://ecoplastile.com/

EcoPlastile allows thousands of slum dwellers to collect and use waste plastics as well as agricultural waste as a form of financial resource in exchange for medical services and uses an innovative, chemical-free and energy-conserving plastic extrusion technology called "waxy 2 technology" to recycle and transform post-consumer plastic garbage and packaging materials into durable and long-lasting plastic timbers (lumbers) and other building hardware.

The plastic poles, lumbers and tiles replace expensive wooden timbers, thus reducing plastic plus marine pollution, deforestation rates, and the effects of climate change while improving access to health facilities especially for marginalized communities.

The technology converts more than 10 different types of plastics and packaging materials into products that are among the most low-cost and environmentally sensitive products in the industry today. Durable Ecopoles, plastic lumbers and Ecofloor tiles substitute wooden timbers and unsanitary dirty floors.

- **Partnerships for innovation at the local level.** Locally-led solutions translate the global commitments to change on-the-ground through new business models and partnerships with local companies, like hotels, restaurants, shopping centres, and grocery stores (*see **BOX 17** for details on the EcoPlastile Succes Story*).

In support for these types of initiatives, the following activities are advised:

- Active involvement of Business Support Organisations active in the region in mapping of relevant Start-ups in the region and provision of support activities for their development;
- Promotion **incubation and accelerator programmes** in partnerships with the **Eastern Caribbean Green Entrepreneurship Initiative**[199], in various formats, including virtual courses, a mentorship programme, links to investors, in-person events and networking opportunities, in addition to provision of seed grants and repayable loans to selected businesses
- **Setting-up Regional Alliances** / **Partnerships** that support these types of initiatives, including the organization of accelerator programmes, regional yearly awards, etc.

199 *This GGGI's Initiative supports the development, financing, and growth of businesses that contribute to addressing environmental and sustainability issues in 6 OECS countries (Antigua & Barbuda, Dominica, Grenada, St. Kitts & Nevis, Saint Lucia, and Saint Vincent and the Grenadines).*

11.2.3.3. On aspects related to the logistics of plastic export – a "Hub and Spoke" approach as a short-sea shipping solution

A "hub and spoke" approach could be envisioned to develop a waste collection and treatment model for the Caribbean Region on the basis of the demographic and geographic constraints of Caribbean SIDS, identifying areas with higher population concentrations and areas with diffuse populations and outer and sparsely inhabited islands.

To address the various degrees of insularity of the Caribbean states, a dual approach for waste collection could be explored: **a long-term perennial organization of collection, grouping and transfer of waste**, versus an **organizational scheme for waste storage/destocking campaigns**.

Caribbean Islands are located at the crossroads of the main global North-South and East-West shipping routes and thus are dependent on existing maritime lines and market concentration. In this context, Caribbean countries should take advantage of their geographical position as intermediate points in the main global routes developing and integrating hub-and-spoke networks within the global liner shipping / cargo flows. **The "Hub and Spoke" trans-shipment traffic approach** *(as opposed to traditional point-to-point collection system, see **Figure 8**)* **is aimed to network optimization[200] and should contribute to minimizing transit times and operating costs for shipping containers between hub ports.**

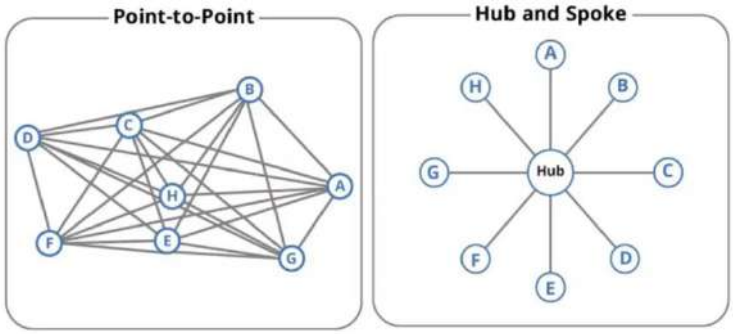


Figure 8: *Collection systems and network optimization*

The isolation of some islands and slow existing port reforms, coupled with the inherent dependence on the existing legal and regulatory frameworks of other islands designated as "intermediate points" or "recycling ports" (*for transit, with or without trans-shipment / transloading*) could constitute a drawback for some of the more isolated islands. In addition, the high exposure and vulnerability of the region to hydro-meteorological hazards would also be a major factor to consider in the identification of suitable locations for the collection points in the islands and highly operational shipping routes. Since recyclable materials are dispersed through the islands, the hub-and-spoke approach would ensure effective transportation is needed to aggregate and process materials. Moreover, as in most of the cases, domestic recycling is difficult as there are no technological bases for domestic recycling, reverse logistics (*e.g. for vehicles, white goods, aluminium cans, pet bottles or paper and cardboard*) should allow the circulation and trade of recycling materials towards remanufacturing points for recycling and/or reuse purposes. The 2013 JICA study[201] showed the effectiveness of reverse logistics based on hub-and-spoke networking (*see also **Figure 9***) and transportation for recycling materials in the Pacific; findings and recommendations are applicable also to the Caribbean context, and could help developing the

[200] *Japan International Cooperation Agency (JICA). (2013). Data Collection Survey on Reverse Logistics in the Pacific Islands. Final Report. The Overseas Coastal Area Development Institute of JAPAN Yachiyo Engineering Co., Ltd.*
[201] *Ibid*

recycle materials market in the Caribbean region. One of the central features of a regional framework of reverse logistics for recycling materials would be the development of an information platform covering both waste recycling field and transportation field.

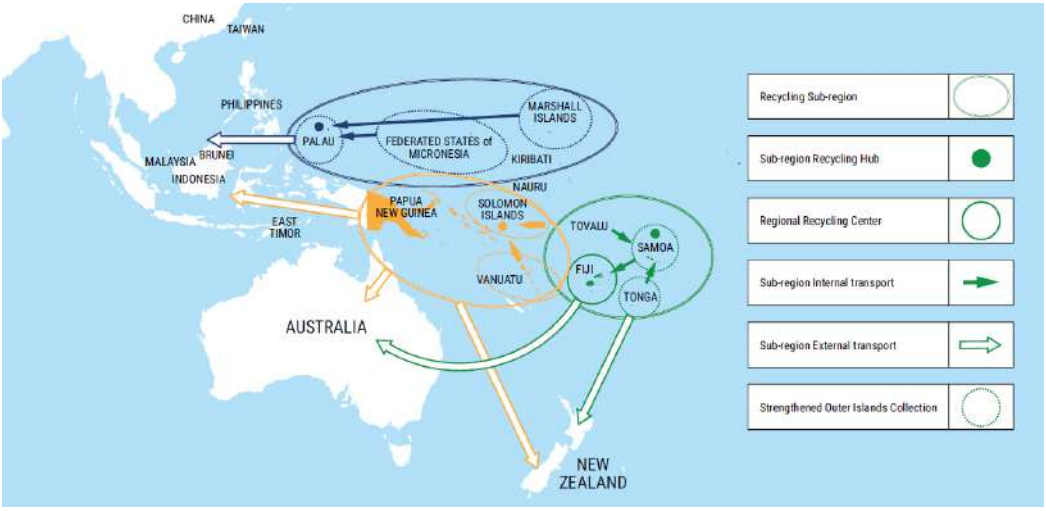


Figure 9: *Hub-and-Spoke regional cooperation model for managing waste in the Pacific region*[202]

11.2.3.4. On the regional upscale of RePLAST in view of the adoption of a "Hub and Spoke" approach for the Caribbean region

Building on the previous recommendation, an upscaling of the RePLAST initiative could be considered at the regional or sub-regional level based on the adoption of a "Hub and Spoke" approach for plastic waste collection and diversion.

In order to optimize the coverage of challenges and opportunities, the mapping of potential hubs and spokes centres should consider the Wider Caribbean Region and its sub-regional areas. This would not only help optimize the flows of raw recycling materials collected from the source islands, but also open the financing of treatment plants to other sources and donors (such as the new EU Green Deal sustainable investment tools aimed at boosting sustainable industries and building a circular economy). The case of the SIDREP recycling plant in Martinique, which was initially aimed at supporting the Saint Lucia RePLAST initiative, should become a learning case study, based on which in-depth technical and economic feasibility studies for further regional recycling plants should be drawn.

In support for the setting up of such a regional model, the following investigations and studies are advised:

- In-depth transport/maritime shipment and logistics study, for the identification of sub-regions that will serve as collection points for an efficient flow of materials from outer islands, and identifications of nearby countries with existing or potential processing facilities;
- Regional assessment on waste characterization and opportunities for onshore partial processing of recyclables with the involvement of local communities, which would provide not only additional sources of revenues for the communities but would also add value to the exported recyclables;

[202] *UNEP United Nations Environment Programme (2019). Small Island Developing States Waste Management Outlook. Nairobi.*

- Technical and economic feasibility study for potential locations of further treatment plans (to avoid the situation of SIDREP plant in Martinique);
- Other aspects to be investigated: transversal support related to the development of a regional logistics observatory; promotion of PPP schemes in the definition of hub and spoke approaches for waste collection and recycling; facilitation of reduction of intra-regional trade formalities and conditions (*i.e. expansion of single window schemes or single inspection systems*); and support to private sector initiatives related to the RePLAST collection.

BOX 18. "Hub and Spoke" regional cooperation model for managing waste in the Pacific Region (Source: UNEP, 2019)

Using a reverse logistics approach, the model is conceptualized around sub-regional collection points and regional centres. The waste material would be first transferred to the sub-regional collection points from outer islands, and then transferred to regional centres and from there sent to nearby countries with processing facilities.
Requirements of this approach include:

- **Infrastructure to allow for secure storage of hazardous substances until a viable quantity is built up ready for transport;**
- **education of storage facility personnel and companies in the proper storage of hazardous wastes to build awareness on importing regulations at destination ports;**
- **Education for the general population to raise awareness of the dangers of the substances they handle.**

By operating one system for different waste streams (e.g. hazardous materials* and recyclables) costs can be further decreased. Other benefits of such an approach include the employment opportunities generated for local communities in relation to the onshore partial processing of recyclables in a safe environment and the value added to exported recyclables from the upskilling of workers.

*** for hazardous waste, additional provision of law enforcement, coupled with necessary amendment of the Basel Convention would be required to regulate movements of hazardous waste between nations.**

11.2.3.5. On synergies with the GIZ Project

Plastic waste collection schemes developed under *RePlast* could be upscaled in touristic areas (resorts, airports, ports).

11.3. GIZ Action - Improving plastic waste management for a sustainable tourism development in the Dominican Republic and Belize

11.3.1. Background – SICA Preventing Plastic Waste in the Caribbean Sea

In July 2020, the Federal Ministry for Economic Cooperation and Development (BMZ) and the Central American Commission for Environment and Development (CCAD) of the Central American Integration System (SICA), agreed to cooperate on addressing the challenge of plastic waste in the region through the regional technical cooperation project "Preventing Plastic Waste in the Caribbean Sea".

The project, kicked off in October 2020, is being implemented by the Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ), in SICA's 8-member states (*Belize, Costa Rica, Guatemala, Honduras, Nicaragua, Panama, San Salvador, and Dominican Republic*) and Mexico. Through the implementation of strategic regional approaches to avoid plastic waste, the project aims at improving the general conditions for preventing plastic waste from entering the Caribbean Sea, ultimately contributing to building a circular economy.

Plastic Waste and Tourism Context in Dominican Republic

The distinctive and attractive environmental assets of the Caribbean Region are a source of pleasure, wellbeing and pride for its citizens and, at the same time, an important economic resource for Caribbean countries, for which tourism, both land-based and via cruise-ships, is one of the most important economic activities.

Ineffective waste management practices existing in the region have a direct impact on tourism, which at the same time, is also a major contributor to waste generation. In particular, the large quantities of plastic waste entering the Caribbean Sea are posing increasing problems.

Unsustainable consumption patterns coupled with a growing number of tourist arrivals and insufficient waste collection services, are leading to a considerable increase of solid waste volumes, in particular plastic waste, in the Dominican Republic, which, in turn, is placing increased pressure on existing solid waste collection and disposal services. With a private sector that is not yet sufficiently equipped to deal with all the plastic waste being generated, this situation represents a major risk for the environment and the health of the growing population.

The project expected outputs and main activities are outlined in ***Figure 10,*** *hereafter* (Source: GIZ)

ER1: Regional exchange on challenges and soluions to prevent plastic waste is established	- Form technical committe of member countries (monitoring, knowledge platform, dialogue) - Events (digital, physical) on priority issues targeting various stakeholder groups, and development of multi-actor networks - Global partnerships and initiatives - Networks and promotion of exchanges between public, private, academia and civil society
ER2: The private sector's capabilities to prevent and value plastic waste are strengthened	- Private sector training (waste generators, environmental services) - Exchange (digital communities): prevention strategies, plastic waste valorization, EPR - Business models - Development of value chains
ER3: In selected pilot areas, processes to prevent plastic waste entering the Caribbean Sea are introduced	- Selection of appropriate pilot areas and key stakeholders - Participatory planning of prevention processes at the local level - Implementaiton of integrated, holistic pilot projects
ER4: Sensitization and Awareness raising of civil society and the private sector to prevent plastic waste entering the Caribbean Sea has increased	- Innovative awareness-raising processes (e.g. social media) - Strengthening civil society in the environmental sector - Campaigns to reduce plastic waste targeted to citizens and the private sector - Local environmental education programs

Figure 10: *Preventing Plastic Waste in the Caribbean Sea project focus areas*

The GIZ Preventing Plastic Waste in the Caribbean Sea is summarized hereafter (***Table 15***):

Project Summary: Preventing Plastic Waste in the Caribbean Sea	
Project Objective	Improve the general conditions for preventing plastic waste from entering the Caribbean Sea with the ultimate goal of contributing to a circular economy
Funding Source	German Federal Ministry for Economic Cooperation and Development (BMZ)
Target countries/ Beneficiaries	SICA countries: Belize, Costa Rica, Guatemala, Honduras, Nicaragua, Panama, San Salvador, and Dominican Republic; and Mexico. People of coastal regions and rivers in Central America and the Caribbean
Project Budget	7M€
Project Counterpart	Central American Commission for Environment and Development (CCAD) of the Central American Integration System (SICA)
Implementing Agency	Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH
Implementation period	34months (October 2020 – July 2023)
Project Focus Areas	1. Regional exchange to prevent plastic waste from entering the Caribbean Sea 2. Strengthening the capacity of the private sector to deal with plastic waste 3. Implementing pilot projects to prevent plastic waste from entering the sea 4. Raising awareness of the waste challenges among the population and private sector
Project Highlights	Key contribution to the ActionPlan for Marine Protection and Sustainable Fishing drawn up by the German Federal Ministry for Economic Cooperation and Development (BMZ) and the Action Plan to Combat Marine Litter approved by the G20 states in 2017

Table 15: *Preventing Plastic Waste in the Caribbean Sea - Project Summary*

Another approach presented in recent studies (2018, UNEP) in St Lucia[203] and the Dominican Republic started a reflection on mapping out the tourism value chain and impacts associated with this sector, while identifying sectoral hotspots (of hotels and restaurants) for focused action to have the largest effect on reducing GHF emissions and improving resource efficiency. A follow-up of this exercise should be a Caribbean wide mapping exercise for pollution hotspots in the region, based on the model of the Mediterranean Hot Spots Investment Programme (MeHSIP) financed by the EIB. Complementarities should be searched with Integrated Coastal Zone Management planning and development initiatives[204], integrating pollution and waste management into land-use planning on the coast and instituting mechanisms to address ship-based pollution; St Lucia is, for example, one among the few countries in the Wider Caribbean region having developed and implemented a functional ICZM Plan (UNEP 2012à). Belize[205], a country that ranks among the top eco-tourism world destinations, with a coastal zone that hosts a renowned World Heritage Site, the Barrier Reef Reserve System, can also be highlighted as a country with a critical need for an integrated approach to the management of its coastal and marine zones, with a balance to be sought between ecological sustainability (the need for ecosystems conservation and/or restoration), socio-economic development trends characterized

203 *UN Environment (2018) Overview And Hotspots Analysis Of The Tourism Value Chain In Saint Lucia.* http://www.oneplanetnetwork.org/sites/default/files/iki_country_report_saint_lucia_final.pdf

204 *Trinidad & Tobago (2019). Integrated Coastal Zone Management (ICZM) – Policy Framework. Revised draft April 2019, identifying agricultural, built environment and tourism as majors environmental pressures sources to the coastal and ocean space and resources.*

205 *The process of preparing an ICZM Plan was launched in Belize in 2003. CZMAI (2016). Belize Integrated Coastal Zone Management Plan: "Promoting the Wide, Planning Use of Belize Coastal Resources". CZMAI*

by increased economic (*i.e. associated with tourism and recreational facilities*[206]) and demographic pressures, and the threats of natural hazards.

Taking the fact that "**tourists only consume what is made available to them**"[207], the project aims to play a leading role in behavioural changes, with regards to tourism consumption patterns induced (and wished) in the two Caribbean countries. As previously highlighted, tourism should be viewed through the lens of integrated land-planning and coastal / marine zone management.

Sub-regional and regional coherence in action and cooperation in the Caribbean should build upon **voluntary agreements and partnerships**, and the private sector can and should be a driver of this process. The **UN Global Tourism Plastics Initiative**[208] is a global flagship action, addressing the root causes of plastic pollution in the tourism. The large mobilization of the private sector (*and more particularly through the Advisory Group*[209]*, contributing to the co-creation of the initiative, developing commitments and roadmaps for implementation of the initiative by the 2025 for the private sector, destinations, associations and NGO's*) is aimed to pave the way for transforming tourism value chains and implementing a life-cycle approach. Several Caribbean islands are active and present into the UN Global Tourism Plastics Initiative (St Lucia, Dominican Republic, or Jamaica). Initiative concern airlines sustainability voluntary agreements, hotels chains plastic ban charts, but also transversal initiatives referring to Extended Producer Responsibility programs, Coastal Health, Responsible Seafood and Circular Economy[210], Plastic Smart Cities or ReSource Plastic.

A Caribbean chapter of the Global Tourism Plastics Initiative could gather stakeholders from private sector, destinations, associations and NGOs through a systemic approach aimed at:

- Sharing information about actions and solutions to the plastic pollution challenge being implemented across the sector by eliminating problematic or unnecessary packaging and items (and effects on reduction of landfill, pollution and natural resource depletion);
- Fostering sustainable procurement practices and collaboration with suppliers, and inducing more sustainable alternatives to single-use plastic products moving to reuse models or reusable alternatives; engage the whole value chain to move towards 100% plastic packaging to be reusable, recyclable or compostable
- Promoting collaboration at destination level to improve waste management practices, through dedicated awareness raising among staff and guests to avoid single-use plastic
- Consolidating and disseminating the progress reported by all signatories and showcasing the leadership of the sector
- Cooperation with national governments to improve waste infrastructure and community facilities

206 *CZMAI (2001). Tourism and Recreation: Best Practices for Coastal Areas in Belize*

207 *Megan Shaw (2019). Plastics in "Paradise"? A look at plastic consumption and waste management in San Pedro, Belize. Department of Anthropology, San Jose State University.*

208 https://www.oneplanetnetwork.org/sustainable-tourism/global-tourism-plastics-initiative

209 *The Advisory Group gathers ABTA The Travel Association* https://www.abta.com/ *, ANVR - Dutch Association of Travel Agents and Tour Operators* https://www.anvr.nl/ *, ACCOR* https://group.accor.com/ *, Betterfly Tourism* https://www.betterfly-tourism.com/ *, CONSIDERATE* http://consideratego roup.com/ *, Hostelling International* https://www.hihostels.com/ *, ITP (International Tourism Partnership)* https://www.tourismpartnership.org/*, IBEROSTAR GROUP* https://waveofchange.com/ *, Monty's Bakehouse - Airline Sustainability Forum (Qatar Airways, British Airlines, TUI, Iberia, KLM, Monty's Bakehouse, Rapid Action Packaging, Global-C, London Gatwick Airport and Alpha LSG)* https://montysbakehouse.co.uk/ *, MVO Netherlands* www.tourismplasticpledge.com*. , RADISSON Hotel Group* https://www.radissonhotels.com/ *, Pacific Asia Travel Association – PATA, The Travel Foundation* www.thetravelfoundation.org.uk *, Travel Without Plastic* https://www.travelwithoutplastic.com/ *, TUI* https://www.tuigroup.com/ *, WWF* https://wwf.panda.org/

210 *Iberostar*

11.3.2. Proposed activities under the EU funded GIZ Project for the Dominican Republic

Building on the regional project that is being implemented in the SICA countries and Mexico, aimed at improving the general conditions to prevent plastic waste from entering the Caribbean Sea, GIZ proposes to focus the EU funded activities on tourism destinations. Indeed, tourism provides a good framework to establish quick cooperation agreements between relevant stakeholders and the private sector towards the development of successful business models. In particular, the hotel industry has the resources and motivation to invest in sustainable waste management.

The project proposed by GIZ has the overall objective of avoiding, reducing, recycling, upcycling and reusing plastic waste in the Dominican Republic. It intends to create synergies and leveraging the country components of the regional project in these two countries, with the ultimate goal of protecting natural capital, supporting economic development and improving the social conditions of local communities.

Some of the proposed activities under the EU funded project implemented by GIZ include (*Source: GIZ*):

- **Development of comprehensive destination assessments analysing current performance levels on internationally recognized criteria and indicators for sustainable destination management** (as developed by the Global Sustainable Tourism Council, GSTC), with a focus on plastic waste
- **Improve plastic waste management through the estimation of the impacts of plastic waste on natural capital and the engagement of stakeholders** (including governments, private sector, tourism industry and civil society) towards finding joint, long-lasting stewardship solutions.
- **Support to the private sector and private sector associations to reduce, recollect, reuse and transform plastic waste, promoting collaboration between the various recycling associations** for capacity building activities, plastic processing techniques, joint shipments overseas, etc.
- **Increase investment for better plastic waste management systems** in the destinations, recognizing their dependency on marine and coastal ecosystems and sustainably managed destinations.
- **Creation of stronger incentives and commitments and raising awareness in the tourism sector** and in local communities
- **Awareness campaigns and capacity building on circular economy**, separation at the source and especially PET Plastic Reduce, Re-Use, Recycling and Upcycling, with activities such as the promotion and incentivizing of businesses (especially cruise companies, hotels and tourism agencies) to implement best practices in minimizing plastic and Styrofoam use (e.g. no straw zone), or the promotion of separation of waste at the source (households);
- **Improve the regulatory framework for waste management**, enhance stakeholder cooperation, and strengthen institutional empowerment and policy planning
- **Creation and support for existing multi-stakeholder partnerships** (public-private partnerships) in order to facilitate joint strategies towards a reduction of plastic waste.
- **Foster regional cooperation and exchange**, as well as joint learning on plastic waste prevention and management, promoting shared responsibilities of all stakeholders and best practices, and identifying opportunities to overcome the heterogeneity that characterizes the Caribbean region.

The GIZ Action through EU financing is summarized hereafter (***Table 16***):

Project Summary	
Project Objective	To avoid, reduce, recycle, upcycle and reuse plastic waste in the Dominican Republic, with a potential replication, where applicable, in Belize.
Funding Source	11th EDF Envelope
Project Budget	€3.0M
Implementing Agency	Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH
Implementation arrangements	TBD
Project Areas	Pilot projects in Dominican Republic and Belize
Main Project Activities under EU financing envelope	1. Development of comprehensive destination assessments 2. Improve plastic waste management through the estimation of the impacts of plastic waste on natural capital and the engagement of stakeholders (including governments, private sector, tourism industry and civil society) towards finding joint, long-lasting stewardship solutions. 3. Support to the private sector and private sector associations to reduce, recollect, reuse and transform plastic waste 4. Increase investment for better plastic waste management systems in the destinations, recognizing their dependency on marine and coastal ecosystems and sustainably managed destinations. 5. Creation of stronger incentives and commitments and raising awareness in the tourism sector and in local communities 6. Awareness campaigns and capacity building on circular economy, separation at the source and especially PET Plastic Reduce, Re-Use, Recycling and Upcycling 7. Improve the regulatory framework for waste management, enhance stakeholder cooperation, and strengthen institutional empowerment and policy planning 8. Creation and support for multi-stakeholder partnerships (public-private partnerships) facilitating joint strategies towards a reduction of plastic waste. 9. Foster regional cooperation and exchange, as well as joint learning on plastic waste prevention and management, promoting shared responsibilities of all stakeholders and best practices, and identifying opportunities to overcome the heterogeneity that characterizes the Caribbean region.
Expected Starting Date	June 2021

Table 16: *Summary of GIZ Action through EU financing (Source: GIZ proposal and EU Action Document)*

Specific pilot projects to be undertaken in the Dominican Republic, and potentially replicated in Belize are still to be determined. Some of the initial preliminary ideas for the Dominican Republic project (Caribe Circular) include the development of Plastic Waste Spot Mobile RDs, a waste center, a plastic waste check tool for data collection, and a Circular Caribbean stamp (*Sello Caribe Circular*) as an incentive program for the private sector to reduce the volumes of waste that reach the waterways.

The project in the Dominican Republic intends to create partnerships with AIRD (*Asociacion de Industrias de la Republica Dominicana*) and its emanation ECO-RED, who gathers many large environmentally committed companies. In addition, technical assistance to AIRD and its derived program NUVI may also be considered.

11.3.3. Specific recommendations for practical implementation of the GIZ project

Several meetings were held with representatives from GIZ throughout the development of this assessment. The recommendations provided herein aim to respond to key concerns raised by GIZ during these meetings, and provide examples of best practices that could be implemented in the target countries.

11.3.3.1. On the rationale for geographical focus on Belize

Located both in the Caribbean and Central America, Belize is a country heavily dependent on its natural resources both land and sea. With the longest continuous barrier reef in the Western Hemisphere, the citizens of Belize are culturally linked to the country's natural resources and rich biodiversity and economically tied to the marine environment through the tourism and fishing sectors[211].

With over 489,000 overnight tourist arrivals in 2018[212], and over 1.2million cruise tourists in the same year[213], the Government of Belize has identified tourism as a major industry and a key sector to boost economic growth. At the same time, Marine Litter and improper waste management coupled with the geographical challenges associated with a coastal nation, represent a threat to the tourism sector (and other important economic sectors, like fisheries). Given that the number of residents in Belize is estimated to be less than 400,000, it is clear that the pressure of tourism on waste management is significant. In fact, the National Sustainable Tourism Master Plan (NSTMP) for Belize 2030, identifies "insufficient waste disposal" as a key constraint on tourism growth. Marine litter in particular, a growing global problem[214], is also a major concern for Belize with serious impact on tourism activities[215].

Waste management facilities in Belize are under considerable pressure. Currently, only one sanitary landfill (Regional Sanitary Landfill at mile 24 on the George Price Highway) is active in the country (constructed under the IDB financed first Solid Waste Management Project, SWMP I, between 2009 and 2015), which acts as final disposal site for the waste coming from the five existing transfer stations. New transfer stations have recently been constructed in emerging tourism destinations in northern and southern Belize (as part of the SWMP II, also financed by the IDB). However, many areas of the country still see the accumulation of waste in dumpsites, and even in mangrove areas or little islands (cayes), from where it can easily escape and be transported towards the sea. Some other important challenges and considerations concerning SWM and Marine Litter include the policy of not landing waste from international vessels in ports due to recognized lack of resources, the major widespread littering habit and the lack of enforcement of the national anti-littering law.

The Belize: Green, Clean, Resilient and Strong Environmental Strategy and Policy 2014-2024, stresses the need to transition to a green economy and improve and strengthen waste management through the promotion of policy and regulatory reform to develop sustainable consumption and production in trade, a circular economy, greener production standards and practices to improve value added green products, green services and green technology. The country's current focus on single use plastics, marine litter, and watershed management (Ridge to Reef) makes Belize an ideal candidate for implementation of pilot projects and joint activities with research centres/IGOs on these initiatives to test and demonstrate concepts and ideas to address marine litter.

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211 *Belize Department of the Environment (2019). Belize Marine Litter Action Plan: Belize – Blue, Clean, Resilient and Strong, developed in collaboration with the Commonwealth Litter Programme (CLIP)*

212 *BTB, 2018. Belize Tourist Board Statistic Digest, 2018.* https://belizetourismboard.org/wpcontent/uploads/2019/07/2018-TT-Statistics-Digest_Final.pdf

213 *BTB website, 2019.* https://belizetourismboard.org/belize-tourism/statistics/

214 *United Nations Environment Program, UNEP (2014). Year Book 2014 emerging issues update. Air Pollution: World's Worst Environmental Health Risk.*

215 *The UN Environment (UN Environment, 2017) points out that "impacts [of marine litter] on the tourism sector […] and associated costs can be quite significant particularly in areas which are heavily focused on coastal tourism that relies on a clean and pristine environment to continue attracting visitors".*

BOX 19. Key findings from the Commonwealth Litter Programme, CLiP (Source: Belize Department of the Environment, 2019)

- **There is a need for a coordinated, sustained and long-term marine litter awareness campaign**
- **There is a relatively high occurrence of micro-plastics, mainly polyethylene (commonly used in single-use plastic items) and cellophane (commonly used to wrap or cover food), in the freshwater red head cichlid (Cichlasoma Synspilum) also used for human consumption.**
- **98% of litter found on beaches was plastic, the majority of it can be reduced with national action on preventing littering of crisp (chips bags) and sweets wrappers, drinking pouches (drinking water bags) and foam cups and trays,**
- **Queen Conch samples show indications of the presence of micro-plastic in significant localised concentrations or hotspots.**
- **There is a need for a coordinated, sustained and long-term monitoring programme for micro and macro-plastics in the Belizean environment.**
- **The Regional Sanitary Landfill at mile 24 on the George Price Highway could reach capacity 30 years before previous estimates in the worst-case scenario; recycling and composting of household food waste could add 10-15 years to its lifespan.**
- **NGOs and communities should be trained and empowered to do their own scientific monitoring according to agreed protocols and contribute to national datasets.**
- **There are significant amounts of recyclable and compostable items in household and commercial waste streams.**
- **There is insufficient awareness of stakeholders' roles in waste management, from the general public up to municipalities.**
- **Policies, including legislation, are required to encourage a circular economy and minimise waste.**
- **A previously un-monitored waste stream has been identified in the small national (domestic) shipping sector.**
- **No audits or inspections of international vessels in collaboration with regional neighbours means Belize is trusting commercial international shipping 'to do the right thing' and not dump waste illegally in its waters.**

In this context, GIZ's proposal to consider Belize as a pilot country to be included in the EU funded activities aimed at tackling the issue of plastic waste (and marine litter, in particular), with a specific focus on the tourism industry, seems timely and necessary. It is imperative to strengthen and improve the solid waste management sector in Belize, in particular taking action to address the impacts of marine litter on its environment, in order to preserve the delicate balance of Belize's natural resources in an environmentally sustainable and efficient manner.

Some of the key actions to address and reduce marine litter and strengthen SWM in Belize can be centred within the following recommendations (cf. *Belize Marine Litter Action Plan*[216]):

- Develop and implement a coordinated and sustained long-term outreach campaign across multiple sectors and audiences addressing marine litter and waste management to encourage behavioural change in waste management, disposal, and understanding of marine litter and impacts to the Belizean people, the marine environment, and in turn the region.
- Increase and strengthen data collection and enforcement for waste management to aid in evidence-based decision-making and development of information for future policies and actions to address marine litter.
- Strengthen institutional and financial capacity to conduct scientific monitoring programme in Belize and contribute to regional data sets.

216 *Belize Department of the Environment (2019). Belize Marine Litter Action Plan: Belize – Blue, Clean, Resilient and Strong, developed in collaboration with the Commonwealth Litter Programme (CLIP)*

- Develop and implement Marine Pollution Prevention Legislation to address waste from sea-based sources (maritime sector and port facilities), and marine litter in the marine environment as a measure for preventing marine litter (plastic pollution) in Belize, among other marine pollution issues.
- Develop and implement a Waste Reduction Policy and Recycling Sector Policy, and legislation to formalise and standardise waste management (collection and disposal), promote the development and strengthen of a recycling sector (inclusive of source separation), and reduce marine litter generated at source.
- Work towards building capacity in Belize through the Department of Environment to focus on creating, demonstrating, and testing concepts using science to address / reduce marine litter.

11.3.3.2. On plastic pollution and tourism

A global approach for **Cleaner Caribbean** could draw on the experience of Cleaner Pacific 2025[217] initiative, and its recommendations in adapting regional and nation plastics regulation in order to prevent the generation of wastes and pollution, to recover resources from waste and pollutants, to improve management of residual wastes, chemicals and pollutants from which resources cannot be recovered, and to improve the monitoring of the receiving environment, to support informed decision measures to protect environment and support remediation.

Regulatory and legal frameworks should draw and be enforced, either by introducing or amending laws related to waste management, health and consumer product regulation, or trade, commerce and manufacturing, in order to support measures related to bans on importation, on manufacturing or distribution, and on sale or supply; voluntary, co-regulatory options should be equally considered.

It should also be highlighted that, especially in the islands, "**tourists only consume what is made available to them**"[218], meaning that the market regulations and voluntary approaches of hospitality chains and cruise companies should play a large role in inducing and changing the plastic waste production behaviour of tourists (both visiting tourist and secondary residence owners).

GIZ initiatives should search for synergies with other initiatives aiming at reducing plastic waste production in the Caribbean in the tourism and hospitality sector. Some ideas of actions and support that may be considered include:

- **Promotion of bans of single-use plastic products** (*plastic bags, takeaway products, Styrofoam or polystyrene containers*);
- **Reduction of marine plastic pollution** on both aspects, garbage from ships and dumping of land-based waste at sea (*and the support to the emergence of sub-regional port facilities*);

  See, among others, the opportunity to involve hotel chains, but also cruise companies into the **Clean Seas Campaign** (implemented with the involvement of GPML-Caribe) and other Coastal, River, Beach Clean initiatives launched at national (more regularly) or regional level (on special occasions, such as Earth Day),
- Develop and/or enforce **Container Deposit Schemes or Laws** as a primary tool for product stewardship, extended producer responsibility (EPR) and polluter pays principle.

  As administrative approaches may widely differ, national detailed feasibility studies should be undertaken where no such regulations exist, in order to define, among other aspects: i) the

[217] https://www.sprep.org/publications/cleaner-pacific-2025-pacific-regional-waste-and-pollution-management-strategy

[218] *Megan Shaw (2019). Plastics in "Paradise"? A look at plastic consumption and waste management in San Pedro, Belize. Department of Anthropology, San Jose State University·*

modalities of implementation, ii) the role of corporate responsibility in funding initiatives to manage waste and minimize litter and marine pollution, iii) the role of government in funding upcycling initiatives (value-adding), iv) the potential of leveraging PPPs with universities, industries and local manufacturers, v) the possibility of expanding municipal waste collection (infrastructure / points), and vi) the role of environmental levies to increase funding to waste collection.

- Promote **Visitor Environmental Levies** (*Environmental levies on tourism activities to target the generation and management costs of plastic waste e.g. arrival or departure taxes, in-country services taxes*). These levies should be accompanied by a strong voluntary involvement and agreements of large hotel groups and cruise companies.

  As tourism consumption / use of plastics depends on what is sold to them, global certifications and behavioural changes should be led by hospitality and global transportation groups, positioning themselves as pioneers in the field.

- Examples of **non-legislative supporting measures** may include, for example: establishing per capita waste reduction targets for cruise liners and other tourism sectors where waste is measurable; establishing a voluntary certification programme for large resorts, cruise liners, large ferries and airlines to encourage plastic waste reduction actions;

- Examples of **procurement policies and agreements** (*linked to the above*) for example to: replace disposable plastic products with alternate materials; reduce usage of disposable plastic products (*e.g. water bottles*) and personal care products such as shampoos, packaged condiments; purchase recyclable plastic products or products with recycled content; purchase locally-made products with traditional materials (*e.g. baskets*); and systemically reduce the enterprise's retail and operational packaging.

11.3.3.3. On Private Sector and Corporate level involvement: Green Labelling

An increasing number of hotels, resorts and hotel chains have taken (on a voluntary basis) a number of steps towards better environmental management. Good (and green) and more climate resilient reputation for environmental best practices became a labelling and marketing tool, while several studies showed that the cost savings from going 'green' was the main factor for a hotel voluntarily adopting sustainable practices[219]. Integrating eco-tourism rules into tourism products and implementing policies to protect marine and terrestrial resources is aimed to become more and more part of corporate vision. For example, the overall goal of **Landal Green Parks, Wyndham Hotel Group** is to be climate neutral by2030 by implementing diverse measures, all the while focusing on improving the customer experience[220]; energy efficiency, use of renewable energy and the reduction of waste by the use of recyclable materials are integral part of their approach. Some resorts have already implemented global integrated approaches, as shown in ***BOX 20***; moreover, environmental sustainability emerges as a strong component explaining tourisms satisfaction[221], but needs more enforcement and market instruments and incentives for waste reduction[222].

219 *Don Charles. (2013). Sustainable tourism in the Caribbean: The role of the accommodations sector. In International Journal of Green Economics Volume 7 (No 2) DOI: 10.1504/IJGE.2013.057447*

220 *Global Hotel Decarbonisation Report (2017). In Responsible Hospitality for a Better Word. Sustainable Hospitality Alliance (formerly known as International Tourism Partnership ITP, part of Business in the Community BITC) in collaboration with GreenView*

221 *Sun, Sand, and … Sustainability in Developing Countries from a Tourists' Perspective. The Case of Punta Cana, Gianluca Goffi, Magdalena Cladera, Linda Osti,* www.mdpi.com

222 *Sustainable Asset Valuation Tool: Materials management infrastructure. (2020). IISD, MAVA.* www.IIDS.org

BOX 20. Punta Cana Resort & Club, Dominican Republic

Launched in May 2019 with the support of UNEP, the Punta Cana (region) "Roadmap for Low Carbon and Resource Efficient Accommodation in the Dominican Republic encompasses five objectives for accommodation facilities in order to improve the sustainability performance of the local hospitality industry: (i) reducing greenhouse gas emissions, (ii) non-renewable energy use, (iii) food waste; (iv) eliminating single-use plastics; (v) adopting sustainability certifications.

Located in Punta Cana, by far the destination generating most of the tourism revenues in the DR and among the most tourism-penetrated destinations worldwide, Punta Cana Resort & Club is a leading Caribbean coastal destination characterized by package-tourism and one of the premier examples of sustainability in the Caribbean, having been named the Caribbean's Leading Green Resort at the World Travel Awards in 2014, 2018 and 2019.

The property spans 15,000 acres of land, with multiple hotels, luxury home rentals, miles of private beaches, a beach club, a spa, two golf courses, and large wedding venues, hosting over a dozen restaurants and bars. It also owns and operates an international airport. Environmental and social initiatives are overseen by Grupo PuntaCana Foundation, the not-for-profit foundation of the Resort, responsible also for the design, launch and implementation of the group's Zero Waste initiative.

"This solid waste management initiative is implemented throughout the property, and encourages guests staying at home rentals to separate organic waste from recyclable materials. Food waste is then given to individuals to convert to animal feed or is used in their worm composting (vermicomposting) programme. This compost is sold locally".

Jake Kheel, the Vice President of Grupo Puntacana Foundation, identified several challenges in the implementation of the initiative:

- **improper waste separation as the main barrier to reduction of food waste;**
- **logistics can be a bottleneck in the collection and transportation of large volumes of food waste, due to the size and diversity of the resort;**
- **need to identify affordable and locally available technologies (such as digesters and large-scale composting)**
- **low costs of landfilling (in DR) and lack of incentives from the government to encourage hotels to seriously look for alternatives**

It is also noted that Punta Cana Resort & Club initially contributed to landfills until this integrated programme was developed, which also incorporates resort-wide education and training for staff and a purposeful cultural shift marked by using words such as "materials" instead of "garbage".

On the low costs of landfilling (in DR, but also in the rest of the Caribbean), it is highlighted that market instruments and incentives should be designed in order to effectively reduce landfilling and increase the recycling (i.e. taxes and tax differentiation. Examples include: Catalonia, Spain charges higher landfill and incineration fees for waste without recovery; increased landfill tipping, gate fees and pay-as-you-throw PAYT are effective in reducing waste material; Estonia: tax credits for the use of solid residues in manufacturing processes; Brazil: deposits-refund systems contributing to high container return rates.

11.3.3.4. On the types of initiatives

The high level of insularity is the focal challenge of any initiative implemented in the region; therefore, in order to gain momentum, while having a national component (*demo or pilot projects*), all actions should both adopt an integrated / transversal approach and building upon synergies with the rest of the Caribbean islands.

1. **Specific recommendations to reduce waste generation in tourism industry**
   - Creating a **regional forum to share experiences and initiatives** by hoteliers and other professionals of hospitality sector on waste management and organize an **annual Green Awards and/or Ligue of Champions**
   - Developing and implementing **regional communication programmes** to increase awareness and sensitize the tourism industry to the need for reducing waste
   - Developing a **regional waste characterization from the accommodation** sector to develop common and tailored solutions.
   - Establishing a **sustainable financing mechanism for waste management and recycling** to improve technologies and capacities for solid waste management at regional level
   - **Considering waste as a resource and promoting common circular economy strategies and business models** incentivizing entrepreneurship in the recycling sector and upstream solutions with suppliers such as purchase-buy back models. This can benefit from economies of scale at the OECS level.
2. **With regards to transversal supportive actions**
   - **Reviewing and aligning tourism policies to mainstream environmental sustainability criteria** to work towards a low-carbon, resource-efficient OECS tourism industry, promoting sustainable consumption and production patterns
   - Promoting **sustainable procurement polices within the tourism industry** at regional level to influence environmental sustainability within the value chain by provision of capacity building and incentives to enable the accommodation sectors to procure sustainable products and services
   - Promoting the adoption of Global Sustainable Tourism Council (GSTC) accredited certification by providing incentives
   - Promote the **Caribbean** (**regional) sustainability hospitality awards** to incentivize action and initiatives to reduce GHG emissions and improve resource efficiency and to share good practice; introduce within the Caribbean Sustainable Tourism Awards[223] www.caribbeanstc.com
   - Developing national and regional tourism energy, waste and GHG emissions monitoring and reporting mechanisms; setting national and regional targets for OECS member states aligned with NDCs and the SDGs to reduce energy consumption, waste generation and GHG emissions within the OECS tourism sector
   - Establishing **rating and certification schemes** to recognize energy efficiency and GHG management leadership in the hotel industry in accordance with GSTC / CHENACT recommendations; the initiative should include a specific waste management chapter
   - Develop a reporting mechanism to disaggregate the contribution of the tourism sector to the achievement of the NDCs and SDGs
3. **With regards to actions at national level**
   - Review the national tourism strategy to identify opportunities to integrate sustainability such as enabling tourism businesses to become more sustainable and raising awareness to support sustainable consumption and production.

[223] *CTO Caribbean Sustainable Tourism Policy Framework, 2008*

- Implement training for hotels on: food waste measurement, training on sustainable procurement, including circular procurement practices, low-carbon menus, and energy and water efficiency measures
- Develop and pilot financial mechanisms to encourage: circular economy models, eco-innovation, recycling, energy efficient appliances, installation of renewable energy technologies, obtaining sustainability certification and mangrove protection and restauration
- Set-up research programmes to foster innovation for reduction in GHG emissions from domestic beef production, removal of plastics from the ocean, reuse of recovered plastics, and development of circular solutions for ocean sargassum.
- Prepare and launch communication campaigns on: food waste, plastic and energy- and water-efficient behaviour to staff, guests and suppliers.
- Develop registries of recycling businesses and providers of local food products who are champions of sustainability best practices
- Establish sustainable building codes for the construction of new hotels.
- Set up monitoring programmes to track progress against roadmap targets for corporate GHG emissions and food waste and single-use plastics for hotels larger than 100 rooms (starting in 2022). Provide feedback to hotels on their environmental performance.
- **Create incentives and support the adoption of Global Sustainable Tourism Council (GSTC) accredited certification, hotel classification systems and standards for the accommodation sector** (i.e. through training, support in certification, financing, etc.)
- Belize: **Take an integrated approach to the implementation of National Sustainable Tourism Master Plan (STP) for Belize 2030** in conjunction with the recommended Informed Management zoning scheme[224] for sustainable marine recreation and tourism. The proposed scenario embraces a blended combination of development and conservation priorities, and would minimize impacts on coastal and marine ecosystems; tacking into account also the continued human use of the coastal zone includes integrated waste management.

4. With regards to the mobilization for promoting circular economy

Approaches / roadmap of cluster of actions aimed at transforming tourism value chains should focus on **three systemic solutions**[225] and communicate and share on peers' experiences and best practices: (i) beating pollution / towards zero waste, (ii) sustainable gastronomy, and (iii) sustainable / smart energy

- **Reduce the consumption of materials and waste arising from tourism**, through both a plastic target and a certification target, through for example:
  - Develop a pilot project for biogas production using food waste, green waste and sewage in partnership with accommodation providers and other value chain businesses (i.e. farmers, food suppliers).
  - Incentivize research and entrepreneurship to create alternatives to single-use plastics
- Support **sustainable gastronomy** aimed at measuring and reducing food waste in hotels, introducing the concept of sustainable gastronomy, by training chefs and hotel managers on the topics of food sustainability, but also optimizing organic waste "back-

[224] *In order to understand the implications of each zoning scenario, CZMAI used InVEST to model several ecosystem services and to create final zoning schemes.*

[225] *United Nations Environment Programme UNEP 2019. Roadmap for Low Carbon and Resource Efficient Accommodation in the Dominican Republic and St Lucia. Promoting resource efficient and low-carbon development through transforming tourism value chains in developing countries and SIDS.*

yard" composting (*i.e. promote adoption of food waste monitoring and reduction in kitchens, introduce sustainable procurement practices of food, …)*
    - Engage hotels in the Saint Lucia Solid Waste Management(SLSWMA) pilot project for segregated waste collection, through consultation, training and improved infrastructure to support the uptake of recycling
    - Promote the benefits and economic opportunities of agricultural composting, using food and garden waste for hotels within farms for own use and/or to sell, thus decreasing the use of imported inorganic fertilizers
    - Establish local partnerships to support alternative to sending food waste to landfill (*i.e. with farmers for anaerobic digestion, or local NGOs for food donations*)
- **Sustainable** / **smart energy** aimed at increasing energy-efficiency and the use of renewable energy in hotels, including the emergence of policies incentivizing the **establishment of standards and certification schemes** such as energy audits and rating schemes (*i.e. replace low-efficient devices with high-efficient appliances, increase energy conservation in hotel design, construction and operation, increase the use of renewable energy in hotels or soft operational and behavioural measures,* …)

11.4. UNEP Action – Caribbean Region

11.4.1. Background

The UN Environment Programme (UNEP) is involved in a diversity of initiatives and projects in the Caribbean, through its regional focus and offices in Latin America and the Caribbean, under the following agenda themes: climate change, disasters and conflicts, ecosystem management, environmental governance, chemicals and waste, resource efficiency and environment under review. According to the initiative or project, the UNEP adopts a different role, either as a secretariat, coordinator or facilitator. It works hand in hand with a broad range of governmental and non-governmental institutions from across the globe.

Some examples of initiatives and projects led by UNEP in the Caribbean are included next.

11.4.1.1. Capacity building related to Multilateral Environmental Agreements in ACP Countries Phase III (ACP-MEAs)

The programme is a joint partnership among the European Union, the Organization of African, Caribbean and Pacific States (ACP), UNEP, and the FAO to build capacity in 79 ACP countries, thereby fulfilling their obligations as parties to various MEAs. It is a 5-year programme (2020-2024) which will be implemented in the CARICOM countries. The efforts will focus on effectively integrating the environmental concerns addressed in MEAs into national and regional policies and laws, as well as strengthening regional negotiation skills, raising awareness, supporting the development of information systems, environmental assessments and establishing marine protected areas. It will focus on the following areas: sound management of chemicals and waste, marine pollution, coastal erosion and loss of biodiversity.

11.4.1.2. Interactive map for Styrofoam and Plastic bag bans in the Caribbean

UN Environment CEP created an interactive map on the status of bans that can be updated periodically. Through this interactive tool, Contracting Parties to the Cartagena Convention will be able to monitor their efforts to comply with the Protocol on Land-Based Sources of Pollution. The map will also allow countries to provide updates on national policies and regulatory measures and evaluate their effectiveness to address the importation, use and disposal of plastics and Styrofoam products.

11.4.1.3. New Circular Economy Coalition for Latin America and the Caribbean

While many of the region's countries have been actively working on national circular economy strategies, the coalition, coordinated by the UNEP and supported by 8 strategic permanent partners, is an opportunity to increase cooperation, scale up initiatives and strengthen public-private partnerships, as well as innovation and capacity development. The new Circular Economy Coalition for Latin America and the Caribbean was launched during the XXII Meeting of the Forum of Ministers of Environment of Latin America and the Caribbean (LAC) in February 2021.

11.4.1.4. Assessing Waste Management in Latin America and the Caribbean

UNEP, in collaboration with different regional actors, produced the Waste Management Outlook for Latin America and the Caribbean published in 2018. The report analyzes the current situation of waste management in the region, its environmental challenges and trends, and outlines the actions required to achieve an efficient management and move towards a circular economy. The report is a response to the request of Member States, in the framework of the Forum of Ministers of Environment of Latin America and the Caribbean and the UN Environment Assembly.

11.4.1.5. Intergovernmental Network on Chemicals and Waste for Latin America and the Caribbean

This Network, established in 2016, aims to strengthen the sound management of chemicals and waste, through regional cooperation and the exchange of experiences and information in Latin American and the Caribbean countries.

11.4.1.6. Voluntary coalition for the progressive closure of dumpsites

The Voluntary coalition of governments and relevant organizations for the progressive closure of dumpsites in Latin America and the Caribbean, hosted by the UNEP Regional Office, promotes the eradication of open dumps and the transition to integrated waste management in the region.

The coalition was established after the XXI Meeting of the Forum of Ministers of Environment of Latin America and the Caribbean in 2018.

11.4.1.7. UNEP and RAPMaLi

In 2005, UNEP-CAR/RCU and its Regional Activity Centres for the Land Based Sources of Marine Pollution Protocol and Oil Spills Protocols with support from UNEP Regional Seas began the development of a Regional Action Plan on Marine Litter in the Wider Caribbean. The objective of this activity was to assist in the environmental protection and sustainable management and development of the WCR through the development of a Regional Action Plan on Marine Litter in the Wider Caribbean Sea.

A series of region wide surveys, literature reviews and ICC data were compiled. This assessment was followed by a regional workshop of experts in Aruba in February 2007 which ultimately led to the development of the Caribbean's first Regional Action Plan for the Sustainable Management of Marine Litter (RAPMaLi) in 2007. The RAPMaLi was designed to addresses the complex and interconnected nature of the marine litter problem and outlines several actions at the National and Regional Level within five thematic areas:

1. Legislation, policies and enforcement
2. Institutional framework and stakeholder engagement
3. Monitoring programmes and research
4. Education and outreach
5. Solid waste management strategies

Recognizing the need to implement these actions outlined within the RAPMaLi, UNEP with support from UNEP Regional Seas Programme initiated pilot projects within Barbados, St. Lucia and Guyana to improve public awareness and national capacity to manage marine litter.

11.4.1.8. Clean Seas—a global call to fight marine litter

In February 2017, UN Environment launched the Clean Seas campaign to engage governments, the public, civil society and the private sector in the fight against marine plastic litter. Clean Seas addresses the root cause of marine litter by targeting the production and consumption of non-recoverable and single-use plastics.

By April 2019, 60 governments (including nine in the Caribbean) accounting for more than 60 per cent of the world's coastline, had signed up to #CleanSeas. Many have made commitments to protecting oceans, encouraging recycling and cutting back on single-use plastics, while a few have created marine reserves and adopted national plans on recycling and waste management.

11.4.1.9. CEP (Caribbean Environment Programme) – Cartagena Convention Secretariat—a framework for action and tracking progress

UN Environment established the Caribbean Environment Programme (CEP) in 1981 as one of its Regional Seas Programmes in recognition of the importance and value of the Wider Caribbean Region's fragile and vulnerable coastal and marine ecosystems. Countries of the region then adopted an Action Plan also in 1981 that led to the development and adoption of the Cartagena Convention on 24 March 1983.

As the Secretariat to the Cartagena Convention, the only legally binding environmental agreement in the Region, UN Environment's Caribbean Environment Programme supports the implementation of the Land-Based Sources of Marine Pollution Protocol and the Caribbean Regional Action Plan for Marine Litter (RAPMaLI). This includes support for national and regional marine litter projects as well as promoting national policy and legal reforms. In addition to a wide variety of communication activities, the Caribbean Environment Programme created in 2018 an interactive map[226] to track progress.

11.4.1.10. Getting down to communities—trash-free waters international partnership

In 2017, UN Environment's Caribbean Environment Programme entered into a partnership with the U.S. Environmental Protection Agency, Peace Corps and UN Environment's Regional Office for Latin America to launch the Trash Free Waters Initiative. The partnership, first piloted in Panama and Jamaica, aims to reduce and prevent land-based trash from entering watersheds, coastal waters and the Caribbean Sea. In Jamaica, the initiative focuses on recycling, community awareness and education while in Panama activities include solid waste management, pollution prevention and waste separation.

Lessons from this project have been incorporated into national and regional efforts coordinated by the Secretariat. The linkages made with other government programmes that address solid waste management and the promotion of partnerships between civil society and the private sector in both countries are the most significant aspects of these initiatives. The timing is right for both replication and upscaling through the rest of the wider Caribbean region.

11.4.1.11. Supporting global efforts on marine litter

The Global Partnership on Marine Litter is a multi-stakeholder partnership that was launched at the United Nations Conference on Sustainable Development Rio+20 in June 2012. It brings together actors working on marine litter to share knowledge and experience and to advance solutions to this global issue. In the Caribbean, the focus has been on reducing the quantity and impact of marine litter in coastal zones.

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226 https://www.google.com/maps/d/viewer?mid=1AjpZsUQgmFbYcDNpXl0GMfL6vie-h_Ni&ll=17.702153867662386%2C-73.41237590867729&z=4

11.4.1.12. Others

UNEP is also involved in the other following projects in the Caribbean region:

- The Environmental Training Network of Latin America and the Caribbean;
- The UNEP Global Mercury Partnership
- Regional Strategy for Sustainable Consumption and Production.

At regional concerted level, synergies should be sought with different international donors, such as:

The **European Regional Development Fund supporting wasted management in the French Outermost Regions**, complemented by the Just Transition Fund which will solely focus on circular waste management solutions, redirected support towards climate & waste positive activities that maximise material recovery, prevention and reuse.

By incentivising solutions that design out waste, it is intended to design out carbon emissions from these systems. EIB with the support of JASPER facility intends to finance the building of a complex of three non-hazardous waste management facilities in Martinique.

Promotion of Good Governance in the waste sector in the Caribbean

Coordinated multi-donor, multi-year efforts are needed to deliver waste and pollution management services, systems and capacities in the Caribbean region.

Strategic dialogue on important and relevel areas of waste management should be supported in the framework of the Forum of ministers of Environment in the LAC region.

Strengthening environmental governance and innovative financial mechanisms to catalyse private climate investment are the cornerstones of multilateral initiatives and regional policy dialogues on environment.

Another pillar that should be developed at regional / sub-regional level is the establishment of networks facilitating dialogue among the countries in the region, and for sharing information and experiences.

Cooperation with neighbouring independent territories is advised to be prioritised, but regulatory differences might complicate the interactions; however, the regional cooperation of Outermost Regions (OR) with their independent neighbours is advised in the development of shared circular economies, given the prohibitive costs of transferring waste to metropolitan France. (See ***BOX 21*** *on the next page*). It is also suggested to explore mechanisms to make the Basel Convention more flexible in cases where waste can be used either as secondary raw material, recycled, or otherwise treated in joint facilities and to consider the OR initiatives as “demonstration sites”, or living laboratories, to show how resource-constrained economies can develop and how regional cooperation can work.

The emergence of **regional approaches to the National Determined Contributions (NDC) in the Caribbean Countries, and the weight given to SWM under the NDCs**: the value of cooperation for integrated intensified approaches and knowledge sharing on Climate Change should be increasingly evident through regional networks and initiatives

The NDC Finance Initiative funded under the umbrella of NDC Partnership aims at building a regional platform for learning and support on project preparation and access to finance for NDC implementation. It is aimed to be a catalyser of investments in climate-friendly and resilient infrastructures in the Caribbean, focusing on priority sectors such as energy, water and critical infrastructure. GET.Invest (*through its Finance Catalyst program* https://www.get-invest.eu/finance-catalyst/) could bring the necessary support that would link renewable energy projects and companies with finance opportunities and vice versa, targeting small- and medium-scale renewable energy opportunities. Several investment-ready projects supported by GET.Invest of the GIZ (in cooperation with the OECS and the Government of St Lucia) were aimed at enhancing resilience to climate change impact, push forward NDC implementation and drive transformational change in the region; projects and businesses with strong underlying fundamentals are supported to access debt and equity, possibly combined with grants and cover the entire spectrum of renewable energy technologies (*including waste-to-energy, biomass and biogas projects in a variety of business models*).

BOX 21. Progressing towards "zero waste" in French overseas territories could go through enhanced cooperation with neighbouring independent states

In the light of lessons learnt from the recent SIDREP failure in Martinique ("little sister" of the Matières Plastiques Martiniquaises, active in Martinique for more than 20 years and producing 100 million plastic bottles per year), strong cooperation is advised with the regional and/or sub-regional partners in order to ensure that the break-even volumes are made available from other Caribbean independent territories. With the presence on the island of the what is known as "the coca plant", the SNEMBG (Société nouvelle des établissements modernes de boissons gazeuses, located in Lamentin since 1987) producing soda drinks (Coca-Cola, Orangina, Riglès, Canada Dry, Oasis, along with its own in-house variants under Royal Soda) sold throughout the whole island, as well as in Guadeloupe, Guyana and metropolitan France, EPR could have been a way to energize the sector and ensure a strong and sustained collection stream. Or, while investments in SIDREP were significant (EUR 5 million from private investments, and EUR 6 million in public investments from Martinique Region and European funds), and aimed to be the corner stone of a circular economy initiative (i.e. replacing imported plastic granulates by recycled plastic containers), a lack of efficiency in the collection of plastics on the island was the major cause of the failure.

Globally, public support and stronger involvement of the private sector (mainly through corporate responsibility) and awareness raising will have to be at the core of any initiative, in order to increase the collection rate of plastics (currently 11% in Martinique, compared with 55% at national level), while making a better use of the taxes collected from plastic bottling and soda producers. Initiatives like Solarcube

(operational since 2019) also show the way forward through incentives (against reduction checks of 2-cents per bottle, to be used in Carrefour Dillon, in Fort-de-France) and awareness raising campaigns targeting the large population.

While legislative provisions might differ, support could be brought by international donors to the target countries in order to upgrade their regulatory framework and enforcement in order to align with EU requirements, in place in the French Outermost Territories.

A new project will be launched in Martinique (located in Le Robert municipality, Petit Galion), aimed at building a waste management facilities complex, for improving the island's environmental performance and helping to achieve the objectives of the Waste Management and Reduction Local Plan:

- **Sorting centre for bulky and commercial waste aimed at increasing the rate of waste recycling in Martinique (capacity of 20,000 tonnes of waste per year, corresponding to nearly 10% of the annual production of household waste in Martinique)**
- **A mechanical biological pre-treatment unit aimed at extracting fermentable waste further treated in the organic recovery centre, to produce electricity. Cooperation with the agricultural sector is intended to maximize the quality of biodegradable material**
- **A non-hazardous waste facility (landfill) in the quarry of Petit Galion, designed to meet the maximum requirements for environmental protection and preventively designed to resist natural hazards, including hurricanes and earthquakes.**

Lessons learned in the field from the Pacific Island Countries could help advancing NDC implementation, while increasing resilience to climate change through the creation of a regional Caribbean NDC Hub (in the framework of the NDC Partnership). Again, the experience of HIZ, as one of the main implementers of the Pacific Hub alongside with the Pacific Community (SPC), the Secretariat of the Pacific Regional Environment Programme (SPREP) and other international agencies could benefit to the region. Tools developed under the GIZ projects (*Information Matters and Concepts for Sustainable Solid Waste Management and Circular Economy*) supporting the improvement of GHG emissions estimates from the waste sector and facilitate the identification of emission reduction policies and measures, could be used for improving regional cooperation.

Support to public sector investments but also to the emergence of private sector initiatives and well-structured public-private partnerships (PPPs) can result in significant improvements in efficiency and quality of solid waste management.

The contribution of institutions such as the Caribbean Development Bank in **financing public sector investments in SWM**, along with **private sector initiatives** such as cost-effective microenterprises should be encouraged[227] should be incentivized to attract technology and capital.

Under any circumstances, **public and private sector together need to assume much more responsibility for waste generation and disposal, specifically product design and waste separation**; formalization of responsibilities could be done through well-structured **public-private partnerships (PPPs)** that would result in significant improvements in efficiency and quality of SWM. Most commonly, these projects include waste incineration, waste treatment, recycling, and waste-to-energy (WtE) projects. Important factors of success to be taken into account are a realistic estimation of the volume and correct definition of the content of the existing waste stream, the appropriate (local) technologies, the imperative of stringent environmental standards and community engagement, and clear rules of "who pays for what" in the system.

While tackling waste management at national level, it is important that at sub-regional and regional level the strategic dialogue on important and relevant areas of waste management gets the necessary recognition through concerted policy developments and strengthened environmental governance, improved capacity to lead multilateral initiatives aimed at exchanging of information, sharing experiences and coordinating waste management at regional level. Activities aiming at improving waste characterisation and related statistics, data collection and sharing, assessing, aligning and enforcing legal frameworks and policies, developing structured education and awareness initiatives, enhancing private sector engagement, and building capacity to deliver sound environmental waste management practices across the Caribbean should be designed at regional level.

While strategic policy dialogue is key at regional level, implementing a regional programme reinforcing capacity and institutional settings would constitute the baseline of a long-term synchronised approach aimed at operationalizing the regional Caribbean Waste Management Action Plan. UNEP, serving as the Secretariat of the Forum of Ministers of Environment, has also played a leading role in the endorsement of the regional policy framework proposed under the Caribbean Waste Management Action Plan.

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*227 For example, for projects that fit under the **Clean Development Mechanism (CDM)** defined as one of the Flexible Mechanisms of the Kyoto Protocol. In December 2021 the executive board of CDM, under the pressure of controversial market of carbon-trading scheme, has decided to suspend the approval of new projects under a UN-led carbon market until countries agree on common rules for global carbon trading – raising the stakes for a prompt resolution of the issue.*

Building upon the lessons learned from the activities implemented under the European Strategy for Plastics in a Circular Economy[228] that set up the strategic vision of what a "circular" plastic economy could be in the decades ahead, requires action from all players in the plastic value chain, from plastic producers and designers, through brands and retailers, to recyclers. Similarly, civil society, the scientific community, businesses and local authorities have all to be part of the new paradigm, and future initiative should in particular, support investment in modern recycling technologies, new materials better suited to recycling, and solutions to curb marine litter.

Reflecting UNEP mandate, the GWMO[229] has defined the rationale and provided tools for taking a holistic approach for waste management encompassing significant contributions to sustainable development and climate change mitigation.

Within this overall aim, a number of specific objectives have been defined:

- Call for policy- and decision-makers to take urgent and concerned action towards good governance, and establish links to wider health and environmental policy and other global challenges;
- Support transition towards the concept of "waste and resource management", incl. waste prevention and minimization and also aspects of resource efficiency and sustainable consumption and production (SCP);
- Examine the available approaches to waste management financing and set out a framework for establishing a sustainable financing model, while defining how to raise sufficient revenue to cover the net costs of service provision, and investment financing.
- Define sets of standardized performance indicators on waste management that allow benchmarking exercises and facilitate better analysis of the state of waste management in the Caribbean and provide a standardized means for monitoring progress.

UNEP action could equally contribute in harmonizing and collecting waste related data (both observations and measurements), defining clear and consistent methodologies for waste management, in order to tackle with major concerns such as:

- Lack of standard definitions and classifications; common approaches should be suggested, while requesting to each country clear definitions and consistent applications;
- Absence of measurement and of standard methodologies for measurement (knowing that weighting of waste is not universally practised)
- Lack of standard reporting systems: While tracking systems for the transboundary movement of hazardous wastes are mandatory under the Basel Convention, data collection and reporting of total quantities generated are only advisory and thus patchy.

11.4.2. Summary of proposed activities under the Action

A regional mobilisation of actors, a transversal reading of on-going or forecasted programs in the region aimed at mainstreaming waste management and waste management induced challenges into the development priorities (*e.g. through programs related to private sector development, disaster management, biodiversity and climate change, etc*), should build upon synergies between the actions of the aforementioned Caribbean High-Level Forum on SWM, the Caribbean Community Climate Change Centre (5Cs) Secretariat Sustainable Development Unit, CARPHA and the Caribbean Disaster Emergency Management Agency (CDEMA).

Waste prevention actions should be designed and implemented with the vision of a circular Caribbean economy, at different stages of product life-cycle at national levels (*see* ***Figure 11****,*

228 *A European Strategy for Plastics in Circular Economy, adopted in January 2018*
229 *Global Waste Management Outlook, UNEP, ISWA, 2015*

hereafter), as described in the GWMO by UNEP (2015), and with structural and regulatory support at macro, regional level.

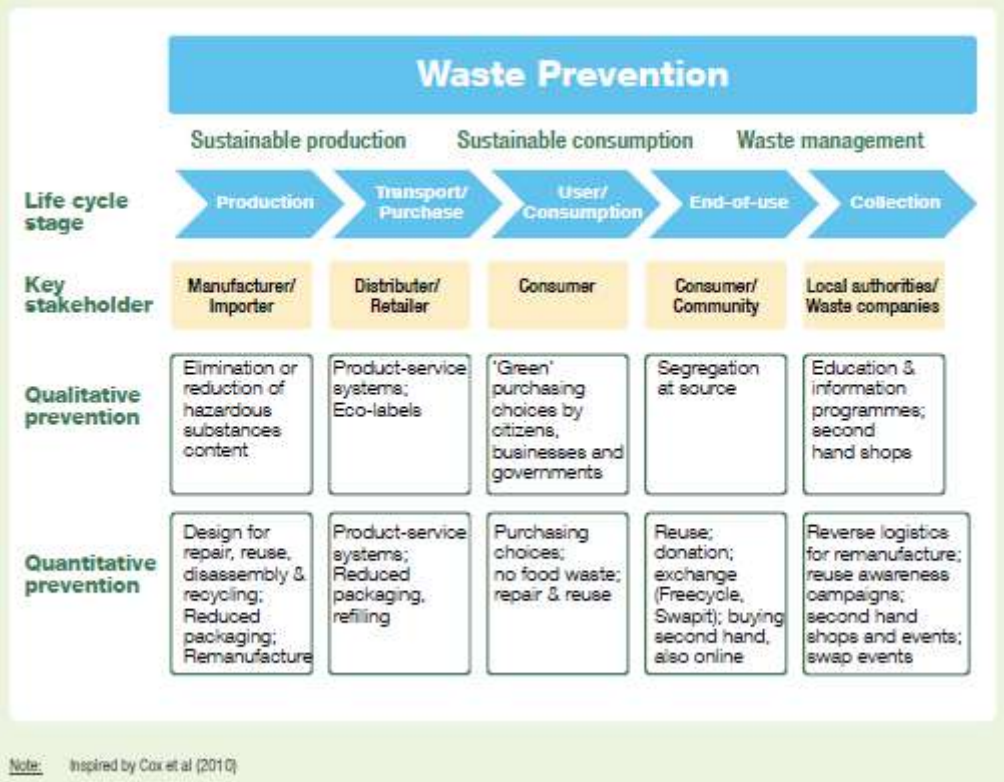

Figure 11: *Waste prevention at different stages in product life cycle*[230]

UNEP is expected to be the third implementing partner of the action, and its role is intended to cover the following components:

1. **The development of a robust solid waste management legal and strategic framework** in the Caribbean countries.
   The assessment of the current status will allow to identify gaps (*e.g. policy, legislation, data availability, disaggregation of data, …*), opportunities for support, and means for inclusion of SWM aspects in the NDC, including
   (i) **Improvement of weak SWM legal and regulatory systems**, and defining **enforcement measures** at national and – potentially – regional level;
   (ii) **Improving investment environment**, aiming to support the emergence of private sector initiatives and to attract investment in the sector; and
   (iii) **Improving WM systems through specific support** (e.g. related to progressive closure of dumpsites, banning of single-use plastics, waste to energy innovative schemes, energy efficiency and renewable energies, promotion of polluter-pays principle and implementation of Extended Producer Responsibilities (EPR) for priority waste streams, …).

The institutional capacity of regional organisations and national authorities delivering waste and pollution management should be strengthened through this component; support should be given for drafting a robust regional policy and regulatory framework, coherent with the national settings, based on the review of status of current legislation and gap analysis,

230 *Global Waste Management Outlook, UNEP, ISWA, 2015*

followed, when needed, by the **development of national legal instruments, regulations and enforcement measures**. The approach to be used should be consultative and inclusive, to enhance ownership of the policies and facilitate the revision process. Activities should have both a regional as well as a national application, with countries that do not receive or receive very little support by other donors being the primary focus of national efforts for SWM.

Activities will involve supporting the development of legislation that incorporates institutional arrangements for waste management and leads to improvements in service delivery, private sector engagement and cost recovery of waste management activities. Gender-sensitive and rights-based approach will be fostered, to create equal opportunities arising from the development of policies and regulations that can affect health and well-being and livelihoods.

Specific support could cover:

- A **comprehensive review of the legislative and regulatory framework and institutional arrangements primarily related to SMW and pollution**, but also of those related to environmental protection, (integrated) coastal management, climate change and disaster risk management.
- **Assistance to countries to progress laws and regulations in area of need, related law enforcement measures** aimed at supporting the Caribbean in the transition to a comprehensive and sustainable waste management system including upstream elements (*e.g. waste avoidance, product replacement, value adding*), and fostering the private sector engagement and cost recovery of waste management activities (*such as models of Container Deposit Legislation CDL, pre-paid bag systems or paid-back system for Used Lead Acid Batteries ULABs*)
- Advocacy for definition and adoption of a **common terminology for waste classification to ease waste management, including for hazardous waste**, to be used in a broad variety of activities, including the transport of waste, installation permits, or as a basis for waste statistics.
- **Mainstreaming disaster waste management** into integrated approaches addressing climate change and disaster risk management;
- **Donor coordination for a joint pipeline of projects** to be funded, and operationalisation of a **regional green investment fund; a pilot phase of the project could support acceleration programs for innovative start-ups of the region**
- Develop a **Caribbean waste and pollution portal** (including a GIS application identifying pollution hotspots in the region) could be developed; following the model of INFORM project[231] funded by GEF and UNEP; the web-portal would support the **establishment of a Caribbean islands network of national and regional data repositories and reporting tools** to support the monitoring, evaluation, and analysis of information related to environment but also to waste management, climate change, fisheries, energy, maritime, land resources
- **Assist in developing mechanisms** (such as national licencing and certification) for waste management service providers, including a monitoring system (that could be related to the web-portal) **allowing to track and capture relevant activities** (e.g. number and type of national licenses / certifications issued)
- **Advocate for change in terms of environmental diplomacy and good governance in the field of waste management and pollution control at regional level** *(activity also in relation with the awareness raising activities).*

231 INFORM (Building National and Regional Capacity to Implement Multilateral Environmental Agreements by Strengthening Planning and the State of Environmental Assessment and Reporting in the Pacific https://www.sprep.org/inform) established a Pacific islands network of national and regional data repositories and reporting tools to support the monitoring, evaluation and analysis of environmental information

2. **Increased awareness of the EU-CARIFORUM partnership by Caribbean institutions and citizens, including in the SWM and circular economy fields**. Two pillars of communication could be followed:
   - **(i)** One **EU-CARIFORUM partnership specific** (*to be implemented through direct modalities, cf Action Document forecasting EUR 500,000 dedicated to communication and visibility activities related to the EU– CARIFORUM partnership*) and
   - **(ii)** **One SWM management-specific** (*and its relevance to a shared circular economy and sustainable development*) that could be implemented by an organisation having already a strong regional presence and recognition (*such as the UNEP*).

BOX 22. Designing sustainable products

Knowing that up to 80% of products' environmental impacts are determined at the design phase, sustainability aspects of products should be addressed either on a mandatory or voluntary basis.

The Eco-design Directive or instruments such as the EU Ecolabel or the EU green public procurement (GPP) criteria contribute to ensuring that products on the market become increasingly sustainable and stand the test of circularity.

Eco-design for existing products can optimize the remanufacturing process, further saving resources, while for new products, it can include design principles such as designing for energy efficiency, reparability, recyclability, minimization of packaging and chemical safety. However, many products (e.g. cars, electronics), are not originally produced in the region; thus, eco-design may have a limited impact in the region. In fact, eco-design standards should be global, in order to be extended to many product categories and not just to certain products and sectors.

Eco-labelling, should reflect a life-cycle analysis for products and services, and has definitely a role to play towards a circular economy, provided consumers are sufficiently aware of environmental challenges and prefer products potentially more expensive, but considering externalities.

Green public procurement may also contribute to promoting sustainable products, provided that criteria are in line with WTO requirements.

Product lifetime extension through its partial or complete refurbishment and remanufacturing to return to its original quality, would extend the usage of the product thereby also contributing to a circular economy. Overall, these instruments are one step further in the direction of circular economy, and help implement sustainability principles such as:

- **improving product durability, reusability, upgradability and reparability, and increasing their energy and resource efficiency;**
- **increasing recycled content in products, and enabling remanufacturing and high-quality recycling**
- **restricting single-use and countering premature obsolescence, and introducing a ban on the destruction of unsold durable goods**
- **rewarding products based on their different sustainability performance, including by linking high performance levels to incentives**

Specific support could cover:

- broad communication and awareness actions to sensitise Caribbean citizens of the relevance of the EU-CARIFORUM partnership
- "smart awareness campaigns" on environmentally-related fields in main affected value chains, showcasing good practices in terms of, e.g. community (and youth) involvement,

ecosystem conservation and/or restauration, development of integrated sustainable tourism destinations, …

- Showcasing European best practices in promoting circular economy, while accelerating the transition towards a regenerative growth model, reducing the consumption footprint and increasing the circular material use rate. Introducing eco-design[232] criteria (*see **BOX 22**, previous page*) would support integrating environmental protection criteria over a service or a product's lifecycle and contribute building a Cleaner Caribbean. However, with a limited impact, as most of the Caribbean package waste is imported and not produced locally.

11.4.3. Recommendations for Implementation

Regional actions defined at national level should enable:

- A smart, innovative and sustainable plastics industry, where design, production and procurement fully respect the needs of reuse, repair, and recycling
- Citizens, government and industry support more sustainable and safer consumption and production patterns for plastics, leading for social innovation and entrepreneurship.

Globally, innovation should be fostered to make plastics and plastic products easier to recycle; to expand and improve the separate collection of plastic waste and to ensure quality inputs to the recycling industry, to expand and modernise the sorting and recycling capacity and to create viable markets for recycled and renewable plastics.

11.4.3.1. On improving the economics and quality of plastics recycling

- **With regards to actions aimed at improving product design**
  - Harmonized rules on plastic packaging, forecasted to be reused or recycled in a cost-effective manner
  - Improve traceability of chemicals and address the issue of legacy substances in recycled streams
  - Requirements to support recyclability of plastics (i.e. through eco-design measures)
- **With regards to actions aimed at boosting recycled content**
  - Launching Caribbean-wide pledging campaign targeting industry and public authorities
  - Assessment of regulatory or economic incentives for the uptake of recycled content (i.e. packaging waste, construction products, end-of-life vehicles
  - Development of quality standards for sorted plastics waste and recycled plastics
  - Ecolabel and other Green Public Procurement rules and incentives
- **With regards to actions aimed at improving separate collection of plastic waste**
  - Issuing guidelines on separate collection and sorting of waste
  - Better implementation of existing obligations in separate collection

11.4.3.2. On curbing plastic waste and littering

- **With regards to actions aimed at reducing single-use plastics**
  - Definition and / or enforcement of single-use plastics legislation
- **With regards to actions aimed at tackling sea-based sources of marine litter**
  - Adoption of legislative provisions on port reception facilities for delivery of waste from ships
  - Development of measures to reduce loss or abandonment at sea of fishing gear (e.g. including recycling targets, EPR schemes, recycling funds or deposit schemes)
  - Development of measures to limit plastic loss from aquaculture

232 *Circular Economy Action Plan – For a cleaner and more competitive Europe.* https://ec.europa.eu/environment/circular-economy/pdf/new_circular_economy_action_plan.pdf

- **With regards to actions aimed at monitoring and curbing marine litter more effectively**
  - Improved monitoring and mapping of marine litter
  - Support of implementation of measures on marine litter
- **With regards to actions targeting compostable and biodegradable plastics**
  - Start work on development of harmonized rules on defining and labelling compostable and biodegradable plastics

11.4.3.3. On driving investment and innovation towards circular solutions

- **With regards to actions aimed at promoting investment and innovation in value chain**
  - Test methods to incentivize design-for-recycling (e.g. through mandatory extended producer responsibility (**EPR**) schemes and **eco-modulated fees**)
  - Facilitate the launch of a "Circular / Green Economy Finance Support Platform" for the Caribbean
  - Examine the feasibility of a private-led investment fund to finance investments in innovative solutions and new technologies aimed at reducing the environmental impacts of primary plastic production
  - Direct financial support for infrastructure (logistics / transport and treatment plants) and innovation
  - Support the development in the Regional Research Centres and Universities of a Strategic Research Innovation Agenda on plastics, to contribute to future start-up / technology transfer initiatives
  - Biodegradable plastics

11.4.3.4. On harnessing global action

- **With regards to actions focusing on key regional initiatives**
  - Launch of a Cleaner Caribbean 2030 initiative (on the model of Cleaner Pacific 2025), including specific coordinated actions for reduction of plastic waste and marine litter (e.g. support of sustainable consumption and production, promotion of waste hierarchy and extended producer responsibility, improvement of recovery of fishing gear)
  - Joint and coordinated actions to reduce plastic pollution in the Caribbean
  - Exchanging with other regional initiatives (Mediterranean basin, Pacific region)
- **With regards to actions in support of multilateral initiatives on plastic**
  - Renewed engagement and enforcement on plastics and marine litter in for a such as the UN, G7, G20, the MARPOL and the Cartagena conventions
  - Implementation of the toolkit on environmentally sound waste management (particularly with regards to the Basel Convention)
  - Promote policy dialogue on trade, industry and environment, as well as economic diplomacy
- **With regards to actions relating to international trade**
  - Support the development of regional industry standards on sorted plastic waste and recycled plastics, aligned with international standards and regulations
  - Support the development of a certification scheme for recycling plants in the Caribbean

12. Potential Additional Pilot Activities in Three Thematic Areas: Marine Litter, Sustainable Tourism and Eco-Ports

In addition to the main analytical work presented in this report, three specific topics are of particular relevance for the region, namely: marine litter, tourism and ports. As such, three synthetic Action fiches were developed to provide a starting point for new initiatives contributing to the improvement of solid waste management in the region.

The brief description of the rationale for the consideration of these three topics in the context of the Caribbean Region is included in this section. The three Action Fiches corresponding to each of the topics are included in ***Annex 9***.

Preventing/reducing **marine litter** is a topic recognised as being of paramount importance in the EU (see Marine Strategy Framework Directive and various Regional sea conventions such as OSPAR, HELCOM, the Barcelona Convention and the Bucharest Convention) , or the US where NOAA (National Oceanic and Atmospheric Administration) has put in place a Marine debris programme. At a global level, the Montego Bay Convention (UNCLOS Convention) calls on States to adopt laws and regulations to prevent, reduce and control pollution of the marine environment from land-based sources.

In the Caribbean region, this issue is also high on the agenda and a legal framework was already adopted in the mid-1980s, with the conclusion of the Cartagena Convention and its protocols, including the Protocol on Land-based Sources of Marine Pollution.

The marine litter Action fiche aims at assessing what progress has been made in recent years in dealing with marine litter in the region, what obstacles remain on the way to drastically reducing marine litter and what proposals could be made to overcome these obstacles, considering whether regional or sub-regional cooperation should be promoted and on what it should focus.

Tourism is a major component of economic activity in several countries in the Caribbean region. Even though statistics require careful interpretation, it appears clear that countries such as the Dominican Republic, Barbados, or Trinidad and Tobago welcome up to 700,000 visitors a year, a figure which is even much higher in Jamaica (more than 4 million). Flows of tourists also mean flows of waste, unless measures are taken to change the situation.

Waste management has to comply with national legislation which is not specific to touristic activities is not harmonised throughout the Caribbean region, and is not necessarily with the same level of ambition. Some hotels already implement demanding standards in the field of waste management, as they would do in other parts of the world. In the EU (and beyond) an Ecolabel (including criteria on reducing waste production) has been developed for Tourist Accommodation Services and Campsite Services, whereas others are using an ISO 14001 certification.

The tourism Action fiche, building on a survey of Caribbean hotels, intends to clarify which progress could be made to reduce waste generation and improve waste treatment. Proposals are made to develop innovative approaches such as voluntary commitments by hotels or the cruise industry inspired by the Global Plastic Tourism Initiative, or a charter on good practices for sustainable cruise tourism as currently under preparation in the EU.

Ports are also of major economic importance in the Caribbean region. Moreover, a reason why waste management in ports deserves particular attention is that maritime transport is expected to grow in the future (containers in Kingston, Port of Spain, San Juan or Bajos de Haina for instance) as well as cruise ships traffic (once the Covid pandemic is over). A move towards circular

economy should be linked to the sustainability of the entire maritime sector and should therefore consider waste handling in ports, ensuring that corresponding facilities are in place. The dense network of island ports makes waste management in ports an issue of common interest in order to collectively reach a better environmental record (with less marine litter and better quality of bathing waters).

The main international piece of legislation relevant in the field of waste produced by ships is the IMO MARPOL Convention (International Convention for the Protection of Pollution from ships) of 1973. In the EU, directives adopted on Port Reception Facilities (PRF) create an obligation to provide port waste reception facilities adequate to meet the needs of ships using the port; it also requires the delivery of ship-generated waste and the implementation of a cost recovery system, covering the costs of planning for, collecting and disposal of this waste. Ports have to develop waste handling plans, and vessels have to pay a mandatory fee for landing their waste and to notify in advance what waste they intend to discharge.

The Ports Action fiche, building on a survey of Caribbean ports and Ports authorities, aims at clarifying how ports could contribute to better waste management in the Caribbean region. Proposals are made in order to create a level playing field amongst Caribbean ports, using common sustainability indicators, promoting voluntary commitments such as a charter on solid waste management by ports inspired by the EcoPort scheme developed by ESPO (European Sea Ports Organisation), and supporting on-going efforts to promote a Regional Reception Facility Plan and the creation of Regional Waste Reception Centres.

13. Regional Integrated Pilot Action on Plastic Recycling for the Caribbean

Plastic pollution is perhaps the most dramatic ecological problem that threatens to severely penalize both the marine environment and the whole Caribbean economy.

Some ongoing (*RePLAST: Pilot Plastic Recycling Project – Saint Lucia*) and upcoming (*AFD & GIZ Projects under EU-CARIFORUM Regional Waste Management Programme*) initiatives have started to address plastic recycling

The replication and scaling up some of some of these plastic recycling initiatives throughout the region is important in order to contribute to economies of scale, general environmental protection, and the renewal of the SWM. ***Figure 12*** hereafter presents some of the aspects to take into consideration in the planning and implementation of these initiatives.

Build on RePlast-OECS Project experience on plastic collection & AFD Project within EU-CARIFORUM Regional Waste Management Programme	• work with local agents for preparing plastics for recycling; involvement of private sector and financial incentives to collect plastic bottles • Involvement of hotel chains, cruise companies and ports as "first movers"
Search for economies of scale and synergies in **preparation of plastics for recycling and foster collaboration between the islands**;	• Harmonization of laws and standards and law enforcement are needed.
Establish a **Caribbean market-on-line for scrap-sourcing or ready-to-be recycled plastics**,	• Engaging local partners (SMEs) to actively propose PET bottle scrap / Baled PET bottles for sale, following clearly set rules and standards (*i.e. without caps, rings or labels, …*).
Ship sorted plastic from islands (containers) to sub-regional centers and / or to plastic recycling units	• Feasibility and technical studies needed (*shipping / logistics, regulatory harmonization, …*). • Establishment of regional shipping agreements / framework (*hub and spoke / reverse logistics cf Pacific experience*)
Set pilot plastic recycling unit(s) in selected islands	• Suggested first location: Dominican Republic. • Feasibility and technical studies needed for the recycling units

Figure 12: *Considerations for the replication and scaling up of plastic recycling initiatives in the Caribbean region*

The replication and dissemination of such a pilot project at a regional level presents significant political and legislative constraints, that could be addressed both through a "bottom-up" approach, mobilizing and supporting countries to up-grade and reinforce their integrated waste management approaches, while supporting at regional levels (*see the role of regional organizations and international donors active in the region*) the harmonization of methods, tools and joint-initiatives.

The description of this regional pilot action is included in ***Annex 10***.

14. Summary

A regional assessment on SWM has been undertaken for the Caribbean region, looking at the overall regional context as well as the specific national context of each of the 16 CARICOM countries as well as Cuba. The analysis developed in this report highlighted the disparities that exists between the CARICOM countries, in financial, legislative, and technical terms.

Although all countries strongly feel the problem of SWM, as its further deterioration will have dramatic consequences for the entire Caribbean area, the problems and technical drawbacks associated with SWM are many. Currently, one of the priorities for the region is landfill diversion, with options towards recycling, composting, or waste to energy, WtE. Plastic poses a threat both to the environment and to the tourism sector which is the main pillar for the entire Caribbean economy. Both legislative and technical initiatives are already underway in some CARIFORUM Countries; in particular it is worth mentioning the RePLAST project in St. Lucia for the treatment and recycling of plastic.

The consultations in the Caribbean, the interviews with stakeholders and video conferences, as well as the questionnaires provided to key stakeholders, stressed a series of significant aspects which have been reflected throughout the report. Some of these aspects were:

- The **key problem of plastics**;
- The **lack of tools suitable for a complete design on SWM infrastructures;**
- The need to **propose concrete pilot projects as replicable models** to be included as recommendations;
- The need to **design the SWM at a regional or even sub-regional level** for evident economies of scale;
- The importance of **involving the private sector in the SWM** by proposing adequate financial returns on invested capital;
- The need to **develop bankable actions** / **projects** to identify and formulate the economic and financial impact, risks, and finally the convenience from the point of view respectively of the: private sector, public sector, the environment, the economy as a whole.

The most significant existing waste management infrastructure and equipment have been analysed and comments provided. The constraints and gaps in the SWM sector, the lessons learned, and the relevant initiatives in the region have also been assessed. This assessment has highlighted important challenging shortcomings, such as insufficient coverage of collection services, in addition to an inadequate final disposal, leading to a large number of open dumpsites, which support the need to (re)consider waste management as one of the entry points for sustainable development, where waste management should be geared towards waste prevention, minimization and resource management, as major pillars of circular economy.

A set of recommendations including actions for policy and institutional development and technical interventions for the improvement of SWM systems was provided at the regional and national levels, followed by additional recommendations for the implementation of the EU Programme “Support to the effective and sustainable management of Solid Waste in the Caribbean”, and a proposal for a regional pilot action for plastic recycling.

15. Annexes

Annex 1: List of documents consulted

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Annex 3: SWM Questionnaire

Short-term expert support to assess and define opportunities for action in the field of solid waste management (SWM) in the Caribbean

FWC SIEA 2018- LOT 2
EuropeAid/138778/DH/SER/multi
SIEA 2018-445

QUESTIONNAIRE - SWM INFORMATION

NAME	
TITLE & FUNCTION	
INSTITUTION	
COUNTRY	

A. BASELINE QUESTIONS ON SOLID WASTE MANAGEMENT

1. What is the average generation rate for household solid waste in your country (in kg/inh/d)?

2. What is the average collection coverage of all household solid waste (in % of the generated solid waste)?

3. Are there practical regulations for solid waste collection and treatment (Yes or No)? Please, indicate which.

4. Is the private sector already involved in solid waste collection and treatment (Yes or No)? If, yes, please provide details on the initiative. How do you think the private sector could be further involved?

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5. **What is the average percentage of solid waste recycling (in % of the collected solid waste)?**

6. **Is there any central composting platform? Please, expand.**

7. **Is there any public Material Recovery Facility?**

8. **What are the main treatment projects? Please, provide the name of the projects**

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B. ADDITIONAL QUESTIONS ON SOLID WASTE MANAGEMENT

9. **What do you think are the main gaps and constraints in SWM in your country?**

10. **Do you have any suggestion to improve SWM systems in your country? Do you have any suggestions for initiatives that could be implemented at the regional or sub-regional levels?**

11. **How does your country assess ongoing cooperation at regional level (such as the REPMaLi initiative)? Do you know what is done by CARICOM in the field of waste management/circular economy)?**

12. **What do you think would be the added value of regional cooperation? Where do you see additional room for regional cooperation in the field of SWM? In harmonized legislation, harmonized statistics, common infrastructures, partnerships related to waste collection, recycling or other, capacity building, financing?**

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13. **Where do you see room for sub-regional cooperation? Which participants do you think should be involved? In which topics?**

14. **Would you expect better coordination of international donors to promote SWM and circular economy? In which respect?**

15. **Please indicate any lessons learned from any ongoing or past initiatives in SWM.**

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Annex 4: Country Assessment Profile forms for 17 Caribbean countries

Antigua and Barbuda

CARICOM (Caribbean Community) since 1974

OECS founding / protocol member

SICA (no)

WTO member since 1 January 1995 and a member of GATT since 30 March 1987

Caribbean MoU on Port State Control (PSC) signed in 1999 (among 9 founding members)

GENERAL	
Official name	Antigua and Barbuda
International code	AG
HDI (UNDP, 2019)	0.778
Total population (WB, 2019)	97,118
Population growth rate [%] (WB, 2019)	0.86
Main language	English
Capital city	St. John's
Urban population [%] (WB, 2019)	24.51
Main city	St. John's
Population of main city	21,600
Travel & Tourism Industry	62.9% total contribution to GDP (Worls Travel and Tourisl Council, 2014)
EU representation	None
Possible funding partners	UK ; EU
Possible implementing partners	**Environmental Awareness Group "EAG"** : focused on efforts to raise public awareness of the values of – and threats to - natural resources and to promote their sustainable management.
Potential corporate partners (CSR, voluntary agreements, …)	**Green Globe Members (6):** Curtain Bluff Resort, Galley Bay Resort, Hermitage Bay, St. James's Club Resort & Villas, Sugar Ridge Hotel, The Verandah Resort & Spa.
Income group (based on GDP - WB, 2019)	High income
Other comment	-

SWM	
Legislative part	
National SWM framework, including collection and treatment regulations for SWM if any	**National Solid Waste Management Authority (NSWMA) Act, Amendment (No. 6 of 2005)** - Amends NSWMA Act 1995 by redefining the tasks of the NSWMA, by redefining regulation-making powers of Minister and enforcement powers of authorized officers. - Provides indications for the development a Strategic Plan for solid waste **National Solid Waste Management Authority NSWMA Act 1995 (No. 10 of 1995)** - Establishes NSWMA with the responsibility for solid waste collection, storage, treatment and disposal **Environmental Protection Bill (2015)** provides for enforcement by the Environmental Department, Ministry of Health and Environment; **Merchant Shipping Act 2006** : provides that the garbage barges have to be certified for the collection of garbage in the port area, and gives authority to board ships for all aspects of MARPOL. However, does not contain compulsory or enforcement provisions. The law establishes authority to function, but not to enforce MARPOL requirements, and only identifies garbage as SGW, not oil; **Litter Act (Cap. 250; 1983)** - Governs the management of litter in public places. **Public Health Act (Chapt. 353, 1957):** regulation of environmental pollution **Dumping at Sea Act (Cap. 141)** - provides that no dump of any materials within the sea, other than those needed for mooring a ship. **Maritime Areas Act (Cap. 260)** - outlines the preservation of the marine environment and the control of pollution within the environment.

Plastic ban* UNEP / CEP	**Date of ban of plastic bags: Jan 1st, 2016.** Level: national (importation, manufacturing and trading of plastic shopping bags, since Jan 2016, and distribution of such bags at points of sale) **Further phases** (accompagnied by depletion of stock to be followed by monitoring and confiscation): - **July 1st to December 31st, 2017**: **ban on importation and use of food service containers** - **January 1st to June 20th, 2018**: **ban on importation and use of plastic utensils, straws, trays for fruit, meat or vegetable, and egg cartons** **- July 1st, 2018 to January 1st, 2019: ban on importation and use of "naked" Styrofoam coolers**; Bans are extended to all businesses withing the food service industry, including large and small supermarkets, grocery stores and catering sector (*with a result of 15,1% decrease in amount of plastic discarded in landfils in the first year of implementation*). **AirLine Carriers, Private Charters and large Cruise Liners** are (until further notice) exempted from the ban. **This leaves space and create opportunities for voluntary agreements in the sector.** In the same time, while the ban on commercial use of plastic bags has seen major businesses conforming, and as compliance among smaller operators remains problematic, **support to smaller businesses** *(i.e. free distribution of reusable plastic bags*) should emphasized.
Reception & Collection of Ship-Generated Wastes (SGW)* RAC-REMPEITC Caribe	- a modified version of IMO's Standard Format of the Advanced Notification Form for Waste Delivery to Port Reception Facilities is used. - the receipt of food as SGW is prohibited by the government of Antigua and Barbuda, as there are no incineration capabilities and the government is concerned with health risks. - for cruise ships (and airport waste), the transfer of waste occurs from the ship to garbage "bins" on one of two garbage barges that services the port area (*one owned by the SWMA and the other by the private company Island Sanitation*). For cargo ships, garbage is transferred directly to shore-side bins on the pier. For non-food SW a "hauler" (*service provider*) picks up and delivers the waste to the landfill. - disposal fees include charges at the landfill that are imposed by weight (kg), and a tipping fee for nondomestic waste received from ships or airplanes. - cruise ship waste (as well as airport waste) is required to be taken to a separate landfill. **The cost recovery system in place reflects the "polluter pays"-principle**; Government is involved with the cost recovery system (Controller of Customs receives cruise ship levy and SWMA the tipping fees). The current set rate is at **$40 USD/ton**.
Enforcement, Control and (environmental) Monitoring Systems	- the SWMA has been assigned the responsibility to address this situation, but there is currently no legislative and financial mandate to act. - cooperation with other ports in the region regarding the collection and/or treatment of ship generated waste been has not yet been considered (*as the ports are considered competitors*), waste reception tipping fees have been harmonized by OECS since 1995. - legal possibilities to enforce the compliance of ships with the MARPOL regulations have not yet been investigated, and there are currently none in place. Need for additional legislation and enforcement procedures, to prevent illegal pollution discharges from ships in relation to MARPOL *(in addition to Public Health and Litter Acts and procedures in place by the Ministry of Health*). - currently, there is no license system to control the different waste handling operations. - possible reasons / barriers for ships not to discharge their wastes in A&B include the restriction on not receiving food waste. Risks (especially for small ships) also come from limited (or no) reception bins available to dispose of their wastes, and no regulations/ stipulations for such facilities are provided. - the collection of ship generated waste and cargo residues is free for entrepreneurship and there is a market mechanism that includes the requirement for the collector to have a permit.
National SWM authority Other Government Monitoring Systems	**Antigua and Barbuda Waste Recycling Corporation (ABWREC):** - bulk waste reduction through collection, removal and recycling of non-biodegradable materials. - education or sensitisation of the public about recycling. **National Solid Waste Management Authority (NSWMA)** , estabilised through the NSWMA Act 1995 - defines its functions, powers and internal organization (www.laws.gov.ag) - provides storage facilities for solid waste, collect and transport solid waste. - converts dumps to sanitary landfill sites. **Environment Division of the Ministry of Agriculture, Lands, Housing and the Environment** - oversight of environmental issues and development of initiatives for environmental protection.
Technical part	
Household SW generation ratio	0.89 kg/inh/d (2015) (WB, What a waste)
Collection rate	100%
Organic waste	N/A
Plastic waste	N/A
Recycling rate	N/A
Existing pre-collection mode	Private service
Existing collection mode	Private service without transfer
Existing composting facilities	None
Existing recycling facilities	Municipal MRF (Antigua & B waste Recycling corporation)
Existing final treatment facilities	Central landfill (Cooks Sanitary Landfill)
Main type of stakeholders	Private SMEs
Financial part	
Annual budget required (USD / inhabitant)	N/A
Participation form of population	waste tax
Coverage of expenses (%)	N/A

To-action part	
Past or current projects	**Barbuda Zero Waste Working Group** **Coastal clean-ups** (every year; volunteers, such as community groups, schools and private sector, collect marine litter and record data on quantity and types of debris at beaches, waterways and ocean) OECS countries were given (2003) World Bank concessionary loans to **build landfills through the OECS Ship-Generated Waste Management and Solid Waste Management Project**, but many of the landfills are now at or beyond capacity. **National Recycling Program** overseen by the National Solid Waste Management Authority and ABWREC (a subsidized company), in addition to another business exporting recyclable material. **GEF Waste Recycling Programme** (plastics & aluminium containers) implemented by Antigua-Sundown Rotary Club; trans-boundaries through the region, export potential to Trinidad **Different types of reception systems considered for improving ship-generated waste streams**, incl: incinerator (i.e. for wood waste), waste to energy proposals, potential reuse of oily wastes A **deep water harbor** (under port redevelopment project) could potentially present opportunities to consider different reception, treatment and disposal options, depending on investments and risks.
Key issues	Available space and plastic pollution The current landfill is at or beyond capacity and there are monetary constraints that prohibit the development of additional proper landfills Limited equipment to manage and operate the existing landfill
Type of projects needed	Further recovery projects
Main recommendations	Recycling centre
INDC - Intended Nationally Determined Contribution under the UNFCCC Recommendations - Priorities (key sectoral policies, legislation and actions that address Climate Change Mitigation and Adaptation)	17th Nov, 2015: support on-going technical studies with the intention to **construct and operationalize a waste to energy (WTE) plant by 2025**
Final considerations	Quite complete and advanced situation Engamenent of the private sector Improvement of data collection & building monitoring / regulatory capacity

Commonwealth of The Bahamas

CARICOM (Caribbean Community) since 1983

OECS (no)

SICA (no)

In accession process (The Bahamas' Working Party on the Accession was established on 18 July 2001. The Working Party met for the fourth time in April 2019)

Caribbean MoU on Port State Control (PSC) member

GENERAL	
Official name	Commonwealth of The Bahamas
International code	BH
HDI (UNDP, 2019)	0.814
Total population (WB, 2019)	389,482
Population growth rate [%] (WB, 2019)	0.99
Main language	English
Capital city	Nassau
Urban population [%] (WB, 2019)	83.13
Main city	Nassau
Population of main city	266.100
Travel & Tourism Industry* CREST - Center for Responsible Travel www.responsibletravel.org (WWF / Food waste 2018)	47,8% contribution to GDP in 2017 (raising forecasts to be reviewed post-COVID-19) ranking 5th in the Caribbean 398.713 inhabitants (2018) vs 1.335.933 stayover visitors (2017) - more than 80% of Bahamas' food is imported (poor quality of soil, high cost of production) - approx 50% of consumer)oriented food products imported are directed toward the hotel, restaurant, and institutional (HRI) food service sector - donation and diversion opportunities for hotels are available through Nassau food bank "**Hands for Hunger**" (*see **2010 Good Samaritan Act** , reflecting 1996 U.S. Federal Bill Emerson Good Samaritan Food Donation Act that protects donors from the liability of food donations to charitable organization*). Unique in the Caribbean - opportunities for engagement with the **Bahamas Hotel & Tourism Association** through a "**Green Enterprise Seal Checklist**" and a Best Practices Guide for hotels and alliance with the **American Hotel & Lodging Education Institute Partners Program**
EU representation	None
Possible funding partners	EU
Possible implementing partners	**The Bahamas National Trust** - manages the National Park System and conducts marine litter campaigns **Friends of The Environment** - conserve habitats/protected areas: clean-up campaigns, educational programmes) **The Bahamas Reef Environment Education Foundation (BREEF)** - Addresses the issues relating to the marine environment. As well as conduct public education outreach and school programmes. **The Nature Conservancy** - Protects priority land areas and marine habitats. **NGO Bahamas Plastic Movement (BPM)** - advocate of nationwide plastic bans to build a community of education and activism around plastic pollution, empowering Bahamians to contribute to hands on citizen science and environmental leadership https://www.bahamasplasticmovement.org/
Potential corporate partners (CSR, voluntary agreements, …)	**Green Globe Members** (1): Tiamo Resort
Income group (based on GDP - WB, 2019)	High income
Other comment	-

SWM	
Legislative part	
National SWM framework, including collection and treatment regulations for SWM if any	**Environmental Health Services (Collection and Disposal of Waste) (Amendment) Regulations, 2013** - Determine waste disposal charges for waste brought to a waste management facility. **Environmental Health Services (Collection and Disposal of Waste) Regulations, 2004 (Cap. 232)** - Make provision for a public waste collection service and private collection of waste, prescribe rules for the transportation, disposal and collection of domestic and commercial waste including special (hazardous) waste, define prohibited methods of disposal of waste and regulate the operation of waste management facilities including waste recycling plants. **Environmental Health Services Act (Cap. 217; No. 4 of 1987)** - Regulations with respect to water supplies, solid and liquid waste, beaches, seaports, harbours and marinas, including **general Anti-Dumping law, within the Environmental Health Services Act, Chapter 232** **Freeport (Removal of Refuse) Bye-laws, 1967/1976 (Cap. 29)** - Provide for the collection of disposal of refuse in the Freeport area and provide rules relative to prevention of pollution by refuse in that area included waters. - Prohibit, among other things: accumulation of refuse on premises; disposal of trade refuse in another manner as indicated; throwing refuse from vessels into inland waters; and transport of refuse in another manner as indicated. **Water and Sewerage Corporation Act (Cap. 184; 1976)** - Oversees waste disposal, water treatment and water quality. **Local Government Act (No. 5 of 1996)** - Mandates each district council to provide community services, including waste collection and disposal. ***Pollution Control and Waste Management Legislation*** *- Already enacted to address any and all contaminants or pollutants in the form of solid, liquid or gas.*
Plastic ban* UNEP / CEP	**Date of ban:** 1st January 2020 (for full implementation on July 1.) Level: national (import, distribution, selling). Items banned: plastic bags, styrofoam containers, plastic utensils, plastic straws. Prior to the introduction of the ban, the duty rates on reusable shopping bag and the alternatives to the forbidden items were reduced to zero.
Reception & Collection of Ship-Generated Wastes (SGW)* RAC-REMPEITC Caribe	**In Nassau: Ship Generated Waste (SGW) :** handled directly between the ship operators and the service providers without any true government oversight. The Prince Georges Wharf cruise ship terminal is currently the only port that accepts SGW in Nassau. Municipal garbage service provider (Bahamas Waste) ensures large waste bins are available on the pier for requesting ships. SGW, primarily from cruise ships, is disposed directly into the bins (without separation or inspection), hauled away for disposal at the local dump daily. **Freeport, Bahamas is owned and operated by The Grand Bahama Port Authority (GBPA), a private entity** (230-square-mile economic zone) has its own license requirements with rules and penalities provisions; for ships calling to Freeport SGW is receitp by ship agents, working with the Port Authority Sanitation Department; **enforcement and control is ensured of Customs**. Shipyards in Freeport provide waste reception services to clients and bill directly for the use of port facilities.
Enforcement, Control and (environmental) Monitoring Systems	**The Marine Resources, Department of the Ministry of Agriculture and Marine Resources** **The Bahamas Environment, Science & Technology (BEST) Commission** – as an advisory role **Health Inspectors** are assigned to, and are stationed at each port but it is uncertain how well the Environmental Health Services Act is enforced **The Royal Bahamas Defence Force (incl. Coast Guard)** – enforces and maintains the laws. But, there are no means in place for The Bahamas Government to quantify or classify what types of SGW is actually received in the ports, to verify if SGW is being properly disposed of or to determine whether or not there are adequate reception services for the maritime users in each port.
National SWM authority Other Government Agencies & Departments	**Ministry of the Environment and Housing** (www.bahamas.gov.bs) **The Bahamas Environment, Science & Technology (BEST) Commission** – Manages the implementation of multilateral environmental agreements (MEA's) by the government and reviews EIAs and Environmental Management Plans for development projects in Bahamas. **The Port Department** – Regulates all maritime and environmental issues within the port. **The Royal Bahamas Defence Force** – Enforces and maintains the laws.
Technical part	
Household SW generation ratio	1.87 kg/inh/d (2015) * WB "What a Waste"
Collection rate	100%
Recycling rate	N/A
Existing pre-collection mode	Private service
Existing collection mode	Private service without transfer
Existing composting facilities	None
Existing recycling facilities	Municipal MRF (inaugurated in 2015)
Existing final treatment facilities	Central landfil - 2 sanitary landfills
Main type of stakeholders	Private / SMEs
Financial part	
Annual budget required (USD / inhabitant)	N/A
Participation form of population	Tax through water bill
Coverage of expenses (%)	N/A

To-action part	
Past or current projects (*waste minimisation & recycling, marin litter reduction, …*)	**WtE project** **Bahamas National Trust's (BNT) National Parks Clean-Up** (collaborate with private groups and schools throughout various communities around the island to teach the importance of National Marine Parks and clean them up of debris, invasive species, etc.) **Citizen Science Debris Surveys** (locals involved in collecting quantitative data which can be used to mitigate solid waste issues) **Community/Beach Clean-ups** (local community involved in cleaning there community and/or a local beach on a monthly basis) **Community Recycling** (implements community recycling programmes) **National Coastal Awareness Committee (NCAC) - Coastal clean-up initiative** (the Committee, along with private citizens, involved in beach clean-up activities throughout The Bahamas) **Social science surveys** (to identify local perceptions on solid waste and views on mitigation) **The Cape Eleuthera Institute/ Bahamas Plastic Movement - Plastic Beach Project** (citizen science based initiative to study macro and micro plastic concentrations between windward and leeward beaches of South Eleuthera) **Coastal clean-ups** (Ministry of the Environment and the Departments of Marine Resources and Environmental Health in charge of removal of derelict boats, debris such as tires and batteries from the waters that surround the ports). - **bio-economic models for organic waste management** by Inter-American Institute for Cooperation on Agriculture (IICA) and Caribbean Agricultural Research and Development Institute (CARDI) - innovative technologies for compost recipes / techniques and alternative biomass conversion options.
Key issues	Available space
Type of projects needed	Further recovery projects
Main recommendations	Composting platform project
INDC - Intended Nationally Determined Contribution under the UNFCCC Recommendations - Priorities (key sectoral policies, legislation and actions that address Climate Change Mitigation and Adaptation)	17th, November 2015: **Renewable resources** such as **waste-to-energy and biomass** are indigenous to the country, and if developed adequately, should provide cleaner, and in the long term, more affordable alternatives to fossil fuels.
Final considerations	Quite complete and advanced situation

Barbados

CARICOM (Caribbean Community) since 1983

OECS (no)

SICA (no)

WTO member since 1 January 1995 and a member of GATT since 15 February 1967.

Caribbean MoU on Port State Control (PSC) signed in 1999 (among 9 founding members)

GENERAL	
Official name	Barbados
International code	BB
HDI (UNDP, 2019)	0.814
Total population (WB, 2019)	287,025
Population growth rate [%] (WB, 2019)	0.13
Main language	English
Capital city	Bridgetown
Urban population [%] (WB, 2019)	31.16
Main city	Bridgetown
Population of main city	89,000
Travel & Tourism Industry* CREST - Center for Responsible Travel www.responsibletravel.org (WWF / Food waste 2018)	40,6% contribution to GDP in 2017 (raising forecasts to be reviewed post-COVID-19) ranking 8th in the Caribbean 286.336 inhabitants (2018) vs 642.350 stayover visitors (2017) - opportunities for engagement with the **Barbados Hotel & Tourism Association** engages with the private sector on environmental and food-related issues (Barbados Culinary Team and Culinary Alliance of Barbados).
EU representation	Delegation
Possible funding partners	UK ; EU
Possible implementing partners	**Future Centre Trust** : organisers of **Clean-Up Barbados** and conducts recycling programmes **Barbados Blue** – Dive operator at the Hilton, Needham's Point that organises beach clean-ups in partnership with PADI Project AWARE and has a zero litter policy. **Barbados Hotel and Tourism Association (BHTA)** – Umbrella group of hotels and tourist attractions working towards **Green Globe certification** **Barbados Marine Trust** – Dedicated to promoting environmentally & socially-sustainable use of marine areas **Barbados National Union of Fisherfolk Organisations (BARNUFO)** – an association of subsistence fishermen that participate in local conservation programmes. **Barbados Sea Turtle Project** – conserving and protecting endangered sea turtle populations in Barbados through education and awareness programmes and beach monitoring **Bellairs Research Institute of McGill University** – teaching and research offering conservation programmes. **Centre for Resource Management and Environmental Studies (CERMES), University of the West Indies (UWI)** – romotes and facilitates sustainable development in and outside the Caribbean. **Caribbean Youth Environment Network (CYEN)** - promotes education and training, Caribbean integration and community empowerment as tools to develop an ethic amongst young people that assists in the conservation and protection of natural resources within the Wider Caribbean. Coordinates the **International Coastal Cleanup** hosted by **Ocean Conservancy** annually as part of their **Let's Do It Barbados initiative**. **Underwater Barbados** - enables education and awareness of the environment through the dive shops, swimming school and youth educational programme.
Potential corporate partners (CSR, voluntary agreements, …)	**Green Globe Members (18):** Atlantis Submarines – Barbados, Beach View Hotel, Butterfly Beach Hotel, Catalonia Royal Bavaro, Colony Club Hotel, Crystal Cove Hotel, Dover Beach Hotel, Divi Southwinds Beach Resort, Little Arches Boutique Hotel, Radisson Aquatica Resort Barbados, P.B. Events, ECO Lifestyle + Lodge, Southern Palms Beach Club & Resort Hotel, Tamarind Cove Hotel, The House, Turtle Beach Resort, Yellow Bird Hotel, Waves Hotel & Spa.
Income group (based on GDP - WB, 2019)	High income
Other comment	With Barbados major homeport location for many European cruise ships operating in the Caribbean.

SWM	
Legislative part	
National SWM framework, including collection and treatment regulations for SWM if any	**Municipal Solid Waste Tax Bill, 2014** **Health Services Act (Cap. 44)** - defines the regulatory framework for solid waste management in Barbados while the regulations address landfill sitting, littering and dumping, waste containment and waste collection and transportation. **Returnable Containers Act (Cap. 395A; 1987)** - all beverage containers (plastic and non-plastic) have a deposit-refund. - provides the control of the sale of beverages in beverage containers (plastic or non-plastic) whereby a deposit is paid on sale and a refund is provided when returned to a suitable centre. **Coastal Zone Management Act (No.39 of 1998)** - provides a comprehensive, statutory basis for coastal zone management and planning. **National Conservation Commission Act (Cap 393; 1985)** **-** provides for the conservation of public parks, beaches, caves, and related matters, and to make provision for the conservation of sites and buildings of national interest. **Underground Water Control Act (and Territorial Waters Act)** - regulates the disposal of sewerage or waste into the ground via water wells.
Plastic ban* UNEP / CEP	**Date of ban: Apr 1st, 2020.** Level: national. Items banned: Plastic and Styrofoam T**emporary stop (April 2020)** of the ban on sale and use on single-use plastic bags, as **biodedegradable resin** used for the production of biodegradable plastic bags, i**n short supply on the world market**, due to a lack of materials under the COVID-19 curfew.
Reception & Collection of Ship-Generated Wastes (SGW)* RAC-REMPEITC Caribe	- **Ship Generated Waste (SGW)** is mostly considered domestic waste in Barbados, as Barbados is considered as homeport for major cruise ships from the region. By policy, only combustible garbage is received in Barbados, and it must be **incinerated at the port**. Under the port health regulations, SGW is not allowed to be transported directly from ships to the landfill. - only **ash from garbage incinerations** is allowed to be transported off the port to the **landfill**. Initial design of the incinerator was supposed to be smokeless system. Many ships have their own incinerators on board (*question: ashes could be landfilled as SGW? lack of chain of custody on ash waste*, ...). A more efficient manner of incineration needs to be considered, as well as the need to incinerate all wood pallets. - **co-operation with other ports in the region regarding the collection and/or treatment of SGW been has not yet been considered**, however, Barbados is already handling regional waste for regional cruisers. - **studies on types of reception systems** for improving ship-generated waste streams such as recycling.
Enforcement, Control and (environmental) Monitoring Systems	- **legal possibilities to enforce the compliance of ships with the MARPOL regulations** have not been investigated and none are currently in place. No permit requirement for port reception facilities; however, the waste haulers are required a permit issued by the Environmental Protection Department for SGW transport - **the price to receive SGW is too low to be considered as a cost recovery mechanism** that reflects a "polluter pays" - principle.
National SWM authority Other Government Monitoring Systems	**Environmental Health Officers, Ministry of Health** - assist in monitoring and enforcement aspects of solid waste management. **Sanitation Service Authority (SSA), Ministry of Health** - responsible for non-hazardous solid waste collection and disposal from homes and government agencies island-wide. **Solid Waste Project Unit (SWPU), Ministry of Environment and Drainage** - implements the Integrated Solid Waste Management Programme and manages solid waste in Barbados. **Coastal Zone Management Unit (CZMU)** **National Conservation Commission (NCC)** - responsible for the Adopt-A-Beach Programme. **Ministry of Tourism and International Transport** - responsible for the port control, marinas, safety and pollution in territorial waters, as well as promote the coastal environment as a tourism asset and Barbados as a clean, environmentally friendly destination.
Technical part	
Household SW generation ratio	1.80 kg/inh/d (2015) (WB, What a waste)
Collection rate	90%
Organic waste (CREST study on food waste 2018)	51% of the solid waste stream
Plastic waste	N/A
Recycling rate	20%
Existing pre-collection mode	Private service
Existing collection mode	Private service without transfer
Existing composting facilities	Sustainable Barbados Recycling Centers maintains a small composting project as well (but doesn't officially accept food waste) Domestic workshops
Existing recycling facilities	Private MRF (Sustainable Barbados recycling centre)
Existing final treatment facilities	Central landfill (Mangrove landfills + 4 phases)
Main type of stakeholders	Private companies
Financial part	
Annual budget required (USD / inhabitant)	N/A
Participation form of population	waste tax
Coverage of expenses (%)	N/A

To-action part	
Past or current projects	- for Ship-Generated Waste: future options of **recycling**, **waste-to-energy technology project**, **improved incineration operations and ash disposal** **- Integrated SWM Programme** **- 4 R's Fair** (organised by the Solid Waste Project Unit; promotes the 4 R's "Reduce, Reuse, Recycle and Recover" of waste minimisation to the public) **- Solid Waste Project Unit's Litter Management Campaign** : posting of signs which state **Don't Dump Don't Litter** and using television commercials, skits and school programmes educating on waste management **- Adopt-Your-Beach Project** - project nurtures relationships by encouraging all interested individuals, communities, organisations and agencies to adopt beaches, through educational and creative conservation activities, such as: regular beach and underwater clean-ups, International Coastal Cleanup Day, design and provision of creative and effective garbage receptacles, benches and tables, re-vegetation initiatives, development and execution of community awareness programmes for beach users. **- Clean Up Barbados, CoRe Network and Green Business** – initiatives done by the Future Centre Trust which promote clean and healthy environment. **- Government Information Service (G.I.S)** – the G.I.S is used by the Ministry of Environment and Drainage to promote environmental awareness via television commercials, short documentaries and skits. **- International Coastal Cleanup Day** – organised by the Caribbean Youth Environment Network, ICC brings together volunteers from different organisations, businesses and schools for underwater and beach clean-ups. **- Ministry adoption of schools** – M.E.D along with EPD and CZMU have adopted schools and assist the schools Environment Club programmes, provide extra education on environmental issues. **- Ministry of Environment and Drainage (M.E.D)** - the gullies programme has projects to curb illegal dumping by involving the community so that they can conduct clean-up activities.
Key issues	Available space + plastic
Type of projects needed	Integrated recycling centre
Main recommendations	Composting platform project
INDC - Intended Nationally Determined Contribution under the UNFCCC Recommendations - Priorities (key sectoral policies, legislation and actions that address Climate Change Mitigation and Adaptation)	28th, September 2015: The emission reduction contributions will be achieved through the **mitigation actions in the energy and waste sectors**, which accounted for the vast majority (88%) of GHG emissions in Barbados in 2008 (base year), thus **planned measures should include waste-to-energy and biomass generation plants**
Final considerations	To carry out bankable SWM projects

Belize

CARICOM (Caribbean Community) since 1974

OECS (no)

SICA full member since 1998

WTO member since 1 January 1995 and a member of GATT since 7 October 1983.

Caribbean MoU on Port State Control (PSC) member

GENERAL	
Official name	Belize
International code	BZ
HDI (UNDP, 2019)	0.716
Total population (WB, 2019)	390,353
Population growth rate [%] (WB, 2019)	1.88
Main language	English
Capital city	Belmopan
Urban population [%] (WB, 2019)	45.87
Main city	Belmopan
Population of main city	13,939
Travel & Tourism Industry* CREST - Center for Responsible Travel www.responsibletravel.org (WWF / Food waste 2018)	41,3% contribution to GDP in 2017 (raising forecasts to be reviewed post-COVID-19) 381.352 inhabitants (2018) vs 427.109 stayover visitors (2017) - as most of Caribbean countries (except Bahamas), Belize does not currently have policies in place to donate or divert food waste from landfills - however, multiple food banks in place (programs run the by Belize Red Cross Society and San Pedro Food Bank), in parallel to a government program to provide subsidized groceries ot low-income families. One governmental entity is involved in small-scale food donation (Belize Agriculture Health Authority) - tourism sector should emphasize the need of the introduction of large-scale composting and food waste processing developments, in order to preserve destinations - opportunities fordiverting hotels and resort food waste from landfills through the food banks and government subsidized food programs - unlike most of Caribbean countries whose hotel associations are (at least partially) industry-facing, the **Belize Hotel Association (BHA)** is consumer-facing, focusing on the marketing of hotels; activities related to education and sensibilization on food waste prevention and reduction could be supported; other potential partners **Belize Tourism Industry Association** and **Belize Tourism Board**
EU representation	None
Possible funding partners	IDB ; GIZ
Possible implementing partners	**- GIZ** **- Belize Tourism Board or Belize Tourism Industry Association** : regulates tour operators' collection and disposal of garbage during tours, especially coastal areas **- Belize Audubon Society (BAS)** – facilitated the passage of legislation for the protection of wildlife and establishment of protected areas, including conservation and protection activities **- Environmental Conservation Organization (ECOMAR)** – NGO specialised in marine conservation practices, research and education and outreach activities in order to preserve Belize's marine environment. **- Environmental Research Institute, University of Belize** – Increase the local capacity for research and monitoring that exists in Belize with respect to the sustainable management of Belize's natural resources. ***- Mesoamerican Barrier Reef Systems Project (MBRS)*** *– enhance the protection of the marine ecosystems comprising of the Mesoamerican Barrier Reef System* **- Protected Areas Conservation Trust (PACT)** – PACT provides funds for conservation and sustainable management of natural and cultural resources in Belize. **- Toledo Institute for Development and the Environment (TIDE)** – foster community participation in resource management, monitoring and sustainable use of ecosystems within the Maya Mountain Marine Corridor (3 protected areas including a marine reserve, Port Honduras Marine Reserve). **- ReefKeeper Belize:** educates Belizean students about protecting their reefs, mangrove and seagrass through classroom visits and field trips to the Cayes Ilsands https://www.facebook.com/reefkeeperbelize/
Potential corporate partners (CSR, voluntary agreements, …)	N/A
Income group (based on GDP - WB, 2019)	Upper middle income
Other comment	-

SWM	
Legislative part	
National SWM framework, including collection and treatment regulation s for SWM if any	**Solid Waste Management Authority Act (1991 revised in 2000 and 2003)** - responsible for proper management and disposal of waste throughout the country. **Environmental Protection Act (Cap 328; No. 22 of 1992)** - prohibits the dumping of garbage, toxic substances or hazardous waste and other sources of marine pollution. **Littering Offences (Violation of Tickets) Regulations (S.I. 130) (1991)** - empowers authorised officers (police, public health officers, etc.) to issue violation tickets to people committing littering offences. **Removal of Refuse By-Laws (Local Government)** - mandates the senior health officer with the authority to arrange the removal of household refuse from a district or to oblige the occupier of the premises to remove the refuse and dispose of that refuse. **Summary Jurisdiction (Offenses) Act (Cap. 99)** - makes illegal the throwing of rubbish in any street, watercourse, pond, reservoir, thoroughfare or seashore and requires that private premises be kept clean. **Belize Port Authority Act (Cap. 233; revised 2003)** - prohibits depositing, placing or discharging pollution into coastal waters. **Pollution Regulation (1995)** - responsible for regulation of pollution and effluent discharge into the environment incl. the marine area. **Dumping at Sea Act (1974) (U.K.)** - prohibits dumping of substances at sea by vessels.
Plastic ban* UNEP / CEP	Date of ban: April 22nd, 2019 (effective). Level: National. Items banned: single-use plastic bags and food utensil and styrofoam
Reception & Collection of Ship Generated Wastes (SGW)* *RAC-REMPEITC Caribe	- has an unofficial policy of not accepting SGW (ship-generated waste) - Belize Waste Control lacks a ship to shore procedure for receiving such waste. - responsibilities have also not been assigned to a port planning team with regard to port reception facilities and none of the necessary safety requirements for port reception facilities have not been developed. - the Port Authority would be the appropriate agency to develop a port waste management plan.
Enforcement, Control and (Environmental) Monitoring Systems	- besides port state control, legal possibilities to enforce the compliance of ships with the MARPOL regulations have not been investigated and are not in place. - no license system in place to control the different waste handling operations, with respect to, types of operations, issue of licenses, incl. the requirements for obtaining licenses or applicable fees. - as far as cost recovery mechanisms, there is currently a Head Tax from cruise ships, which goes to The Protected Areas Conservation Trust (PACT), with small return to the Port Authority; Environmental Monitoring fee in place by the Belize Department of Environment Services for facility that requires environmental clearance - technology and infrastructure for waste handling are well-developed, well-maintained, landfill monitored; - was also considered the possibility of having barges receive waste from cruise ships that anchored offshore, in order to improve SGW streams (but yet not accepted).
National SWM authority Other Government Monitoring Systems	**Belize Solid Waste Management Authority "BSWaMA"** - ensures that solid waste is managed in an environmentally sound way + town councils; manages 3 solide waste management facilities in the Western Corridor (*Belize City, San Ignacio / Santa Elena / Bemque Viejo, San Pedro Ambergris Caye and Caye Caulker*) **Department of the Environment** - regulates the disposal of litter from vessels and coastal communities, incl. control of pollution, conducts clean-up and public awareness campaigns **Coastal Zone Management Authority & Institute (CZMAI)** **-** supports the allocation, sustainable use and planned development of Belize's coastal resources through increased knowledge and the building of alliances for the benefit of all local people and the global community.
Technical part	
Household SW generation ratio	0.77 kg/inh/d (2015) ; 1.07 kg/inh/d (2011)* WB What a waste
Collection rate	85% (IDB); 85,2% (http://www.atlas.d-waste.com/)
Organic waste	60% (http://www.atlas.d-waste.com/)
Plastic waste	5% (http://www.atlas.d-waste.com/)
Recycling rate	> 2% (Returnable Containers Act)
Existing pre-collection mode	Private service
Existing collection mode	Private service with transfer (increasing network of transfer stations, adequate hardware and infrastructure)
Existing composting facilities	There have been only household or small-scale efforts to compost. A four-year strategy (2011) for solid waste management facilities planned for the construction of composting facilities, but was never fully implemented.
Existing recycling facilities	Private MRF.
Existing final treatment facilities	Central sanitary landfill
Main type of stakeholders	Private / SMEs
Financial part	
Annual budget required (USD / inhabitant)	N/A
Participation form of population	Environmental tax on imports (3%) ; Property taxes
Coverage of expenses (%)	N/A

To-action part	
Past or current projects	- Sanitary landfill and transfer stations in project; encapsulation of hazardous waste and leachates treatment **- Coastal and River Clean-ups** – conducted by many NGO's. Some of activities conducted on **Earth Day**. **- Litter Warden and Recycling Programme** – aids in the installation of schools garbage and recycling bins **- Multimedia Education Programme** – inform and engage the public about marine litter and the impacts. - **bio-economic models for organic waste management** by Inter-American Institute for Cooperation on Agriculture (IICA) and Caribbean Agricultural Research and Development Institute (CARDI) - innovative technologies for compost recipes / techniques and alternative biomass conversion options.
Key issues	Recovery rates. Option for a waste-to-energy system has been considered but influx per day of garbage insufficient (140m2/day, while at least 200m3 are required).
Type of projects needed	Improvement of legal framework; Projects of composting and recycling facilities; Source separation of recyclables.
Main recommendations	Support private sector about recycling
INDC - Intended Nationally Determined Contribution under the UNFCCC Recommendations - Priorities (key sectoral policies, legislation and actions that address Climate Change Mitigation and Adaptation)	1st October, 2015: **Develop and Implementation of the Strategy and Plan to operationalize the NSWMP** (The National Solid Waste Management Policy - NSWMP). Methodology for emissions accounting to be developed as part of the Strategy & Plan to operationalize the NSWMP, but information on emission not available. Implement **programmes to reduce, reuse, recover and recycle solid waste and reduce greenhouse gas emissions** into the atmosphere.
Final considerations	Continental / Central America Country

Cuba

In 2017 the Republic of Cuba and the Caribbean Community (CARICOM) bloc signed the "CARICOM-Cuba Trade and Economic Cooperation Agreement"

OECS (No, but cooperation relations)

SICA (No)

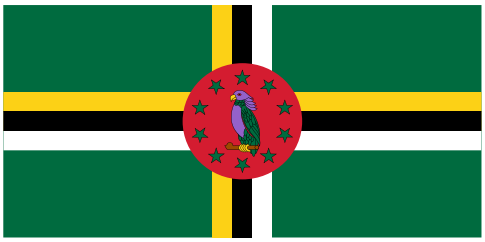
WTO since 20 April 1995 and a member of GATT since 1 January 1948

Caribbean MoU on Port State Control (PSC) member

GENERAL	
Official name	Cuba
International code	CU
HDI (UNDP, 2019)	0.783
Total population (WB, 2019)	11,333,483
Population growth rate [%] (WB, 2019)	-0.04%
Main language	Spanish
Capital city	Havana
Urban population [%] (WB, 2019)	77.11
Main city	Avana
Population of main city	2,140,000
Travel & Tourism Industry	4.71Mio touristes, 2,8% du GDP (https://www.worlddata.info/america/cuba/tourism.php)
EU representation	Delegation
Possible funding partners	AFD ; EU
Possible implementing partners	-
Potential corporate partners (CSR, voluntary agreements, …)	**Wave of change (Iberostar Group & EarthCheck Alliance):** 18 hotels
Income group (based on GDP - WB, 2019)	Upper middle income
Other comment	-

SWM	
Legislative part	
National SWM framework, including collection and treatment regulations for SWM if any	**Resolution No. 136/2009 - Regulations for the comprehensive management of hazardous waste** - Establish the provisions that contribute to ensuring the comprehensive management of hazardous wastes, by preventing their generation at the source and safe handling of the same throughout their life cycle, in order to minimize risks to human health and the environment. **Resolution No. 53/2000 - Amends Resolution No. 87/1999 - National Authority and Contact Point of the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal** - Incorporates a provision on the categories of hazardous waste. **Resolution No. 69/2000 - Procedure for the certification of the granting of tariff reductions to technologies for the control and treatment of waste and emissions - Implements Resolution No. 13/99 - Bonus for the payment of customs duty for imports of technology for the control and treatment of waste from existing facilities** - Establishes the procedure for the certification of the granting of tariff discounts to technologies destined to imports of machinery, equipment and accessories that constitute a technology for the control, reduction and treatment of residual facilities and polluting loads to the environment. **Resolution No. 211/97 - Regulations for the management and final disposal of ship garbage** - Aims to establish the operational procedures and standards that guarantee compliance with the fundamental requirements to prevent contamination of Cuban waters by garbage from ships. **Law of the Environment (No. 81 of 1997)** - Dumping of wastes that may affect human health or harm the quality of life of the population is prohibited. **Public Health Law (No. 41 of 1983)** - States that the Ministry of Health dictates the measures related to environmental health control concerning the prevention and control of air, soil and water, and solid waste among others. **Environment and Rational Use of Natural Resources Act (No. 33 of 1981)** - Embodies natural resource conservation and protection and includes proper waste management. - Dumping in any watercourse or water body and on land is prohibited. - Dumping of garbage or rubbish onto the coastal areas and waters is prohibited.
Plastic ban* UNEP / CEP	**No ban in place, in discussions or announces**
Reception & Collection of Ship-Generated Wastes (SGW)* RAC-REMPEITC Caribe	N/A
Enforcement, Control and (environmental) Monitoring Systems	N/A
National SWM authority Other Government Monitoring Systems	**Environment Agency, Ministry of Science, Technology and Environment** - Responsible for environmental management in Cuba.

Technical part	
Household SW generation ratio	0.67kg/inh/d (2015) (WB, What a waste)
Collection rate	76% (http://www.atlas.d-waste.com/) basic function provided by the government, with no private waste haulers in existence
Organic waste	69% (http://www.atlas.d-waste.com/)
Plastic waste	10% (http://www.atlas.d-waste.com/)
Recycling rate	4,8% (http://www.atlas.d-waste.com/)
Existing pre-collection mode	Service of CBOs
Existing collection mode	Direct service with transfer
Existing composting facilities	Domestic workshops
Existing recycling facilities	Private recycling workshops
Existing final treatment facilities	Central landfill (18 provincial sanitary landfills)
Main type of stakeholders	Public company
Financial part	
Annual budget required (USD / inhabitant)	N/A
Participation form of population	waste tax
Coverage of expenses (%)	N/A
To-action part	
Past or current projects	**Integrated managment Plan of SWM in Havana** **Recycling Programmes** (conducted in the city of Santiago de Cuba) Andalusian Agency for International Cooperation, the Cordoba City Council and the Cordoba municipal sanitation company (donation for the collection of solid waste).
Key issues	Lack of funds for a national action plan
Type of projects needed	WtE; full recycling
Main recommendations	PPP recycling projects Taking inspiration from Barcelona's Superblock system, this zero-sum waste management intervention utilizes this concept by prioritizing inner streets for primarily pedestrian use and relegating most vehicular movement, including government-regulated waste collection, to the outer grid. Supplementary to the Superblock Collection System, a microhauling system will also be put in place to collect solid and organic waste and bring them to the appropriate processing points within the inner grid, by using low or zero tailpipe emission vehicles, like bicitaxis, bikes, e-bikes and electric vehicles. An Upcycling Hub an innovative solution to the massive amount of single-use waste through the transformation (or adaptive reuse) of by-products into new materials or functions of high value and quality.
INDC - Intended Nationally Determined Contribution under the UNFCCC Recommendations - Priorities (key sectoral policies, legislation and actions that address Climate Change Mitigation and Adaptation)	23 November, 2015: Forecasted contributions, per sector, include waste water (**reduction of greenhouse effect gases emissions in the swine industry) but do not mention the solid waste**
Final considerations	-



Commonwealth of Dominica

CARICOM (Caribbean Community) since 1974

OECS founding / protocol member

SICA (no)

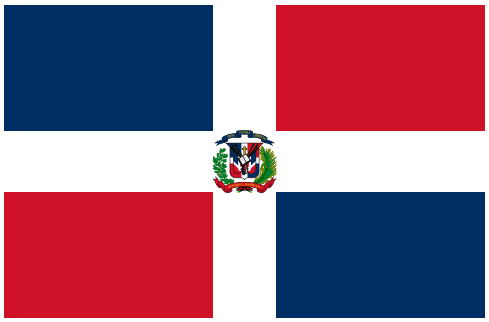
WTO member since 1 January 1995 and a member of GATT since 20 April 1993

Caribbean MoU on Port State Control (PSC) signed in 1999 (among 9 founding members)

GENERAL	
Official name	Dominica
International code	DM
HDI (UNDP, 2019)	0.742
Total population (WB, 2019)	71,808
Population growth rate [%] (WB, 2019)	0.26
Main language	English
Capital city	Roseau
Urban population [%] (WB, 2019)	70.79
Main city	Roseau
Population of main city	15,000
Travel & Tourism Industry	32% total contribution to GDP (Worls Travel and Tourisl Council, 2014)
EU representation	None
Possible funding partners	UK ; EU
Possible implementing partners	**Community Youth Groups** – Participate in the annual National Beach and Waterway Cleanup Campaign and ICC, organises clean-up campaign across the island. **Dominica Youth Environment Organisation, Inc.** – Coordinates the annual National Beach and Waterway clean-up as part of the International Coastal Cleanup (ICC) and conducts Coastal Zone Management workshops. **Soufrière/Scott's HeadMarine Reserve(SMMR)** – Maintaining a healthy reef system & organising underwater clean-ups. **Village Councils** – Local community groups that conduct projects for the cleaning of drains and storm drains to help maintain a healthy community.
Potential corporate partners (CSR, voluntary agreements, …)	**Green Globe Members (2):** Fort Young Hotel & Dive Resort, Secret Bay (Hotel and The Residences)
Income group (based on GDP - WB, 2019)	Upper middle income
Other comment	Dominica works to become the world's first climate resilient nation through renewable energy, organic agriculture and sustainable infrastructure.

SWM	
Legislative part	
National SWM framework, including collection and treatment regulations for SWM if any	**Solid Waste Management (Validation) Act 2006 (No. 1 of 2006) - Amends Solid Waste Management Act 2002 (No. 1 of 2002). Repeals Solid Waste Management Corporation Act 1996 (No. 17 of 1996).** - section 51a imposes an environmental surcharge on such goods imported into Dominica on at such rates as set out in the corresponding columns of Schedule 7 (section 47 concerns the fees payment) - establishment of the Dominica Solid Waste Management Corporation, defines its powers and functions; provides rules for the management, transport and handling of solid waste including hazardous waste and organic waste; provides for the licensing of waste management facilities. **Environmental Health and Services Act (No. 8 of 1997)** – gives the Department of Environmental Health the mandate to investigate problems and institute preventative measures in relation to environmental pollution, the management and disposal of solid [...] wastes and general sanitation. **Litter Act (1990amended No. 20 of 1997)** – provides authority to control litter in public places and private premises **Beach Control Act (Cap 42.; No. 21 of 1966 and 1990)** – control and protection of beaches. **Water and Sewerage Act (Cap. 43; No. 17 of 1989)** – development and control of water supply and sewerage facilities in Dominica and for connected or incidental purposes.
Plastic ban* UNEP / CEP	**Date of ban:** December 2018. 0% import duty on authenticated biodegradable products and reusable shopping bags **Date of ban on all single-use plastic (Go Green Dominica):** Jan 1st, 2019, Level: national. Items banned: plastic bags, styrofoam **Supporting measures:** Gov announced (Feb. 14, 2020) that it will provide all households on the island with jute and cotton bags as sustainable alternative to plastic bags.

Reception & Collection of Ship-Generated Wastes (SGW)* RAC-REMPEITC Caribe	The routes to destinations in the Lesser Antilles are strongly inter-related, mostly to Trinidad & Tobago. Tankers in this region typically attend several adjacent islands after each other and have local concentration on St. Maarten (for the more northern islands) and St. Lucia (for the more southern islands). Dominica thus has a strong dependency on Trinidad, but also with strong connections with **Barbados**, **Antigua & Barbuda**, **St. Lucia** and **St. Kitts & Nevis**. Other connected destinations include Grenada, **St. Martin**, British Virgin Islands and Martinique.
Enforcement, Control and (environmental) Monitoring Systems	N/A
National SWM authority Other Government Monitoring Systems	**Dominica SWM** - Responsible for collection of garbage and debris island-wide. Collection Schedule, Fond Cole Landfill Location & Hours of Operation, Recycling and Legislation www.dominica.gov.dm **Environmental Health Department** – Responsible for Dominica's sanitation of collection system, monitors the proper dumping sites which are administered. They identify the location of legal/approved dump sites which works to ensure that healthy communities are maintained. **Solid Waste Environmental Educators Network (SWEEN)** – Provides discussions on waste disposal and other environmental issues. **Solid Waste Management Cooperation and Anti-Litter Lifestyle Beautification Committee -** Responsible for the management of the Anti- Litter Beautification Project.
Technical part	
Household SW generation ratio	0.84 kg/inh/d (2015) (WB, What a waste)
Collection rate	100%
Recycling rate	1-5%
Existing pre-collection mode	Private service
Existing collection mode	Private service without transfer
Organic waste	N/A
Plastic waste	N/A
Existing composting facilities	None
Existing recycling facilities	Private recycling workshops (inaugurated in 2015)
Existing final treatment facilities	Central sanitary landfill (Fonte Colà)
Main type of stakeholders	Private SMEs
Financial part	
Annual budget required (USD / inhabitant)	N/A
Participation form of population	N/A
Coverage of expenses (%)	N/A
To-action part	
Past or current projects	**Review final disposal 3R System** - Conducted by the Dominica Solid Waste Management Corporation which is done within schools. The students are taught the importance of solid waste management, in order to change behaviours and attitudes towards having a clean and green Dominica. OECS countries were given (2003) World Bank concessionary loans to build **landfills** through the OECS Ship-Generated Waste Management and Solid Waste Management Project, but many of the landfills are now at or beyond capacity. **"National Community Day of Service" -** Local Government Departments/Community Development – As part of the Beautification Projects, they manage the collection of debris. **Dive Fest** - Conducted annually by the Dominica Watersports Association which promotes public awareness and education about the marine environment. **International Coastal Cleanup (ICC)** – Conducted by the Dominica Youth Environment Organisation Incorporation. **Soufriere-Scott's Head Marine Reserve (SMMR) Day** - Conducted in June where the residents are exposed to educational information about the marine environment and includes tours, quizzes and other activities. **Kalinago Territory Waste Community-based Management** with the support of the Sustainable Destinations Alliance for the Americas (SDAA) **Food waste composting program in Roseau** - Sustainable Travel International partnered with the United Nations Environment Program (UNEP).
Key issues	Available space
Type of projects needed	Further recovery projects
Main recommendations	Recycling and composting projects
INDC - Intended Nationally Determined Contribution under the UNFCCC Recommendations - Priorities (key sectoral policies, legislation and actions that address Climate Change Mitigation and Adaptation)	August, 2015: Emissions from solid waste are intented to be reduce 78.6% by 2030 (compared to the 2014 year basis); actions should include reducing methane emissions from landfill (commenced in 2005 as a modern, engineered landfilled), through methane venting vents for organic waste decomposition process. Need for an integrated solid waste management system aiming: - diverting organics from the waste stream that is currently deposited in the landfill (organic waste brought into the landfill, 40% of all waste, to be reduced, through separation from source with revised collection system); - suitably preparing the landfill, and installing a flaring system.
Final considerations	Building capacity for waste managing



Dominican Republic

CARICOM (Caribbean Community) Observer

OECS (no)

SICA (Associate Member)

Member of WTO since 9 March 1995 and a member of GATT since 19 May 1950

GENERAL	
Official name	Dominican Republic
International code	DO
HDI (UNDP, 2019)	0.756
Total population (WB, 2019)	10,738,958
Population growth rate [%] (WB, 2019)	1.04
Main language	Spanish
Capital city	Santo Domingo
Urban population [%] (WB, 2019)	81.83
Main city	Santo Domingo
Population of main city	965,040
Travel & Tourism Industry* CREST - Center for Responsible Travel www.responsibletravel.org (WWF / Food waste 2018)	17.2% contribution to GDP in 2017 (raising forecasts to be reviewed post-COVID-19) preeminent tourism destination in the Caribbean 10.866.512 inhabitants (2018) vs 6.187.542 stayover visitors (2017) - food imports are second highest in the Caribbean (poor quality of soil, high cost of production) - approx 20% of consumer-oriented food products imported are directed toward the hotel, restaurant, and institutional (HRI) food service sector - donation and diversion opportunities for hotels are available through initiatives supported by CELAC and FAO (National Food Security and Nutrition Program, supporting the Banco de Alimentos) - there are no incentive policies for food donation, nor regulations or donation protocol, but there is a National Committee for Food Loss and Waste Reduction (relevant post-hurricanes Irma & Maria 2017) - 50-90% of recyclable materials are waste-picked by individuals (as in most of LatAm / Caribbean countries) - community's level of engagement on waste issues, coupled with developing food bank initiatives support food waste prevention and reduction programs within the tourism industry; the Asociacion de Hoteles y Turismo de Republica Dominicana (ASONAHORES) is very active in the sector.
EU representation	Delegation
Possible funding partners	JICA; GIZ; AFD
Possible implementing partners	**- GIZ; AfD** **- Research Center for Marine Biology (CIBIMA), Autonomous University of Santo Domingo** – conducts research on marine and freshwater science, provides solutions aimed at improving the environmental conditions; ongoing is a project on environmental assessment and monitoring of coastal and marine resources. **- Dominican Foundation of Marine Studies (FUNDEMAR)** – promotes the sustainable use of marine ecosystems and resources through research, education and conservation policies. **- Fundación Vida Azul (Blue Life Foundation)** – coordinates the ICC in the Dominican Republic. **- ProgramaEcoMar, Inc.** – conducts research on environmental education, management, biodiversity, fisheries and coastal marine ecology. It offers postgraduate research projects. **- Reef Check, Dominican Republic** – NGO active in coral reef education and awareness and conservation.
Potential corporate partners (CSR, voluntary agreements, …)	**Green Globe Members (14):** Barceló Bávaro Beach-Adults only, Occidental Caribe, Be Live Collection Marien, Be Live Collection Punta Cana, Be Live Experience Hamaca Garden, Club Med Punta Cana, Catalonia Bavaro, Beach Golf & Casino, Chic by Royalton Punta Cana, Club Med Holiday Village Of Punta Cana, Memories Splash Punta Cana, Royalton Punta Cana Resort & Casino, Viva Wyndham Dominicus Beach, Viva Wyndham Dominicus Palace, Viva Wyndham Tangerine **Wave of change (Iberostar Group & EarthCheck Alliance):** Coral Reef Laboratory (pilot project) + 7 hotels
Income group (based on GDP - WB, 2019)	Upper middle income
Other comment	-

SWM	
Legislative part	
National SWM framework, including collection and treatment regulation s for SWM if any	**Law for Comprehensive Management and Co-processing of Waste, approved during August 2020** - New dispositions regarding the management of wastes in order to manage waste and promote the reduction and recycling of such wastes. - Applies to both the public and private sector, as well as citizens and private companies and organisations. **General Environment and Natural Resources Law (GENRL) No. 64-00, 2000** - Establishes the basic principles of environmental protection, management and use of natural resources, and the civil and criminal liabilities and penalties. **National Policy for Integrated Municipal Solid Waste Management** - To achieve a comprehensive management of municipal solid waste, which at the same time avoids or minimizes the negative effects or impacts on the health of the population, is environmentally sustainable and socio-economically viable. - Vice Ministry of Environmental Management instructed, through the Environmental Protection Directorate of the Ministry of the Environment. **Resolution No. 19/2014** - Approves the National Policy for Integrated Municipal Solid Waste Management. **Norm for Environmental Management of Non-Hazardous Solid Waste** - Outlines that the Department of Environment and Natural Resources has the responsibility for the collection, treatment, transport and disposal of non-hazardous municipal solid waste, as well as the establishment of a management mechanism to prevent pollution from solid waste. **Decree No. 164/2014 - Regulation of Law No. 110** - Implements Law No. 110/2013 - Law for the Trade and Export of Waste of Ferrous and Non-Ferrous Metals, Scrap and Scrap of Copper, Aluminum, etc. **Decree No. 47/06** - Quarantine treatments and proper handling of international garbage at airports and ports. ** Coastal and Marine Resources Draft Act* ** Solid Waste Management Draft Act* ** Solid Waste Draft Act* *Regulations regarding collection and treatment should come in 2021.*
Plastic ban* * UNEP / CEP	Ban adopted in 2020
Reception & Collection of Ship-Generated Wastes (SGW)** *RAC-REMPEITC Caribe	- at the government operated ports, agents propose licensed service providers that operate reception trucks; SGW discharge notice is checked by multiple agencies, incl Ministry of Agriculture, Ministry of Health, Port Security, Customs, and Dirección Nacional de Control de Drogas prior to offloading the SGW from vessel - garbage is re-bagged and placed in closed trucks once offloaded from ships (*trucks weighing / customs fee of $40.00 USD per ton*). Service providers pay an annual fee for their licenses, a fee to enter the port, and the Customs tax on the SGQ they carry off the port - SGW taken off ships are mixed together as garbage and taken to private incinerator for sterilization facilities - private contractors work with hazardous waste - by law, wastes cannot be imported into The DR, except under MARPOL by entities certified through the Ministry of Environment.
Enforcement, Control and (environmental) Monitoring Systems	- the Ministry of Environment has administrative control of the twenty six (26) commercial enterprises (*service providers*) working in the solid waste industry. The Ministry of Environment controls the quantities of waste each provider collects; reviews and updates a list of all service providers every six months; and posts the list online for public access. - the Ministry of Agriculture (*for food waste*), Customs, Ports Authorities, the Army and Customs are involved in enforcement of SGW received from ships. - procedures are also in place to check the correctness of the information on the advance notification form in order to facilitate enforcement. This is done by the Ministry of Agriculture and Army representative that conduct Port State Control Exams. - the service providers must also put up a 10% “accomplishment bond” that is determined by a matrix. Service providers must submit an environmental accomplishment report (incl volumes of wastes received and disposal of waste) to the Ministry every six (6) months as a condition for the permit - of the thirteen (13) different ports in the DR, two are private, five are concessions and six are “official” ports that fall directly under the national Port Authority. Stakeholders indicated that the private ports have less constraints and better conditions for the management of SGW. - for small ships, regulations place the responsibility on private marinas to provide for the collection of waste for their facilities, but enforcement of regulations is not effective (only 9-12 persons for over 3,280 different facilities).
National SWM authority	**Departamento del Ministerio** (www.consultoria.gov.do) **Santo Domingo National District Municipality** - responsible for the management of solid waste (i.e. collection and disposal).
Technical part	
Household SW generation ratio	1.06 kg/inh/d (2015); 0.78 kg/inh/d (2014); 0.85 kg/inh/d (2017)* * WB What a waste, MMARN, IDB
Collection rate	90%* (MMARN) ; 69% (http://www.atlas.d-waste.com/); 55,5% of households received direct solid waste collection (CREST Food Waste Study 2018)
Recycling rate	7%* (MMARN)
Existing pre-collection mode	Direct service

Existing collection mode	Private service with transfer
Organic waste	N/A
Plastic waste	N/A
Existing composting facilities	Community-based
Existing recycling facilities	Private MRF
Existing final treatment facilities	Central landfill
Main type of stakeholders	Public company
Financial part	
Annual budget required (USD / inhabitant)	29 USD per ton (26 USD for collection and 3 USD for treatment)* (IDB)
Participation form of population	Tax* (JICA)
Coverage of expenses (%)	90%* (JICA)
To-action part	
Past or current projects	Closure of current dumpsite (JICA) (name!); National plan for SWM; Sanitary landfill + 7 transfer stations for Gran Santo Domingo in project; Biogas project with hotel waste in Punta Cana in project (GIZ + IDB); NUVI for the development of recycling **International Coastal Cleanup (ICC)** – conducted by the Vida Azul Foundation, annual clean-up event (collection and monitoring). **Recycling Programmes** – done by the Vida Azul Foundation. **GFDD (¿Basura o Recurso?)** identifies a number of private sector (small) profitable businesses of "trash diving", ranging from individuals selling recycled bottles to factorins converting newspapers into egg cartons **Regional Initiative for Inclusive Recycling (IRR)** - IDB funded **Community-based composing projects in Los Platanitos** (in collaboration with the University of Texas) **and Laguna Salada**
Key issues	Final treatment ; Recycling Waste reception services
Type of projects needed	National master plan; Treatment infrastructure; Awreness rising; Pilot projects about reycling; Participation to a regional project
Main recommendations	- develop eco-design and recycling through the private sector; - follow-up with other donors involved (JICA, BID and GIZ) **- the collection of SGW and cargo residues is free for entrepreneurship**, and there are market mechanisms in place. However, stakeholders expressed that the collection mechanisms may have been inactive over the past year due to the **unavailability of reception facilities**. **- Punta Cana Resort & Club,** is on of the premier examples of sustainability in the Caribbean - **Caribbean's Leading Green Resort at the World Travel Awards** (2014) and their Zero Waste Initiative: has put in place their own recycling program, including composting **- building upon past DR participation (2017) in "Strengthening of Port Environmental Management in Central America and the Dominican Republic" project,** developped developed within the framework of the Agreement of Environmental Cooperation of the Free Trade Agreement between the Dominican Republic, Central America and the United States of America (DR-CAFTA) and being led by the Central American Commission of Maritime Transport (COCATRAM). **- Ministry of Agriculture has recently (2017) started a program to install incinerators in airports and ship ports; the project began in the northern part of the island, and some private incinerators have since been installed at airports.**
INDC - Intended Nationally Determined Contribution under the UNFCCC Recommendations - Priorities (key sectoral policies, legislation and actions that address Climate Change Mitigation and Adaptation)	18th, August, 2015: Despite the low contribution to global emissions of the countries (less than 0.1%), it is recognized that emissions trends of some economic sectors are important (especially transport, energy, manufacturing and construction, waste and agriculture). In terms of mitigation, tourism and waste management are identified as priority sectors
Final considerations	- many projects in the pipe of the State but weak private sector; - possibily of a regional role to play about recycling; however, government representatives hesitate (environmental / public health concerns) receiving international wastes, eventhough as for infrastructure, the DR has a very strategic location where they could potentially develop better reception facilities.

Grenada

CARICOM (Caribbean Community) since 1974

OECS founding / protocol member

SICA (no)

Member of WTO since 22 February 1996 and a member of GATT since 9 February 1994

Caribbean MoU on Port State Control (PSC) signed in 1999 (among 9 founding members)

GENERAL	
Official name	Grenada
International code	GD
HDI (UNDP, 2019)	0.779
Total population (WB, 2019)	112,003
Population growth rate [%] (WB, 2019)	0.49
Main language	English
Capital city	St. George's
Urban population [%] (WB, 2019)	36.39
Main city	St. George's
Population of main city	39,000
Travel & Tourism Industry	20.3% total contribution to GDP (Worls Travel and Tourisl Council, 2014)
EU representation	None
Possible funding partners	UK ; EU
Possible implementing partners	**Caribbean Youth Environment Network** - Conducts clean ups and awareness programmes. **Grenada Fund for Conservation (GFC)** – Beach clean-ups and mangrove restoration. **Grenada Green Group (G3)** – Beach clean-ups **Education Conservation Outreach (ECO)** – Conducts International Coastal Cleanup. **Ocean Spirits** – Conducts education programmes and sea turtle conservation. **St. Patricks Environmental and Community Tourism Organisation (SPECTO)** – Non-profit environmental and community advocacy group. **Woburn/Woodland Development Organisation (WWDO)** NGO - communities based-development.
Potential corporate partners (CSR, voluntary agreements, …)	**Green Globe Members (4):** Blue Horizons Garden Resort, Mount Cinnamon Resort and Beach Club, Spice Island Beach Resort, True Blue Bay Grenada
Income group (based on GDP - WB, 2019)	Upper middle income
Other comment	-

SWM	
Legislative part	
National SWM framework, including collection and treatment regulations for SWM if any	**Draft Environmental Management Act (2005)** – establishment of an Environmental Management Agency, a Sustainable Development Council and related Committees. **Grenada Solid Waste Management Authority Act** (No.11 of 1995, amended by Act No.30 of 1995 and in 2001) – establishes a SWMA charged with the duty of developing the solid waste management facilities and improving the coverage and effectiveness of solid waste storage, collection and disposal facilities. **Waste Management Act (No. 16 of 2001)** – states that an EIA is needed when designating waste disposal sites and in the decision making processes of waste management; ref to litter and other wastes on coastal areas, territorial waters, terrestrial water bodies, national parks and protected areas **Environmental Levy Order (S.R.O. No. 4 of 2015). Amends Environmental Protection Levy Act (Cap. 90B)/1997 (2007) -** amends the Environmental Protection Levy Act in the Third Schedule with respect to environmental charges to be levied by the Grenada Ports Authority for haulage and disposal of ship-generated waste and the importation of new tyres. **Abatement of Litter Act (No. 10 of 1990)** – prohibits dumping of garbage in public areas and forecasts fine of EC$ 1500 and 6 months imprisonment. **Fisheries Act (No. 25 of 1989)** – has regulations for proper gear storage after use which may prevent pollution. It also prohibits dumping of garbage in coral reef ecosystems and marine protected areas.
Plastic ban* UNEP / CEP	Date of ban: 1 March 2019, Level: national. Items: sale of polystyrene "Styrofoam" materials Date of ban: 1 February 2019, Level: national. Items: single-use plastic bags Date of ban: Sept 1st, 2018. Level: national. Items banned: Styrofoam (importation).

Reception & Collection of Ship-Generated Wastes (SGW)* RAC-REMPEITC Caribe	- while Grenada is seeing larger ships arrive with more waste per call, **the country is currently not a party to MARPOL and all policy/regulations regarding the collection and disposal of SGW falls under provisions governing domestic waste**. - collection of waste from the port zone is done by specialized vehicles and trucks. The waste is then transported to the **Perseverance dumpsite on the Main Island (Grenada) and Dumfries on the Island of Carriacou**. There are **no tipping fees at the dumpsites**. - t**he reception of ship generated waste and cargo residues is free for entrepreneurship in Grenada**. The market mechanism in place includes collection by private contractors for all garbage; and SGW is collected and disposed of in the same manner as domestic waste. - conclusion of the study (stakeholders): Grenada ports should not be considered as Regional Ships Waste Reception Centers (RSWRC) in any Regional Reception Facilities Plan (RRFP).
Enforcement, Control and (environmental) Monitoring Systems	- legal possibilities to enforce the compliance of ships with the MARPOL regulations have yet to be investigated as Grenada is not yet a Party to the MARPOL Convention. - current enforcement of national anti-dumping legislation and port regulations in Grenada pertain to environmental pollution in general. - the Ministry of Health is the government agency that carriers out environmental monitoring and control. - there is currently no license system to control waste handling operations but a business license to operate on the port is required.
National SWM authority Other Government Monitoring Systems	**Environmental Health Department**, Ministry of Health and Social Security – Does waste management. Environmental Department, Ministry of Agriculture, Lands, Forestry, Fisheries & Environment - Manages the natural resources in Grenada. **Fisheries Division (MALFF/PU/E/MNIB)** – Ministry of Agriculture, Lands, Forests & Fisheries/Public Utilities/Energy/Marketing & National Importing Board manage fisheries. **Grenada Ports Authority** – Control of litter associated with the port areas. **Grenada Solid Waste Management Authority** (GSWMA) – Associated with Ministry and responsible for the control of land-based sources of pollution (solid waste).
Technical part	
Household SW generation ratio	0.80 kg/inh/d (2015) (WB, What a waste)
Collection rate	98%
Recycling rate	N/A
Existing pre-collection mode	Private service
Existing collection mode	Private service without transfer
Organic waste	N/A
Plastic waste	N/A
Existing composting facilities	None
Existing recycling facilities	Private recycling workshops (inaugurated in 2015)
Existing final treatment facilities	Central landfill (2 smaller sanitary landfills)
Main type of stakeholders	Private SMEs
Financial part	
Annual budget required (USD / inhabitant)	N/A
Participation form of population	Tax through electr. Bill; levy for importers
Coverage of expenses (%)	80%
To-action part	
Past or current projects	**Challenges** / **Needs:** Increase waste collection points for bottles, PET, plastics; improve reception/treatment facilities, include those for waste separation, incineration and waste-to-energy, and other specialized wastes (such as e-waste). New waste management strategy (draft Waste Management Strategy dates back to 2003) to be developed under an **Integrated Solid Waste Management Project** (ISWMP) Construction of a **new landfill** funded by the Caribbean Development Bank **A current Global Environment Facility (GEF)** World Bank Project for domestic waste is first looking at whether domestic waste can deal with SGW. **The Grenada Young Entrepreneurs Project (GYEP)** - Is a project which aims at supporting sustainable businesses within the environmental sector. The recycling of glass and other materials are one of the focus so that the young entrepreneurs can create new economical and viable materials. **International Coastal Cleanup (ICC)** - The annual clean-up event that garbage is collected and recorded.
Key issues	Plastics
Type of projects needed	Recycling Others: Engineered sanitary landfill, garbage compactors, infrastructure and support services, waste separation facilities or hazardous material handling.
Main recommendations	Full recycling centre; composting platform project Support needed : Waste separation is not practiced, and final disposal of waste is not properly done.
INDC - Intended Nationally Determined Contribution under the UNFCCC Recommendations - Priorities (key sectoral policies, legislation and actions that address Climate Change Mitigation and Adaptation)	**30 November 2020 (2nd NDC):** Interventions in the Energy including transport; Waste; Forestry; and Industrial Processes and Product Use (IPPU) sectors and by leveraging mitigation co-benefits of adaptation actions.
Final considerations	SWM planning with bankable projects

Cooperative Republic of Guyana

CARICOM (Caribbean Community) since 1973 (one of the 4 founding members)

OECS (no)

SICA (no)

WTO member since 1 January 1995 and a member of GATT since 5 July 1966

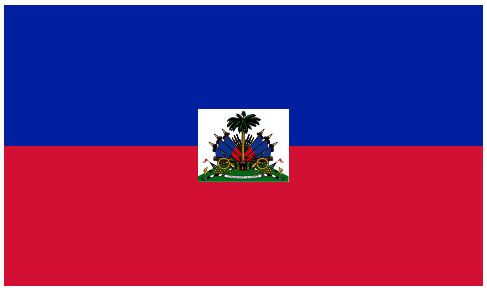
Caribbean MoU on Port State Control (PSC) signed in 1999 (among 9 founding members)

GENERAL	
Official name	Cooperative Republic of Guyana
International code	GY
HDI (UNDP, 2019)	0.682
Total population (WB, 2019)	782,766
Population growth rate [%] (WB, 2019)	0.48
Main language	English
Capital city	Georgetown
Urban population [%] (WB, 2019)	26.69
Main city	Georgetown
Population of main city	245,000
EU representation	Delegation
Possible funding partners	EU, GIZ, AfD
Possible implementing partners	**NSWMA** **Environmental Protection Agenct (EPA) of Guyana** - partnering with supermarkets in Georgetown to minimize the use of plastic bags, as part of Earth Day **Caribbean Youth Environment Network** - conducts clean-ups and environmental awareness programmes. **Friends for Sustainable Coastal Management** – cleaning of seawalls, securing birds and wildlife habitat. **GuyberNet** – national coordinator organises an annual beach clean-up, regular public awareness programmes.
Potential corporate partners (CSR, voluntary agreements, …)	ExxonMobile (associated with Tiger Tanks for private oil waste reception facility) receipts all waste. The waste that Tiger Tanks receives arrives on skiffs/boxes, every month, and all waste that come into their facility is segregated. Tiger Tanks' operation is highly monitored.
Income group (based on GDP - WB, 2019)	Upper middle income
Other comment	-

SWM	
Legislative part	
National SWM framework, including collection and treatment regulation s for SWM if any	**National Solid Waste Management Strategy (2013), including reduction** **Water and Sewerage Act (Cap. 30; No. 5 of 2002)** - introduced through primary legislation, a definition of waste that omits any classification, qualifies itself by entry in to system, via spillage (*any solid or liquid spilled or deposited into water way likely to cause pollution*). **Local Government Act (Cap. 28:02)** - has the overall jurisdiction under the Act for the management of waste in Guyana. **Regional Development Authorities Act (No. 14 of 1977) and Local Democratic Organs Act (No. 12 of 1980)** - give authority to the Region and the communities for waste management. **Public Health (Amendment) Act (No. 31 of 1991)** - amends the Public Health Ordinance Act of 1953, oldest laws in Guyana regulating SWM **Municipal and District Councils Act** - includes how the municipalities and District Councils deal with solid waste management. **National Environmental Action Plan "NEAP" (2001-2005)** - incl a framework for integrating cross-sectoral environmental concerns into broader context of the country's development both economically and socially (*i.e. integrated waste management*) **Environmental Protection Regulations (Water Quality and Waste Management) (2000)** - protect Guyana's waters by controlling discharges of effluent (waste matter) into coastal/inland waters. **Maritime Zones Bill (2009)** – Maritime Boundaries Act (1977) UN Convention on the Law of the Sea (1982): trans-boundary pollution issues, protection and preservation of marine environment. **Hazardous Wastes Management Regulations** - address issues related to storage, transportation, disposal of hazardous materials/waste and classification **Occupational Health & Safety Act (Cap. 99; No. 32 of 1997)** - introduced a duty on employers to conduct work in a manner which does not cause the discharge of any noxious, hazardous, or polluting matter into the air, water, or soil.
Plastic ban* *UNEP / CEP	Date of the ban: January 1st, 2016. Level: national (use, manufacture, importation and distribution). Items banned: all Styrofoam products (2016), single-use plastics (2021).

Reception & Collection of Ship-Generated Wastes (SQW)* *RAC-REMPEIITC Caribe	Ship representatives notify shipping agents of their intent to discharge SGW in port, Ship agents then contact the Port Health authorities to get permission for receiving the SGW. Service providers receive the waste and Port Health officials are to issue certificates authorizing proper disposal.
Enforcement, Control and (environmental) Monitoring Systems	- Guyana has ratified MARPOL, the government has not passed implementation legislation to give it effect of national law; has also ratified 1972 London Convention, but 1996 Convention replacing it has not been ratified. - why penalty provisions in place by EPA and Customs for polluting, enforcement is lacking. - there is currently no regulation or license system, neither for SGW nor domestic garbage waste, which would control the different waste handling operations with respect to types of operations. - there is a need for EPA to be involved, and they are currently working on this issue and investigating legal possibilities to enforce the compliance of ships with the MARPOL - only one approved landfill site for solid domestic waste (and not adapted to hazardous material waste).
National SWM authority Other Government Agencies & Departments	**Environmental Protection Agency (EPA)** - responsible for establishing the regulatory frameworks and enforcement for the reduction of waste and the discharge of waste generation. **Amendment to the Customs Act (2017)**, stipulates that importers of plastic containers pay an environmental levy to the Guyana Revenue Authority (GRA), not as a revenue collection initiative, but a measure to encourage the recycling and reduction of the use of plastics. **Environmental Health Department, Ministry of Health** - monitoring and health risk assessments. - offers advice to Neighbourhood Democratic Councils and Municipalities on Solid Waste Management. **Ministry of Local Government** - regional Democratic Councils and Neighbourhood Democratic Councils collaborated with the Environmental Protection Agency in drafting new solid waste legislation - has the overall jurisdiction under the Local Government Act CAP 28:02 for the management of waste **Solid Waste Management Department, Mayor and City Council Georgetown** - manage solid waste in and around Georgetown, in addition to collection, disposal and to develop new and innovative ways in addressing waste management. **Neighbourhood Democratic Councils (NDC)** - management of local solid waste. **Guyana Advisory Solid Waste Management Association** - responsible for keeping the Georgetown seawall clean and developing a programme for maintenance and sustainability of clean-up in the area. **Maritime Administration Department** - management of harbours and ports of Guyana and for river navigation, including marine environmental aspects relating to pollution and damage. **Environmental Management Consultants (EMC)** **-** conducts environmental and Social Impact Assessments,environmental monitoring and auditing and also biodiversity assessments, monitoring and management plans. **Integrated Coastal Management Committee and Environmental Protection Agency (EPA)** - identification, monitoring, utilisation and management of resources within the coastal zone.
Technical part	
Household SW generation ratio	0.66 kg/inh/d (2010)
Collection rate	60% (2018); 89% (http://www.atlas.d-waste.com/)
Organic waste	49% (http://www.atlas.d-waste.com/)
Plastic waste	10% (http://www.atlas.d-waste.com/)
Recycling rate	5% (2018)
Existing pre-collection mode	Direct service
Existing collection mode	Private service without transfer
Existing composting facilities	Local composting platform
Existing recycling facilities	Private recycling **workshop**
Existing final treatment facilities	Central landfill There are no waste treatment plants in Guyana, except for the private facilities developed independently by commercial operators. The private facility, Tiger Tanks, does employ state of the art technologies Actual cost to dispose of SGW in Guyana was approximately $ 80 to $100 (USD) per cubic meter.
Main type of stakeholders	Private / SMEs
Financial part	
Annual budget required (USD / inhabitant)	0,56 (Georgetown, but nothing outside)
Participation form of population	None
Coverage of expenses (%)	50% (90% in Georgetown)
To-action part	
Past or current projects	**Recycling facility (especially for tyres)** in project; **Biodigestion project** **Anti-litter campaign with litter wardens**, under the Municipal and Districts Councils Act. **International Coastal Cleanup (ICC)** - The annual clean-up event that garbage is collected and recorded. - b**io-economic models for organic waste management** by Inter-American Institute for Cooperation on Agriculture (IICA) and Caribbean Agricultural Research and Development Institute (CARDI) - innovative technologies for compost recipes / techniques and alternative biomass conversion options.
Key issues	Logistical organization / Inaccessibility to the landfill site, especially during heavy rain falls. There are current deficiencies with the waste reception services and challenges in waste management.

Type of projects needed	Sanitary landfill projects by region
Main recommendations	Support final treatment including hazardous waste
INDC - Intended Nationally Determined Contribution under the UNFCCC Recommendations - Priorities (key sectoral policies, legislation and actions that address Climate Change Mitigation and Adaptation)	**8 November 2015:** Work closely with farmers in agricultural areas across Guyana to encourage the use of bio-digesters to reduce waste, produce biogas and provide affordable, healthy and efficient cooking means at the household level.
Final considerations	Big difference between city and countryside



Haiti

CARICOM (Caribbean Community) since 2020 (full members)

OECS (no)

SICA (no)

Member of WTO since 30 January 1996 and a member of GATT since 1 January 1950

GENERAL	
Official name	Haiti
International code	HT
HDI (UNDP, 2019)	0.510
Total population (WB, 2019)	11,263,077
Population growth rate [%] (WB, 2019)	1.25
Main language	French
Capital city	Port-au-Prince
Urban population [%] (WB, 2019)	56.19
Main city	Port-au-Prince
Population of main city	1,234,742
EU representation	Delegation
Possible funding partners	AFD ; EU
Possible implementing partners	**Cooperative Housing Foundation (CFH)** – Conducts a solid waste management programme in the Port-au-Prince metropolitan area. **EnviroSynergy** - Focuses on environmental awareness, education and conducts recycling programmes. **Foundation for the Protection of Marine Biodiversity (FoProBiM)** – Conducts annual beach clean-ups as part of the International Coastal Cleanup and the development of educational materials. **Friends of the Earth** - Campaign for environmental issues. **Haitian Collective for the Protection of Environment and Alternative Development (COHPEDA)** - Umbrella organisation that deals with toxic waste disposal in Haiti. **Haiti Survie** - Develops solid waste management programmes and conducts awareness campaigns. **Oxfam America** – Conducted a pilot project to support the waste collection system in the Carrefour Feuilles Community in Port-au-Prince.
Potential corporate partners (CSR, voluntary agreements, …)	N/A
Income group (based on GDP - WB, 2019)	Low income
Other comment	-

SWM	
Legislative part	
National SWM framework, including collection and treatment regulations for SWM if any	**Strategic plan (2015) (without objectives)** - Law on the creation, organization and operation of the national solid waste management service (SNGRS). **Waste and Public Health Laws: Presidential Decree (1981)** - Provides for the creation of a Solid Waste Metropolitan Collection Service and laws governing the management and the elimination of wastes and appropriate sanctions for perpetrators. **Marine Laws: Le Moniteur (No. 29 of 1975)** - Sanctions the Washington Convention (1972) on the prevention of the pollution of the seas resulting from the immersion of wastes.
Plastic ban* UNEP / CEP	Date of ban: August 1st, 2013 (following a previous attempt, largely ignored). Level: national. Items banned: black plastic bags and foam containers.
Reception & Collection of Ship-Generated Wastes (SGW)* *RAC-REMPEITC Caribe	The most likely partners for potential regional arrangements based on voyage patterns are the Dominican Republic, Jamaica and USA (WCR ports). GISIS database contains the following ports and port facilities for Haiti: - Port-au-Prince (Cimenterie Nationale, Les Moulins d'Haiti, Port Lafito, Port-au-Prince, Terminal Abraham, Terminal Clerie, Terminal Petrolier de Thor, Terminal Varreux SA) - Cap-Haitien (Labadee, Port of Cap-Haitien) - Miragoane (Port de Miragoane) - St Marc (Port of St Marc)

National SWM authority	**Division of Quality of Life and Pollution Management, Ministry of Environment** - Responsible for the control of pollution and waste management and the preparation of the guidelines for the collection, disposal and treatment of waste. **Ministry of Public Health and Population (Ministère de la Santé Publique et de la Population)** - Responsible for solid waste management and public health in Haiti. **Ministry of the Public Works, Transport and Communications** - Partners with waste management departments to fulfil their mission. **Port Authority** - Responsible for Solid waste management. **Metropolitan Solid Waste Collection Service (Service Métropolitain de Collecte des Résidus Solides, SMCRS)** - Responsible for the collection and disposal of municipal waste. **National Solid Waste Management Service (Service National de Gestion des Résidus Solides, SNGRS)** (www.sgcm.gouv.ht). Established by law in 2017
Technical part	
Household SW generation ratio	0.58 kg/inh/d (2015)* What a waste
Collection rate	30%
Organic rate	75% (http://www.atlas.d-waste.com/)
Plastic rate	7% (http://www.atlas.d-waste.com/)
Recycling rate	Medium
Existing pre-collection mode	Private service
Existing collection mode	Direct service withouth transfer
Organic waste	N/A
Plastic waste	N/A
Existing composting facilities	None
Existing recycling facilities	Private recycling workshop
Existing final treatment facilities	Central landfill
Main type of stakeholders	NGOs
Financial part	
Annual budget required (USD / inhabitant)	5 USD / inh (Cap-Haitien)
Participation form of population	Bags
Coverage of expenses (%)	0%
To-action part	
Past or current projects	**Collection project by GRET** (PAP); **Sanitary landfill and transfer stations in project** (Cap-Haitien) **International Coastal clean-ups** – The ICC is conducted annually on the coastlines and in waterways The **UN Stabilization Mission in Haiti (MINUSTAH)** also conducts beach clean-ups and educates and informs the residents of Cap Haitien, Les Cayes and Lully about protecting and cleaning their marine and coastal environment.
Key issues	Working of financial arrangements; Institutional organization
Type of projects needed	Sanitary landfills; Full-scale recycling projects
Main recommendations	New sanitary landfill in PAP; Support private sector about recovery
INDC - Intended Nationally Determined Contribution under the UNFCCC Recommendations - Priorities (key sectoral policies, legislation and actions that address Climate Change Mitigation and Adaptation)	**30 September 2015:** Mitigation priority sectors are **energy, AFLM (agriculture, forestry and land-use), and waste management, namely municipal solide waste** **Further support to the definition and implementatin of a Integrated National Policy for Solid Waste Management (including a Management Plan following the 5RVE-model "*Réduction à la source, Récupération, Réemploi, Recyclage, Réutilisation, Valorisation et Enfouissement*").**
Final considerations	Public projects in progress with support

Jamaica

CARICOM (Caribbean Community) since 1973 (one of the 4 founding members)

OECS (no)

SICA (no)

Member of WTO since 9 March 1995 and a member of GATT since 31 December 1963

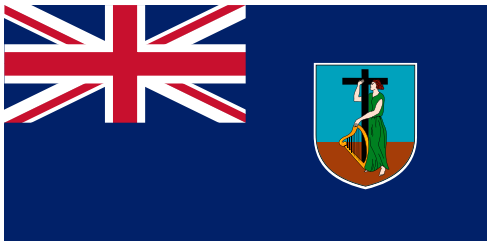
Caribbean MoU on Port State Control (PSC) signed in 1999 (among 9 founding members)

GENERAL	
Official name	Jamaica
International code	JM
HDI (UNDP, 2019)	0.734
Total population (WB, 2019)	2,948,279
Population growth rate [%] (WB, 2019)	0.46
Main language	English
Capital city	Kingston
Urban population [%] (WB, 2019)	55.99
Main city	Kingston
Population of main city	1,243,000
Travel & Tourism Industry* CREST - Center for Responsible Travel www.responsibletravel.org (WWF / Food waste 2018)	- 32,9% contribution to GDP in 2017 (raising forecasts to be reviewed post-COVID-19) - ranking 3rd for international arrivals - 2.897.481 inhabitants (2018) vs 2.352.915 stayover visitors (2017) - several food banks (incl a Food for the Poor branch); support to further establishment of food donation / diversion programs - current engagement among farmers with organic agriculture; pressure to export most of this produce to the US market, but there is an opportunity for hotels to engage with growers and limit their dependency on imports - plans for the establishment of a National Committee for Food Loss and Waste Reduction similar to the DR's - potential national engagement through the Jamaica Hotel & Tourist Association (JHTA)
	USAID's Environmental Audits for Sustainable Tourism (EAST) project identified both direct energy waste, and indirect energy waste through excessive consumption of water, in selected hotels in a pilot project in 1997-2003. The leadership of the tourism sector is particularly responsive to the greening activities that reduce energy costs and enhance the environment.
EU representation	Delegation
Possible funding partners	UNEP; IDB; JICA
Possible implementing partners	NSWMA **Jamaica Environment Trust (JET)** – operates Jamaica's largest environmental education program, the Schools Environment Programme (since 1997). JET delivers a **legal programme**, providing legal advice to communities affected by environmental issues, and conducts campaigns to protect natural resources, organize field trips, environmental events, and coordinates ICC in Jamaica.
Potential corporate partners (CSR, voluntary agreements, …)	**NESTLE** **Green Globe Members (11):** Eden Gardens Wellness Resort & Spa, Half Moon A Rock Resort, Heart College of Hospitality Services, Hyatt Ziva & Hyatt Zilara Rose Hall, Jamaica Inn, Rockhouse Hotel, Royalton White Sands Montego Bay, Royalton Blue Waters Montego Bay, Sunset at the Palms, The Joy Spence Appleton Estate Rum Experience, The Tryall Club **Wave of change (Iberostar Group & EarthCheck Alliance):** 3 hotels
Income group (based on GDP - WB, 2019)	Upper middle income
Other comment	-

SWM	
Legislative part	N/A
National SWM framework, including collection and treatment regulation s for SWM if any	N/A
Plastic ban* *UNEP / CEP	Date of ban: Jan 1st, 2019 (plastic bags), Jan 1st, 2020 (styrofoam). Level: national (manufacture, distribution and use). The ban is complemented by a **Plastic Waste Minimisation project.**

Reception & Collection of Ship-Generated Wastes (SGW)* * RAC-REMPEITC Caribe	- Public and private officials with responsibilities in SGW collaborate by following National Guidelines on the Collection of MARPOL 73/78 ANNEX 1 Waste, and National Guidelines on the Collection of MARPOL 73/78 ANNEX 1 Waste **(which includes also roles and responsibilities for monitoring and enforcement of SGW)** - Jamaica is situated close to major international shipping lanes, an established regional hub for dry cargo shipping, and is a significant cruise ship destination (with main SIDS connections include Dominican Republic, Haiti and Trinidad & Tobago, and the USA) - the development of legislation to implement all Annexes to MARPOL are ongoing, and when finalized will include official requirements for **port reception facilities** (completed?) The National Guidelines on the Collection of MARPOL 73/78 ANNEX I Waste, and National Guidelines on the Collection of MARPOL 73/78 ANNEX V Waste, were developed by Jamaica's National Guidelines Subcommittee of the National Oceans & Coastal Zone Management (NOCZM) Committee as interim measures, using Environmentally Sound Management (ESM) practices, pending the implementation of an adequate regulatory framework to address the matter of ship generated wastes. The stakeholder process employed by officials in Jamaica, and the Guidelines developed may be used as a model for other Wider Caribbean Region SIDS in building their own **process and guidelines in lieu of finalized national MAPROL implementation legislation**. Collection of ship generated waste and cargo residues is free for entrepreneurship and there is a market mechanism in place. Waste contractors have mobile reception facilities which collect the waste from the ships and transport the waste to an end user. An administrative fee if USD200 per transaction is charged to the end user The absence of a dedicated incinerator in the island is one of the most important technological issues regarding disposal of SGW, and prevents wastes such as medical waste and food wastes from being accepted. While Jamaica has seen an increasing number of ships and the size of ships calling at the ports, with a projection of even greater increases with the opening of the expanded Panama Canal, there is no indication of any increase in capacity to handle SGW.
Enforcement, Control and (environmental) Monitoring Systems	**Through the Fixed Penalty Notice (Litter Ticket),** the NSWMA has the power to ticket and charge offenders with fines as high as 10,000 Jamaican dollars per violation.
National SWM authority	**Local Parish Councils** - Collection of waste from some waterways. **National Solid Waste Management Authority** (www.nepa.gov.jm) **-** Manages solid waste, raises awareness of the problem of litter and removal of litter from the drainage system. **National Works Agency** - Collection of waste from waterways, especially gullies, to prevent waste from entering the marine environment. **National Environment and Planning Agency** - Monitors, reports and assesses the marine environment to minimise over-exploitation and depletion of the living marine resources, including fisheries and conducts recycling programmes in local schools. Also conducts a beach clean-up annually. **Maritime Authority of Jamaica, Ministry of Transport and Works**–Responsible for the inspection of ships for the purposes of maritime safety and prevention of marine pollution. **Ocean and Coastal Zone Council, Ministry of Foreign Affairs & Foreign Trade** – its responsibility is to oversee the implementation of the Ocean and Coastal Zone Management Policy.
Technical part	
Household SW generation ratio	1.00 kg/inh/d (2016)* WB What a waste
Collection rate	80% (2019); 73,9% (http://www.atlas.d-waste.com/)
Recycling rate	N/A
Existing pre-collection mode	Direct service
Existing collection mode	Private service without transfer
Existing composting facilities	62.22% of household-generated solid waste is compostable
Existing recycling facilities	N/A
Existing composting facilities	Local composting platform
Existing recycling facilities	Private recycling workshops
Existing final treatment facilities	Central landfill - Nationally centralized through NSWMA
Main type of stakeholders	Public company - Nationally centralized through NSWMA
Financial part	
Annual budget required (USD / inhabitant)	N/A - Nationally centralized through NSWMA
Participation form of population	Property Tax - Ministry of Finance and Public Service
Coverage of expenses (%)	100% - Nationally centralized through NSWMA

To-action part	
Past or current projects	**2015:** Waste is not recognized as such as a priority sector. However, it should be considered as a transversal priority over identified vulnerable sectors (forestry and terrestrial ecosystems, coastal ecosystems, water resources, human settlements, agriculture, tourism and human Health).
Key issues	New strategy in progress
Type of projects needed	Transfer stations; Sanitary landfill sites; Expansion of pilot recycling projects
Main recommendations	Support for sanitary landfills and public MRF A report by the Caribbean Policy Research Institute from 2016 details the many inefficiencies of the NSWMA and suggests that gradual privatization of solid waste management might serve to improve the state of landfills in Jamaica *Caribbean Policy Research Institute. July 2016. Rethinking Solid Waste Management: Privatising the NSWMA http://www.capricaribbean.com/sites/default/files/public/documents/report/rethinking_solid_waste_management_privatising_the_nswma.pdf*
INDC - Intended Nationally Determined Contribution under the UNFCCC Recommendations - Priorities (key sectoral policies, legislation and actions that address Climate Change Mitigation and Adaptation)	**June 2020 (update): Waste (and underlying an integrated waste management strategy) and waste to energy are recognized as prioritary**
Final considerations	PPP project about recovery to be followed



Montserrat

CARICOM (Caribbean Community) since 1974

OECS founding / protocol member

SICA (no)

British overseas territory

GENERAL	
Official name	Montserrat
International code	MS
HDI (UNDP, 2019)	N/A
Total population (UN, 2021)	4,977
Population growth rate [%] (UN, 2021)	-0.02
Main language	English
Capital city	Brades
Urban population [%] (UN, 2015)	0.09
Main city	Salem
Population of main city	1,140
EU representation	None
Possible funding partners	UK ; EU
Possible implementing partners	N/A
Income group (based on GDP - WB, 2019)	N/A
Other comment	-

SWM	
Legislative part	
National SWM framework, including collection and treatment regulations for SWM if any	**Public Health (Collection and Disposal of Refuse) Regulations (Cap. 14.01) Implements Public Health Act (Cap. 14.01). 1982 (2013)** These Regulations, made under the Public Health Act make provision for the collection and processing of refuse and for the enforcement of rules against littering. They also define duties of the owner, occupier, or person in charge of a dwelling house in relation with storage of refuse. Every Environmental Health Officer shall be a litter warden who shall assist in the administration of these Regulations.The Regulations define various offences.
Plastic ban* UNEP / CEP	Date of ban: October 2019 (full ban expected for December 31, 2019). Level: national. Items banned: single-use plastics. Government is expected to identify and support suppliers of biodegradable products to ensure compliance with the plastic ban. An agreement signed (December 2019) between the Gov of Monserrat with UNDP Barbados and OECS to further implement the ban enforcement and supporting measures.
Reception & Collection of Ship-Generated Wastes (SGW)* RAC-REMPEITC Caribe	N/A
Enforcement, Control and (environmental) Monitoring Systems	N/A
National SWM authority Other Government Monitoring Systems	Ministry of Heslth and social services montserrat.worldlegislation.com
Technical part	
Household SW generation ratio	1 kg/inh/d (2015) (WB, What a waste)
Collection rate	100%
Recycling rate	N/A
Existing pre-collection mode	Private service
Existing collection mode	Private service without transfer
Existing composting facilities	None
Existing recycling facilities	Private recycling workshops
Existing final treatment facilities	Central landfill
Main type of stakeholders	NGOs
Financial part	
Annual budget required (USD / inhabitant)	N/A
Participation form of population	N/A
Coverage of expenses (%)	N/A
To-action part	
Past or current projects	Montserrat Recycling and waste Reduction Initiative
Key issues	Available space
Type of projects needed	Further recovery projects
Main recommendations	Action Plan required

INDC - Intended Nationally Determined Contribution under the UNFCCC Recommendations - Priorities (key sectoral policies, legislation and actions that address Climate Change Mitigation and Adaptation)	The United Kingdom includes different geographical boundaries and territories in its various commitments. The UK's domestic goal includes the UK and its Crown dependencies of the Isle of Man, Guernsey and Jersey. Its Kyoto Protocol commitment, on the other hand, includes the above-mentioned Crown dependencies and also the overseas territories of Bermuda, the Cayman Islands, the Falkland Islands, Gibraltar and Montserrat.
Final considerations	**2015:** Waste is not recognized as such as a priority sector. However, it should be considered as a transversal priority over identified vulnerable sectors (forestry and terrestrial ecosystems, coastal ecosystems, water resources, human settlements, agriculture, tourism and human Health).

Commonwealth of St. Kitts and Nevis

CARICOM (Caribbean Community) since 1974 (joined as Saint Christopher - Nevis - Anguilla)

OECS founding / protocol member

SICA (no)

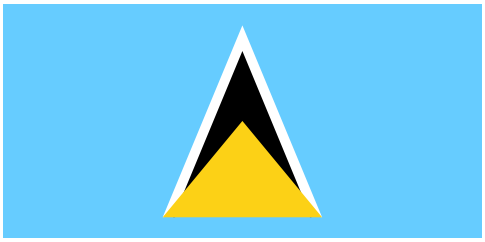
WTO

Caribbean MoU on Port State Control (PSC) member

GENERAL	
Official name	St. Kitts and Nevis
International code	KN
HDI (UNDP, 2019)	0.779
Total population (WB, 2019)	52,834
Population growth rate [%] (WB, 2019)	0.75
Main language	English
Capital city	Basseterre
Urban population [%] (WB, 2019)	30.80
Main city	Basseterre
Population of main city	14,000
Travel & Tourism Industry	22.5% total contribution to GDP (Worls Travel and Tourisl Council, 2014)
EU representation	None
Possible funding partners	UK ; EU
Possible implementing partners	Caribbean Hotel & Tourism Association - Promotes tourism in the Caribbean and urges citizens to maintain clean environments through annual contests, meetings and incentive programmes (e.g. “Green Hotels”).
Income group (based on GDP - WB, 2019)	High income
Other comment	-

SWM	
Legislative part	
National SWM framework, including collection and treatment regulations for SWM if any	1996 SWM Corporation(SWMC) **Solid Waste Management Act, 2009 (No. 11 of 2009). Amended by Solid Waste Management (Amendment) Act, 2009 (No. 38 of 2009).** An Act to provide for the management of solid waste in conformity with the best environmental practices; and to provide for related or incidental matters. This Act makes provision with respect to the management of waste and the prevention of pollution by waste in Saint Christopher and Nevis. This Act amends the Solid Waste Management Act in sections 5, 24 and 49 and inserts a new section (56A) and a new Schedule (5). Section 5 concerns the Solid Waste Management Authority, section 24 concerns collection zones to be prescribed by the Minister, whereas section 49 concerns Litter Wardens. The new section grants power to the Minister to amend the Schedule to the Act and the new Schedule specifies an environmental levy. **Solid Waste Management Corporation Act (1996)** - Provides for the management of solid waste in conformity with the best environmental practices. **St. George’s Declaration of Principles for Environmental Sustainability in the OECS** – Principle 10 relating to marine litter and toxic waste needs to be enforced. D**evelopment Control and Planning Act (No. 14 of 2000)** - Provides for the protection of the environment and improvement of associated amenities with regard to land use planning and management. **National Conservation and Environmental Protection Act (No. 5 of 1987)** – This Act provides for the establishment of a National Conservation Commission and an amendment provided for the establishment of a Department of the Environment **Public Health Act (No. 22 of 1969)** - The Act is the main legislative instrument for managing environmental health issues in St. Kitts and Nevis. It mainly governs the maintenance of general sanitary conditions and cleanliness. **Water Courses and Water Works Ordinance (Cap. 185; 1956)** - Regulates the supply of water to consumers, prevent waste, misuse and pollution of water and control sanitation of watersheds. ***A Merchant Shipping Act, Chapter 7.05****, is in place that regulates ship discharges at sea and contains reference to the implementation of MARPOL solely with regards to oil discharges from ships.* *There is also a* ***Draft Maritime Pollution Act*** *which has not been finalized and approved.*
Plastic ban* UNEP / CEP	N/A
Reception & Collection of Ship-Generated Wastes (SGW)* RAC-REMPEITC Caribe	N/A

Enforcement, Control and (environmental) Monitoring Systems	To enforce the compliance of ships with the MARPOL regulations, the national legislation **(Draft Maritime Pollution Act, 2017)** has to be put in place and / or strengthened. the Department of Health and the St. Christopher and Nevis Solid Waste Management Corporation (SWMC) are responsible for environmental monitoring and control in collaboration with the St. Christopher Air and Seaports Authority.
National SWM authority Other Government Monitoring Systems	**Department of Physical Planning and the Environment, Ministry of Sustainable Development** – Regulates the development of land and buildings. They prevent, mitigate and/or reverse environmental degradation. **Ministry of Health and the Environment** – Responsible for the removal of garbage from beaches. **Solid Waste Management Corporation** – Responsible for waste collection and disposal. **Nevis Solid Waste Management Authority** – Agency responsible for the collection and disposal of domestic waste in Nevis.
Technical part	
Household SW generation ratio	1.50 kg/inh/d (2015) (WB, What a waste)
Collection rate	100%
Recycling rate	N/A
Existing pre-collection mode	Private service
Existing collection mode	Private service without transfer
Existing composting facilities	None
Existing recycling facilities	Private recycling workshops
Existing final treatment facilities	Central landfill (Conaree)
Main type of stakeholders	Private SMEs
Financial part	
Annual budget required (USD / inhabitant)	N/A
Participation form of population	no waste tax; tipping fee
Coverage of expenses (%)	N/A
To-action part	
Past or current projects	OECS countries were given (2003) World Bank concessionary loans to **build landfills through the OECS Ship-Generated Waste Management and Solid Waste Management Project**, but many of the landfills are now at or beyond capacity. **Sandwatch Programme** - Encourages young people to monitor beaches and marine environment. **International Beach Clean-up Day** - The ICC and National Beach Clean-ups are conducted to clean the coastlines of St. Kitts and Nevis as well as to provide the statistical data for the secondary school students School-Based Assessment for Geography and Social Studies. The St. Kitts Tourism Authority is also involved. **One private service provider (Admiral)** has identified possible markets for a limited number of recyclable materials, and currently there is limited entrepreneurship exporting glass, metal, plastic. Admiral has also been experimenting with conversion of vegetable oil to bio-diesel with success on a limited scale; as well as means to re-used motor oil. *Another company was also talking about using waste to fuel (creating "sticks of garbage" to be burned), however, they may have encountered contract/legal issues.*
Key issues	Limited space for landfills use (the landfill that was developed in 2000 was developed to meet the nation's future waste demands for only 14 years, however, that was prior to the development of the large hotel resorts on the island which have created greater demands for landfill space.) There are no incinerators on the island, except at the hospital Currently there are no official recycling programs in place.
Type of projects needed	WtE; plastic treatment
Main recommendations	Plastic collection
INDC - Intended Nationally Determined Contribution under the UNFCCC Recommendations - Priorities (key sectoral policies, legislation and actions that address Climate Change Mitigation and Adaptation)	**2015:** Waste is not recognized as such as a priority sector. However, it should be considered as a transversal priority over identified vulnerable sectors (forestry and terrestrial ecosystems, coastal ecosystems, water resources, human settlements, agriculture, tourism and human Health).
Final considerations	-



St. Lucia

CARICOM (Caribbean Community) since 1974

OECS founding / protocol member

SICA (no)

WTO

Caribbean MoU on Port State Control (PSC) member

GENERAL	
Official name	St. Lucia
International code	LC
HDI (UNDP, 2019)	0.759
Total population (WB, 2019)	182,790
Population growth rate [%] (WB, 2019)	0.49
Main language	English
Capital city	Castries
Urban population [%] (WB, 2019)	18.75
Main city	Castries
Population of main city	22,000
Travel & Tourism Industry* CREST - Center for Responsible Travel www.responsibletravel.org (WWF / Food waste 2018)	41,8% contribution to GDP in 2017 (raising forecasts to be reviewed post-COVID-19) ranking lower comparatively to the rest of the Caribbean because of focus on environmentally-minded visitors 179.564 inhabitants (2018) vs 386.127 stayover visitors (2017) - the Lucian Aid Foundation organizes a food drive each year - potential engagement through St Lucia Hotel & Tourism Association (SLHTA), providing trainings and an Environmental Best Practice Handbook (incl. a section on waste reduction and instructions on composting); there is also an Environmental Committte (all members representing hotels) - significant emphasis on partnersips between tourism and agriculture (approx 30% of all visitor expenditure spent on food) and community involvement. A TripAdvisort barometer study indicated that 60% of guests are likely to expand their "palate" on vacation, and adopting local products
EU representation	None
Possible funding partners	UK ; AFD ; EU
Possible implementing partners	**UNITE-Caribe: implementing RePLAST-OECS (Collection points, vouchers & RePLAST Rewards Cards, cooperation with local RePlast Business Partners)** **Caribbean Youth Environment Network** – Coordinate the ICC, builds awareness and educates the public on proper disposal habits and conducts a recycling programme in secondary schools. **St. Lucia National Trust (SLNT)** – conserves the natural and cultural heritage of St. Lucia, creates and manages environmental protection areas and nature reserves.
Potential corporate partners (CSR, voluntary agreements, …)	**Green Globe Members (8):** Bay Gardens Beach Resort, Bay Gardens Hotel, Bay Gardens Inn, Fond Doux Holiday Plantation, Ladera Resort, The Harbor Club, The Body Holiday LeSport, Royalton Saint Lucia Resort & Spa.
Income group (based on GDP - WB, 2019)	Upper middle income
Other comment	-

SWM	
Legislative part	
National SWM framework, including collection and treatment regulations for SWM if any	N/A
Plastic ban* UNEP / CEP	N/A
Reception & Collection of Ship-Generated Wastes (SGW)* RAC-REMPEITC Caribe	- SGW is removed from ship for disposal or recycling (*and plays the primary role for garbage disposal request*) - recycled waste: classified and charged (*per tariff by Customs*) based on assessed value of recycled material. - other cruise ship material is also received that can be refurbished: creates a business that feeds back to stipends for crew funds, maritime clubs ... - animal and plant wastes are not accepted as SGW The Saint Lucia Waste Management Authority is the governmental agency that has been assigned the responsibility to develop a waste management strategy. A Draft Waste Management Plan was developed as part of an OECS project in 2003, however, implementing legislation for the plan has not been enacted and currently a much needed new strategy is being developed.

Enforcement, Control and (environmental) Monitoring Systems	- St Lucia Customs has in place a **minimal cost recovery system** that stimulates the delivery of wastes to the por; there is annual **Waste Hauler Licenses** for solid waste service providers and ship chandlers (same) A licensing fee for service providers and fees for disposal are in place (charged per ton for receipt of SGW. - **legal possibilities to enforce the compliance of ships with the MARPOL regulations** have been investigated in St Lucia; relevant authorities would be Health Inspectors, Customs, Waste Management Authority and Port Authority, but there are currently no resources in use for quantifying the types and quantities of waste for each MARPOL Annex. - **deficiencies with the waste reception services** and challenges in waste management: no Advisory Panel for developing waste management strategies, no responsibilities have been assigned with regard to port reception facilities, different types of reception systems for improving ship-generated waste streams have yet to be formally considered, nor have different technologies to improve reception and treatment facilities.
National SWM authority Other Government Monitoring Systems	**St. Lucia SWM Authority** 2005 **Castries City Council** – responsible, among others, of regular cleaning of the small drains **Department of Environmental Health, Ministry of Health, Wellness, Human Services and Gender Relations** – regulates the country's waste management activities. **Ministry of Communications, Works and Public Utilities** – cleans the storm drains and Castries River **Ministry of Sustainable Development, Energy, Science and Technology** – environmental management **Ministry of Tourism, Heritage and Creative Industries – Supervises the National Conservation Authority** which clean communities daily and monitors several beaches. **St. Lucia Solid Waste Management Authority** – collection of garbage island-wide and manages recycling programmes in schools.
Technical part	
Household SW generation ratio	1.16 kg/inh/d (2015) (WB, What a waste)
Collection rate	100%
Organic waste	45% of solid waste stream in 2008 (of which food waste constitutes 62%) (CREST 2018 Food Waste Study)
Plastic waste	N/A
Recycling rate	0%
Existing pre-collection mode	Private service
Existing collection mode	Private service without transfer
Existing composting facilities	None, nor organized recycling of food waste
Existing recycling facilities	Private MRF
Existing final treatment facilities	Central landfill (one controlled dumpsite)
Main type of stakeholders	Private SMEs
Financial part	
Annual budget required (USD / inhabitant)	N/A
Participation form of population	Tax through water bill
Coverage of expenses (%)	N/A
To-action part	
Past or current projects	Re PLAST -recycling OECS countries were given (2003) World Bank concessionary loans to build landfills through the OECS Ship-Generated Waste Management and Solid Waste Management Project, but many of the landfills are now at or beyond capacity. Private Sector buy-in from private sector: Massy Stores launched own campaign to promote reusable shopping bags International Coastal Cleanup - The ICC which is conducted by the Caribbean Youth Environment Network in St. Lucia. The Government of Saint Lucia (GOSL), in February 2017 made commitments under the #CleanSeas Campaign (funded by UNEP) to eliminate marine litter. Bio-economic models for organic waste management by Inter-American Institute for Cooperation on Agriculture (IICA) and Caribbean Agricultural Research and Development Institute (CARDI) - innovative technologies for compost recipes / techniques and alternative biomass conversion options SLSWMA implemented a "sustained education and public awareness campaign" on proper waste disposal and but instead require that every visitor to the country pay a small environmental levy, collected by the St. Lucia Air and Sea Ports Authority.
Key issues	**2015:** Waste is not recognized as such as a priority sector. However, it should be considered as a transversal priority over identified vulnerable sectors (forestry and terrestrial ecosystems, coastal ecosystems, water resources, human settlements, agriculture, tourism and human Health).
Type of projects needed	Develop Re-PLAST for full recycling Indicating to the Council of Trade and Economic Development (COTED), as the Member State with responsibility for sustainable development within the Caribbean Community (CARICOM), the need to consider further breaking down the classification of plastics so as to allow a proper disaggregation of the various types of plastics.

Main recommendations	45% organic: **composting platform project** **Optimize the % of transformation of waste into raw material through recycling**. **Pursuing a Waste Management Strategy that includes the conversion of waste to energy** among key sectoral policies, legislation and actions that address Climate Change Mitigation and Adaptation (*INDC - Intended Nationally Determined Contribution under the UN Framework Convention on Climate Change UNFCCC, 17th Nov, 2015*)
INDC - Intended Nationally Determined Contribution under the UNFCCC Recommendations - Priorities (key sectoral policies, legislation and actions that address Climate Change Mitigation and Adaptation)	17th Nov, 2015: Pursuing a **Waste Management Strategy that includes the conversion of waste to energy**
Final considerations	To replicate Re-PLAST in Caribbean

St Vincent and the Grenadines

CARICOM (Caribbean Community) since 1974 (full member)

OECS founding / protocol member

SICA (no)

WTO

Caribbean MoU on Port State Control (PSC) member

GENERAL	
Official name	St Vincent and the Grenadines
International code	VC
HDI (UNDP, 2019)	0.738
Total population (WB, 2019)	110,589
Population growth rate [%] (WB, 2019)	0.34
Main language	English
Capital city	Kingstown
Urban population [%] (WB, 2019)	52.61
Main city	Kingstown
Population of main city	16,500
Travel & Tourism Industry	21.1% total contribution to GDP (Worls Travel and Tourisl Council, 2014)
EU representation	None
Possible funding partners	EU
Possible implementing partners	**Sustainable Grenadines Inc.** – Promotes the conservation of the coastal and marine environment and sustainable livelihoods for the people in the Grenadine islands. **Caribbean Youth Environment Network** - Conducts clean ups and environmental awareness programmes.
Potential corporate partners (CSR, voluntary agreements, …)	**Green Globe Members (1):** Palm Island Resort
Income group (based on GDP - WB, 2019)	Upper middle income
Other comment	Small island country

SWM	
Legislative part	
National SWM framework, including collection and treatment regulation s for SWM if any	N/A
Plastic ban* UNEP / CEP	N/A
Reception & Collection of Ship-Generated Wastes (SGW)* *RAC-REMPEITO Caribe	In Saint Vincent only garbage is accepted as SGW from ships (folloing IMO standard form) The service provider picks up the waste by truck; and brings the waste to the Diamond and Belle Isle Sanitary Landfill, with no tipping fee, receipts, nor fees for service providers to deliver their waste to the landfill Administrative and legal matters as well as technology requirements, infrastructure and support services are all constraints and concerns that prohibit environmentally sound waste handling.

Enforcement, Control and (environment) Monitoring Systems	There are no port waste management plans in place and no inspections of SGW received. They also indicated that while there is a license system in place to control the different waste handling operations, it is not enforced. Government agencies that may carry out environmental monitoring and control could include Ministry of Health – Public Health Department, Customs, Police (National Security), Immigration. There are no resources or methods used for quantifying the types and quantities of waste for each MARPOL Annex received. Legal possibilities to enforce the compliance of ships with the MARPOL regulations have not been investigated as the situation is complicated by not having any enforcement regulations in place. Difficult ot provide legal actions or prosecution for illegal discharges. Stakeholders indicated that there is not a cost recovery mechanism in place that requires involvement of the government and port authorities concerning: monitoring of compliance with regulations and enforcement; financial and administrative matters; nor operational matters (collecting and treating matters). They indicated that the only cost recovery mechanism in place is the collection fee charged by the service providers which amounts to 350 XCD ($129 USD) for every 6 cubic yard cradle used. **This system likely only stimulates the delivery of wastes to the port.** There are current deficiencies with the waste reception services and challenges in waste management; the issue of SGW has not been integrated in the plans and policies for land-generated wastes and responsibilities have not been assigned to a port planning team with regard to port reception facilities. There is no market mechanism in place for the collection of SGW and cargo residue. Lack of adequate disposal facilities is the primary deficiency regarding SGW, and not necessarily waste reception facilities; current treatment and disposal system, such as not having proper incineration capabilities, is not meeting the requirements.
National SWM authority	**Solid Waste Management Unit (SWMU), established in 1999** - Responsible for the collection and disposal of solid waste in the territory. - Governed by the St. Vincent and the Grenadines Waste Management Act and Regulations Act (No. 31 of 2000) and Solid Waste Regulations (No. 11 or 2005). - Executes activities under the OECS Solid and Ship-generated Waste Management Project. **Environmental Health Division, Ministry of Health, Wellness and the Environment** - Promotes sound environmental health practices, including the provision of expenses associated with the removal of garbage and upkeep of public latrines and baths. **Central Water and Sewerage Authority (CWSA)** - Provides solid waste management services. - Manages the SWMU.
Technical part	
Household SW generation ratio	0.79 kg/inh/d (2015)* WB What a waste
Collection rate	100%
Recycling rate	N/A
Existing pre-collection mode	Direct service
Existing collection mode	Direct service without transfer
Existing composting facilities	None
Existing recycling facilities	Municipal MRF
Existing final treatment facilities	Central landfill
Main type of stakeholders	Public company
Financial part	
Annual budget required (USD / inhabitant)	N/A
Participation form of population	N/A
Coverage of expenses (%)	N/A

To-action part	
Past and current projects	**Recycling facility in project** (especially for e-waste) **Sandwatch Programme** - Encourages young people to monitor the beaches and marine environment. **International Coastal Cleanup -** which is conducted annually where the public is involved in the removal of marine litter is and it is quantified. **National recycling program for plastics**, cardboard, scrap metal, green waste (such as compost) and other items, however, this is currently only for national waste and not for SGW. OECS countries were given (2003) World Bank concessionary loans to build landfills through the OECS Ship-Generated Waste Management and Solid Waste Management Project, but many of the landfills are now at or beyond capacity.
Key issues	Small territory
Type of projects needed	Sanitary landfill; Recycling facility
Main recommendations	**2015:** Waste is not recognized as such as a priority sector. However, it should be considered as a transversal priority over identified vulnerable sectors (forestry and terrestrial ecosystems, coastal ecosystems, water resources, human settlements, agriculture, tourism and human Health).
INDC - Intended Nationally Determined Contribution under the UNFCCC Recommendations - Priorities (key sectoral policies, legislation and actions that address Climate Change Mitigation and Adaptation)	18th Nov, 2015: Pursuing a **Waste Management Strategy that includes the conversion of waste to energy** Initiatives are underway to improve energy efficiency in buildings and transport as well as **reduce emissions from waste going to landfill.** **Commitment to mitigating climate change by independently taking concrete measures to reduce emissions, particularly through renewable energy and waste initiatives.** Facilities for waste segregation have been put in place, however to date little segregation has been achieved.
Final considerations	Relate to OECS project

Suriname

CARICOM (Caribbean Community) since 1995 (full member)

OECS (no)

SICA (no)

WTO member since 1 January 1995 and a member of GATT since 22 March 1978

Caribbean MoU on Port State Control (PSC) signed in 1999 (among 9 founding members)

GENERAL	
Official name	Suriname
International code	SR
HDI (UNDP, 2019)	0.738
Total population (WB, 2019)	581,363
Population growth rate [%] (WB, 2019)	0.93
Main language	Dutch
Capital city	Paramaribo
Urban population [%] (WB, 2019)	66.09
Main city	Paramaribo
Population of main city	239,000
EU representation	None
Possible funding partners	NL ; EU
Possible implementing partners	**SuReSur** was founded in 2015. The Foundation would like to play a pioneering role in raising awareness of Surinamese heritage in the field of recycling. She wants to do this by placing a total of 450 collection bins in strategic locations at locations where the plastic bottles and aluminum cans are collected. The intention is that these collected bottles and cans are taken to a recycling company. http://suresur.org/ **University of Suriname** - Responsible for environmental activities and conducts research. **Pan American Health Organisation (PAHO)** - Provides support on proper solid waste disposal and collection as well as environmental awareness. **Foundation for Clean Suriname** - Responsible for clean-ups and environmental projects.
Income group (based on GDP - WB, 2019)	Upper middle income
Other comment	-

SWM	
Legislative part	
National SWM framework, including collection and treatment regulations for SWM if any	**Nature Preservation Law** (1954 revised in 1992 and 1998) – Forms the basis for the establishment of nature reserves. **Hindrance Act (1930, 1944 and 1972)** - Address industrial pollution by permit requirements. ***A Draft Environmental Act*** that contains a penalty code for violations; and ***The Port Act*** which regulates dumping by ships, with penalty provisions for illegal discharges of garbage and oily ballast.
Plastic ban* UNEP / CEP	The Foundation Support Recycling Suriname (Suresur) is working to go for a ban in 2019. SuReSur would like to play a pioneering role in making the Surinamese population aware of the recycling process. The organization has started an online survey and asks respondents what they think about banning plastic bags.
Reception & Collection of Ship-Generated Wastes (SGW)* RAC-REMPEITC Caribe	N/A
Enforcement, Control and (environmental) Monitoring Systems	N/A
National SWM authority Other Government Monitoring Systems	**Department of Solid waste Collection and Disposal, Ministry of Public Works** - Responsible for the collection and disposal of solid waste. **Directorate Milieubeheer** - Responsible for the management of crude waste, clearing of illegal dumping sites and maintaining public gardens. **Ministry of Regional Development** - Responsible for waste collection in the respective districts. **National Institute for Environment and Development** - Initiates the development of national and legal frameworks for environmental policy and management and also provides environmental awareness and education.
Technical part	
Household SW generation ratio	1.67 kg/inh/d (2017)
Collection rate	80% (http://www.atlas.d-waste.com/)
Recycling rate	0% (http://www.atlas.d-waste.com/)
Existing pre-collection mode	Service of CBOs
Existing collection mode	Direct service with transfer
Existing composting facilities	None
Existing recycling facilities	Private MRF (Recycling, PET, plastics, cans, cardboard)

Existing final treatment facilities	Local open dumpsites (Ornamibo)
Main type of stakeholders	Private SMEs
Financial part	
Annual budget required (USD / inhabitant)	N/A
Participation form of population	N/A
Coverage of expenses (%)	N/A
To-action part	
Past or current projects	Pilot project waste separation **Cleanup the World Campaign** - A global initiative which involves communities in the removal of refuse.
Key issues	ActionPlan for SWM
Type of projects needed	Waste separation; recycling; composting
Main recommendations	Recycling
INDC - Intended Nationally Determined Contribution under the UNFCCC Recommendations - Priorities (key sectoral policies, legislation and actions that address Climate Change Mitigation and Adaptation)	30th September, 2015: **study on waste-to-energy at the national landfill and implementation of waste-to-energy technology**
Final considerations	**2015:** Waste is not recognized as such as a priority sector. However, it should be considered as a transversal

Trinidad and Tobago

CARICOM (Caribbean Community) since 1973 (one of the 4 founding members)

OECS (no)

SICA (no)

Member of WTO since 1 March 1995 and a member of GATT since 23 October 1962

Caribbean MoU on Port State Control (PSC) signed in 1999 (among 9 founding members)

GENERAL	
Official name	Trinidad and Tobago
International code	TT
HDI (UNDP, 2019)	0.796
Total population (WB, 2019)	1,394,973
Population growth rate [%] (WB, 2019)	0.37
Main language	English
Capital city	Port of Spain
Urban population [%] (WB, 2019)	53.19
Main city	Port of Spain
Population of main city	37,074
EU representation	Ambassador
Possible funding partners	IDB ; EU
Possible implementing partners	**Green Enviro TT:** local NGO established to nurture a range of environmental stewardship activities and outreach programs **Buccoo Reef Trust** – To assist in the responsible development of Tobago's marine tourism sector and in the conservation of its natural resources. One of its aims is marine conservation through research, education and outreach programmes, restoration and the provision of scientific, technical and human resources for marine park management. This includes marine litter management. **Caribbean Network for Integrated Rural Development (CNIRD)** – Coordinates the ICC as part of its Sustainable Ecological Management section in conjunction with the National Planning Committee (NPC). **Caribbean Youth Environment Network (CYEN)** - Conducts recycling programmes and clean-up activities. **Heroes Foundation** –Non-profit organisation established to promote youth development in the country and coordinates schools across the country to participate in the annual ICC. **Nature Seekers**– To conserve and protect natural organisms by developing the natural and cultural resources in the Matura community in Trinidad. The group cleans the Matura beach to facilitate successful nesting of leatherback turtles. Waste glass is recycled within the Matura community and modified into crafts. Every year, during turtle nesting period, there is a turtle viewing programme where locals and visitors are allowed to see the turtles and learn more about the endangered species. **St. James Empowerment Foundation** –Proposed a project for the implementation and use of bio-engineering techniques (environmental, drainage and landscaping) to reduce the incidence of pollution in the rivers and waterways that lead into the Gulf of Paria from land-based sources in the St. James area. It is a community-managed project with the aim to engage, educate and build capacity via the training of persons in the techniques and effective garbage collection. **Yacht Services Association of Trinidad and Tobago (YSATT)** – Coordination of an annual coastal clean-up day to coincide with the ICC, provides assistance in the clean-up of oil spills, establishment of a Marine Environment Fund to address environmental issues and encourages proper waste disposal and/or recycling facilities for garbage, oil, glass and batteries by all mariners.
Potential corporate partners (CSR, voluntary agreements, …)	Massy Supermarkets, which have instituted a carge for plastics bags in all its stores of the island
Income group (based on GDP - WB, 2019)	High income
Other comment	-

SWM	
Legislative part	
National SWM framework, including collection and treatment regulation s for SWM if any	**Environmental Management Act (Cap. 35:05). 2000 (2014)** - Makes provision for the establishment and functioning of the Environmental Management Authority, for environmental management and impact assessment, for the reduction of pollution, and the protection of natural resources. **National Solid Waste or Resource Management Policy (2012; a 10 year strategy)** - Objective of achieving affordable, sustainable and socially acceptable integrated waste management of solid wastes (exclusive of liquid waste), including hazardous wastes, and substances, in the municipal, commercial and industrial waste streams, in a manner that is protective of human health and the environment. **Beverage Containers Bill (2012)** - Institutes a return deposit system for beverage containers that are sold in Trinidad & Tobago. **Waste Management Rules (2008)** - Seek to address the proper management of hazardous wastes by any person who generates, handles or disposes of any hazardous waste in the country. **Municipal Corporation Act (1990)** - Regulates the activity at the local government level to administer the functions under the Litter and Public Health Acts. **Litter Act (1973), amended by Act No. 10 of 1981, and the Public Health Act (1950)** - Govern solid waste disposal by hotels, restaurants, private businesses and the general public. - Prohibit littering in public places and govern solid waste management in the country, including marine litter, with related regulations.
Plastic ban* *UNEP / CEP	N/A
Reception & Collection of Ship-Generated Wastes (SGW)* *RAC-REMPEITC Caribe	N/A
Enforcement, Control and (environmental) monitoring Systems	The process is of SGW reception and disposal is free for entrepreneurship There is no data collection system in place to identify the volumes of wastes received from ships, the costs charges for waste disposal or other statistics, or the adequacy of facilities available There is no legislation in place to certify waste reception or disposal contractors, and no requirements for companies to state their business operations. Lack of legislation leads to a lack of monitoring and compliance for rogue contractors not disposing in waste at approved facilities. In the absence of domestic legislation and enactment by the designated government authority, there is no incentive for ports to provide information on the type and amount of SGW received. There is potential economic benefit for some ports in Trinidad and Tobago to improve the reception of SGW. **SWMCOL is a State enterprise incorporated in 1980** with an original mandate to close and rehabilitate several nationwide open dumpsites. Currently SWMCOL manages three major Landfills in Trinidad: Beetham Landfill; Guanapo Landfill and Forres Park Landfill. Stakeholders indicated that their **Landfill Rehabilitation** initiative involves reconfiguration and rehabilitation of the landfills as **Material Recovery Facilities**.
National SWM authority and other Government Agencies & Departments	**Tobago Solid Waste Management Company Limited (SWMCOL)** - Since 2018, the Ministry of Rural Development and Local Government has engaged the SWMCOL for the procurement of garbage collection services for the fourteen Municipal Corporations. **Community-based Environmental Protection and Enhancement Programme (CEPEP), Ministry of Housing & Urban Development** - Responsible for reducing the amount of refuse accumulated and deposited on the coastline and inland water bodies. **Municipal Corporations** - Localities are tasked with the provision of several services, including collecting garbage and regular clean-up operations on coastlines.
Technical part	
Household SW generation ratio	1.75 - 2.5 kg/inh/d (2017)* *RAC-REMPEITC Caribe Annex P Trinidad & Tobago
Collection rate	99%
Recycling rate	1%
Existing pre-collection mode	Private service
Existing collection mode	Private service without transfer
Existing composting facilities	-
Existing recycling facilities	Municipal MRF - Beverage Container Recycling Facility
Existing final treatment facilities	Central landfill 3 in the country
Main type of stakeholders	Public company 3 ty the country
Financial part	
Annual budget required (USD / inhabitant)	N/A - Beverage Container Usd Facility
Participation form of population	None 3 ci the country
Coverage of expenses (%)	100% 3 ag the country

To-action part	
Past and current projects	**Sanitary landfill in project;** **Recycling facility in project** **International Coastal Cleanup (ICC)** - The main objective of the ICC is to engage citizens to remove trash and debris from beaches and waterways, identify the sources of debris and change the behavioural patterns that contribute to pollution. **Project Tomorrow** - 'Project Tomorrow' is a 6-month national clean-up exercise funded by the Green Fund, National Environmental Fund of Trinidad and Tobago. The project is under the directive of the EMA and is the precursor to the implementation of the Beverage Containers Bill in Trinidad and Tobago. This Bill is intended to encourage the suitable disposal of beverage receptacles and thus avoid or reduce their adverse environmental effects both on land and in waterways. The main objectives of Project Tomorrow are: - To remove the existing beverage containers in the environment prior to the introduction of the bottle deposit and refund system. - To inform the public, through an aggressive public education and awareness campaign and to solicit citizens' participation and cooperation in maintaining a litter-free environment. - To analyse and collate environmental data with the use of Geographic Information Systems (GIS), and guide future waste management policy. **The Plastikeep Project** - A project created by the Greenlight Network and was initiated to treat the growing problem of indiscriminate disposal of plastics in the environment. Through the Plastikeep Project, plastics are collected and disposed of in an environmentally friendly manner and converted into a useful resource. Through the project, several recycling bins have been installed at strategic locations across the north-western peninsula of Trinidad, a recycling system has been established and the public has been educated on plastic recycling. **Bio-economic models for organic waste management** by Inter-American Institute for Cooperation on Agriculture (IICA) and Caribbean Agricultural Research and Development Institute (CARDI) - innovative technologies for compost recipes / techniques and alternative biomass conversion options.
Key issues	Sanitary landfills
Type of projects needed	Establshment of a SWM authority; Project of composting platforms; Project of plastic recycling Recycling programs in Trinidad and Tobago focus education towards Public Education Programs; Institutions, Schools, Businesses, Communities, and Pilot Community Projects and some initiatives include: - A landfill Sorting and Picking Station at the Guanapo landfill site; - The downstream use of PET Flakes as an additive in concrete; - Preliminary studies being conducted by the University of West Indies for the use of waste in Non-Structural Applications such as decorative bricks and walkways - The use of a Mobile Tire shredder; Port managers want to build downstream logistics services and make their port into a central shipping logistics hub for the country.
Main recommendations	Support for institutional matters and recycling facilities
INDC - Intended Nationally Determined Contribution under the UNFCCC Recommendations - Priorities (key sectoral policies, legislation and actions that address Climate Change Mitigation and Adaptation)	**2015:** Waste is not recognized as such as a priority sector. However, it should be considered as a transversal priority over identified vulnerable sectors (forestry and terrestrial ecosystems, coastal ecosystems, water resources, human settlements, agriculture, tourism and human Health).
Final considerations	Quite advanced country except for recycling

Annex 5: Country-level assessment of focus countries

An in-depth assessment of the SWM systems has been undertaken for the six focus countries, namely, Barbados, St. Lucia, Grenada, Jamaica, Dominican Republic, and Guyana.

A summary of the main features of these systems in the different focus countries, as well as the current management methods for major waste streams in each country is presented herein.

Barbados

Box 23. General country context - Barbados

Barbados is the wealthiest and one of the most developed countries in the Eastern Caribbean and enjoys one of the highest per capita incomes in the region. Historically, the Barbadian economy was dependent on sugarcane cultivation and related activities. However, in recent years the economy has diversified into light industry and tourism. Offshore finance and information services are important foreign exchange earners, boosted by being in the same time zone as eastern US financial centres and by a relatively highly educated workforce. Following the 2008-09 recession, external vulnerabilities such as fluctuations in international oil prices have hurt economic growth, raised Barbados's already high public debt to GDP ratio - which stood at 105% of GDP in 2016 - and cut into its international reserves.

Relevant data:

- Total population: 294,560 inhabitants (2020 est.).
- Population growth rate 0.23% (2020 est.);
- Urban rate: 31.2% of total population (2020)
- Rate of urbanization: 0.2% annual rate of change (2015-20 est.)
- Capital: BRIDGETOWN
- Population of main city: 89,000 (2018)

	DESCRIPTION
PRODUCTION	▪ Household waste generation rate is between 300 - 500 tonnes per day. With a population of 294,560 inhabitants and considering the upper value of 500 tons/day, the per capita rate is 1.7 kg/person/day. ▪ Using the obtained data of 1,079,956 kg/p/d, and taking into consideration that Barbados receives an average of 1,423 visitors per day, it is determined that the average amount of waste generated is = 3.66 kg per person on a daily basis. ▪ The volume of waste rose fivefold in ten years, going from 200 tons/day in 1994 to over 1,000 tons/day in 2005. Between 1994 and 2005 the plastic component almost doubled (9 percent to 16 percent). Organics make up only 30 percent of waste.
COLLECTION	▪ All households have waste collection. Minimum once a week. ▪ Private sector already involved in solid waste collection and treatment through different initiatives. ▪ More persons participating in waste separation for recycling, to decrease the amount of waste unnecessarily going to landfill, as well as decrease littering and illegal dumping. ▪ The Sanitation Service Authority (SSA) has the responsibility for collection island-wide and carries out the collection of household waste as well as some commercial waste. ▪ The country has a high collection rate of 85% (IDB, 2010) and 90% (IDB, 2015), in 2010 and 2015, respectively. ▪ There are practical regulations for solid waste collection and treatment.
RECYCLING	▪ An average 20% of the collected solid waste is separated at source for recycling. ▪ A vital component in the development of the solid waste sector has been the construction and

	commissioning of the Sustainable Barbados Recycling Centre (SBRC) in 2009 at Vaucluse, St. Thomas (adjacent to the Mangrove Pond Landfill site). The facility was developed at a cost of US$30 million and is operated as a joint public private partnership. With the establishment of SBRC, all of the MSW generated in Barbados, with the exception of recyclable materials collected by private recyclers, passes through the SBRC. Each vehicle entering the facility is required to be weighed at the Scale House as well as disclosing the contents of their load which is then entered into the respective categories established by the PPP agreement. ▪ SSA generates revenue through renting out of equipment and collection of dead animals. However, the revenue generated by SSA is not enough to fully fund operational costs of SSA. The SSA receives US$50M/year from MENB to pay the Sustainable Barbados Recycling Centre (SBRC) for its services as well as to fund its own operations.
RECOVERY	▪ At present, there is in the Country a central composting platform. The SBRC generates mulch and some compost. The Centre is also considering the public Recycling Centre of Barbados. A public Material Recovery Facility is in function in the Country. ▪ The household and commercial waste are then delivered to the Transfer Station Building where it is pre-sorted to remove bulky items and green waste. Items with little or no recyclable value or special waste are transported directly to special disposal sites. The different types of waste accepted/handled at SBRC are as follows: i)Municipal Solid Waste (MSW); ii)Construction and Demolition (C&D) waste (includes pallets, lumber, metal, utility wire); iii) Organic/Green waste (GW) which includes coconuts, grass, tree trimmings, logs; and iv) Rocks and Soil (R&S) ▪ There are a number of items such as vehicle tyres and metals which are not among the items accepted but which still arrive (weighed and sorted before being sent to other areas for storage or recycling) at the facility. Recovered recyclable materials include: i) Cardboard; ii) Scrap Metal; iii) Organic/Green waste: including tree clipping, coconut shells from vendors, used pallets, etc.; iv) Construction & Demolition (C&D). The remaining waste is then transported to the Mangrove Pond landfill where it is spread, compacted and daily cover applied. ▪ In addition to SBRC there are a number of private operators who are also involved in the collection and exportation of recyclable materials. These operators are as follows: i) B's Recycling; ii) ACE Recycling; iii) Recycling Preparation Inc.;iv) Scrap Man. ▪ These recyclers are primarily engaged in the recovery and export of the following items: o Plastic containers- A range of plastics are accepted including Polyethylene Terephthalate (PET), Low Density Polyethylene (LDPE) and High-Density Polyethylene (HDPE). Containers are sorted according to size, colour and product manufacturers. o Used automotive batteries o Glass bottles - including beer, rum, wine, other liquor bottles and all non-alcoholic beverage bottles o Scrap metals o Paper and Paperboard ▪ In general, the recovered materials with the exception of glass, are cleaned, baled and exported to recycling establishments or trans-shipment centres. In the case of glass, the materials are primarily jars and beverage containers, which are collected, cleaned and made available to the manufacturers of beverages and condiments for reuse. Once the glass containers reach the end of life with respect to re-use, they are disposed at the landfills so that the efforts of these establishments are really to extend the useful life of these glass items in the current form and not recycle them. The recycling industry is a very competitive and fragmented sector, which is very vulnerable to prices of recyclable materials in the international market. As such, there exist very little collaboration among players and the level of export is very dependent on the prices offered by importers of these materials. ▪ Some composting is performed locally. However, there is no central treatment of organic waste which is planned. ▪ The EU is currently funding a waste-to-energy feasibility study to examine various waste incineration technologies that will strengthen the country's sustainable development.
LANDFILL	▪ So far, most of the waste is landfilled. ▪ The country established its first national sanitary engineered landfill in 1991: Mangrove Landfill. Today this site has four phases, all of them operated by the SSA, and receives between 300-400 tons daily.

Table 17: *Overview of SWM Systems in Barbados*

MAJOR WASTE STREAM	CURRENT MANAGEMENT METHOD
USED LED ACID BATTERIES (ULABS)	▪ Facilities for the recycling of car batteries: Lead acid automotive batteries are assembled, packed in containers and shipped overseas for recycling.
BIOMEDICAL WASTE	▪ Most hospitals have some form of incineration or internal waste management for medical waste and biomedical waste. However, in the case of Queen Elizabeth Hospital, the incinerator is really old (past its design life) and needs to be replaced. During the various periods when the incinerator has been down, the waste has had to be transported to another government incinerator facility[233].
WASTE OIL	▪ Oil is collected by Machinery and Allied Engineering Services and transported to the relevant industries. ▪ Waste cooking oil is used in the production of biodiesel.
E-WASTE	▪ There are several facilities for e-waste in the country: B's Recycling, Caribbean E-Waste Management and Sustainable Barbados Recycling Centre Inc.
END OF LIFE VEHICLES	▪ Both ferrous and non-ferrous metals are recycled in Barbados. There is one facility for metallic waste.
PLASTICS	▪ Most plastics can be diverted towards recycling. These include beverage bottles, containers for cleaning agents, plastic containers containing cream, shampoo and other beauty care agents, car bumpers and other plastics. ▪ Recycling facility: B's Recycling ▪ Supermarket Bottle Return Depots
PERSISTENT ORGANIC POLLUTANTS (POPs)	▪ There is a National Implementation Plan for the Management of Persistent Organic Pollutants, which was published in 2009[234].
GREEN WASTE	▪ Efforts by SBRC to create compost and mulches from green waste ▪ Can be recycled at Solid Waste Management Centre
ORGANICS	▪ This waste stream represents a significant percentage of the overall waste stream (approx. 51%) and little or no effort has been made to institute a waste diversion strategy for this waste stream. ▪ Though SBRC does engage in some separation at their facility, the only organic material utilized as compost are clean organics (grass cuttings, coconut husks etc.). Improved separation at source would significantly enhance the prospects of larger amounts of organic waste being converted to compost.
COCONUTS	▪ Turned into mulch or compost by Solid Waste Management Centre
SHIP WASTE	▪ By policy, only combustible garbage is received in Barbados, and it must be incinerated at the port. Under the port health regulations, SGW is not allowed to be transported directly from ships to the landfill. Only ash from garbage incinerations is allowed to be transported off the port to the landfill[235].
REGULAR HOUSEHOLD WASTE	▪ The infrastructure for regular household waste includes: National Sanitary Landfills, Solid Waste Management Centre (as known as SBRC, formed in 2008), Sanitation Service Authority Collection and Local Private Recyclers
GLASS, TEXTILES AND FURNITURE	▪ All glass is either reused or recycled in Barbados. Some glass containers are washed, sterilised and reused, while other glass is broken into cullet and exported for recycling[236]. ▪ Supermarket Bottle Return Depots ▪ A deposit refund scheme has been in operation for over thirty (30) years to encourage reuse of beverage containers: wholesalers and distributers pay a deposit on beverage containers, which is refunded on return and disposal of these containers.

233 https://www.qehconnect.com/barbados-today-qeh-seeking-to-replace-incinerator/

234 https://www.informea.org/en/national-implementation-plan-management-persistent-organic-pollutants-0

235 *Feasibility Study on the Development of a Regional Reception Facilities Plan for the Small Island Developing States of the Wider Caribbean Region. Annex C. Barbados (http://www.racrempeitc.org/sites/default/files/Annex%20C%20-%20Barbados.pdf)*

236 http://www.racrempeitc.org/sites/default/files/Annex%20C%20-%20Barbados.pdf

TIRES	▪ The Mangrove landfill receives approximately 90% of used tires in the island and there is currently research underway into recycling of these tires. The options being considered include their conversion to rubberized asphalt or to use them as a fuel source[237].
PAPER	• Currently, mainly office paper and magazines are collected for recycling in Barbados. The paper is shredded, baled and exported for recycling. Ace Recycling is the agency responsible for recycling paper in Barbados, see facilities.

Table 18: *Current management method of major waste streams in Barbados (Source: Barbados Solid Waste Management Programme[238]; Ministry of Environment and Drainage, 2015[239])*

Saint Lucia

Box 24. General country context –Saint Lucia

Saint Lucia is small island state located in the Lesser Antilles in the eastern Caribbean Sea adjacent to the North Atlantic Ocean. The island nation has been able to attract foreign business and investment, especially in its offshore banking and tourism industries. Tourism is St. Lucia's main economic activity - accounting for 65% of GDP - and the island's main source of foreign exchange earnings. The manufacturing sector is the most diverse in the Eastern Caribbean area. Crops such as bananas, mangos, and avocado continue to be grown for export, but St. Lucia once solid banana industry has been devastated by strong competition.

St. Lucia is vulnerable to a variety of external shocks, including volatile tourism receipts, natural disasters, and dependence on foreign oil. Furthermore, high public debt - 77% of GDP in 2012 - and high debt servicing obligations constrain the administration to respond to adverse external shocks.

The country has experienced low growth since the onset of the global financial crisis in 2008, largely because of a slowdown in tourism - airlines cut back on their routes to St. Lucia in 2012. Also, St. Lucia introduced a value-added tax in 2012 of 15%, becoming the last country in the Eastern Caribbean to do so. In 2013, the government introduced a National Competitiveness and Productivity Council to address St. Lucia's high public wages and lack of productivity.

Relevant data for SWM:

- Total population: 166,487 (July 2020);
- Population growth rate: 0.29% (2020)
- Urban rate: 18.8% of total population (2020);
- Rate of urbanization: 0.8% annual rate of change (2015-20 est.);
- Capital city: CASTRIES

SWM SYSTEM	DESCRIPTION
PRODUCTION	▪ In St. Lucia, organic waste is the largest component of Municipal Solid Waste (MSW), representing 45% of all waste, whereas plastic is the second largest component with 22% (SLSWMA, 2008). Furthermore, the Deglos Sanitary Landfill has a Hazardous Health Care Waste Treatment Facility. Once treated, the biomedical and hazardous health care waste is deep-buried in demarcated pits on the landfill. ▪ SWM's experts pointed out the importance of including new procedures and strategies to cope with new waste types, such as construction and demolition waste, e-waste and ship-generated waste. It should be stressed that in St. Lucia, stockpiles of tyres are a fire hazard and a disease vector problem.

237 *https://sustainabledevelopment.un.org/content/documents/dsd/dsd_aofw_ni/ni_pdfs/NationalReports/barbados/WASTE_MANAGEMENT.pdf*

238 *https://solid.gov.bb/recycling/*

239 *Waste Characterization Study for Barbados. Final Report. 2015. Ministry of Environment and Drainage (https://www.barbadosparliament.com/uploads/sittings/attachments/b7fafa53eab7cd2cb9f2368bbb2aff5a.pdf)*

COLLECTION	▪ The Saint Lucia Solid Waste Management Authority provides a waste collection service to 100% of residents in the island through regular collection service and a monthly bulky waste collection service. o Daily collection of household waste to landfills o Commercial waste disposal is the responsibility of the waste generator(private agencies) o Final disposal is done at Deglos Sanitary Landfill and Vieux-Fort Solid Waste
RECYCLING	▪ The RePLAST project launched in May 2019, is a two-year public-private initiative aimed at setting-up an incentivized plastic waste collection and recycling scheme. It is the first recycling pilot in the country. The project is funded by the Government of the Republic of France in partnership with the Government of Saint Lucia, and implemented by Unite Caribbean. ▪ The plastic collected in various collection points spread across the island is currently exported to a recycling plant in Honduras promoting a circular economy model
LANDFILL	▪ In Saint Lucia, the main form of waste disposal is landfilling. ▪ The SLSWMA operates two solid waste management facilities, namely Deglos Sanitary Landfill, which serves the north of the island, and the Vieux-Fort Solid Waste Management Facility, which serves the south of the island (SLSWMA, 2015). ▪ The Deglos Sanitary Landfill, which opened in March 2003, was designed to receive waste for a 25-year period. This sanitary landfill occupies approximately 9.5 hectares and receives an average of 4,000 tons/month. This facility is composed of the following components: o a site service area (scale house, maintenance building and wheel wash); o a leachate collection area; (iii) a leachate treatment system; o a recycle area; o a hazardous health care waste treatment facility; o a surface water management area. ▪ The Vieux-Fort Solid Waste Management Facility covers the surface of 7.4 hectares. This site does not have a leachate collection and management system (SLSWMA, 2015). ▪ As part of the landfill operation, all information is recorded, such as the type, origin and amount of waste. This data has assisted the St. Lucia Solid Waste Management Authority in: i) waste management analysis and planning; ii) determining effectiveness/progress of waste reduction programmes; iii) monitoring the performance of its waste collection contractors; and iv) tracking changes in waste generation for various localities. ▪ Not all waste is treated: o Bio-waste is autoclaved and disposed at the landfills o Pharmaceuticals are encapsulated and landfilled o Asbestos is deep-buried o Other waste disposal include exporting of batteries o Waste oil is reused
FINANCIAL SITUATION	▪ St. Lucia Solid Waste Management Authority indicated that in the Country one of the challenges is the frequent equipment breakdown due to the aged fleet of equipment and the lack of financial resources to replace it. She also discussed how frequent wet weather conditions make operation at the tipping face difficult.

Table 19: *Overview of SWM Systems in Saint Lucia*

MAJOR WASTE STREAM	CURRENT MANAGEMENT METHOD
USED LEAD ACID BATTERIES (ULABS)	▪ Garages, battery retailers and service stations are required to take used lead acid when replacing with a new one ▪ Batteries transported to the landfill are segregated and taken by waste diverters (not landfilled) ▪ Recyclers also collect ULAB directly from garages and retailers
BIOMEDICAL WASTE	▪ Waste is collected by Contractor using a specialized vehicle ▪ Waste received at the landfill is then taken to the biomedical waste management facility where it is treated using the autoclave ▪ Periodic training undertaken with Healthcare Facilities on management of biomedical waste ▪ Contractor submit records of collection to the Authority monthly ▪ All Healthcare facilities have biomedical waste management site specific plans which are submitted to the Authority

WASTE OIL	▪ Waste Oil Storage Containers are issued to suitable applicants for the storage of waste oil on their premises and/or facilities ▪ Waste Oil is brought to the landfill by the general public and is stored in the waste oil storage containers on site. ▪ Waste Oil from Containers are collected and recycled by St Lucia Linens and St. Lucia Distillers Limited ▪ Audits of Waste Oil Storage Containers are undertaken by the Authority
E-WASTE	▪ E-waste brought to the landfill and is disposed amongst regular waste if not pre segregated ▪ Segregated E waste is diverted on arrival to the landfill and stockpiled for Recyclers ▪ No separate collection for E-waste ▪ Generators also take their e-waste to the recyclers and repair shops for parts
END OF LIFE VEHICLES	▪ It is the responsibility of the owner to take their vehicle to the landfill. ▪ Removal notices are placed on derelict vehicles whether or not the owners are identified. ▪ The removal and disposal of the derelict vehicle(s) at the owners expense as per the Waste Management Act No. 8 of 2004 ▪ Derelict vehicles are currently being removed under a special program by the Authority
PLASTICS	▪ Plastic waste is brought to the landfill together with regular waste ▪ Plastic bottles are sometimes collected by recyclers and shipped. ▪ Some business houses reuse and process plastic bottles ▪ Supermarket chain encourage customers to bring their reusable bags and have imposed a fee on plastic bags
PERSISTENT ORGANIC POLLUTANTS (POPs)	▪ Items containing POPs are usually transported to the landfill for regular disposal. ▪ Regional strategy for POPs is currently ongoing which will include an education, awareness/training component
FLUORESCENT BULBS & LAMPS	▪ There is currently a bulb crusher at the landfill. ▪ Due to being filled to capacity, bulbs coming to the landfill are currently being stockpiled for crushing.
GREEN WASTE	▪ Green waste suitable for composting is stockpiled at the landfill ▪ Non-suitable green waste is disposed of at the landfill. ▪ Composting is currently being undertaken at the disposal site in Vieux-Fort which is available for purchase ▪ Small amounts of green waste is collected with regular waste ▪ A few generators transport their green waste to the landfill ▪ Document developed on a green waste collection service ▪ Green waste is collected for charcoal material by an organization
ORGANICS	▪ Organic waste collected with regular waste is brought to the landfill ▪ Pig farmers collect organic waste at the landfill and disposal site ▪ Organic waste from hotels/restaurants are also collected by the pig farmers
COCONUTS	▪ Small amounts of coconut shells are placed out by households for regular waste collection ▪ Large amounts are transported to the landfill by the generators/ coconut vendors
SHIP WASTE	▪ All Ship agents are required to submit a notification form on behalf of the vessel via email for review and approval before it can be offloaded on island. It is the responsibility of the agent to make provisions with waste haulers for collection and disposal. ▪ A copy of the form is also submitted to the landfill to alert the staff for prior to disposal. ▪ All ship waste is disposed via deep burial [Special Disposal]
REGULAR HOUSEHOLD WASTE	▪ Regular waste is collected and transported to the landfill
GLASS, TEXTILES AND FURNITURE	▪ Furniture is collected and transported during a once monthly bulky waste collection service provided ▪ Textiles and glass are collected and transported as regular waste ▪ Existing businesses sell/donate used, acceptable textiles ▪ Ship Chandlers buy and resell furniture from the cruise ships

TYRES	▪ Tire shops and retailers transport used tires to the landfill ▪ Tires transported to the landfill are segregated and shredded using the shredder (not landfilled) ▪ Tires coming to the landfill are stockpiled at the Vieux Fort Facility and shredded at the Deglos Sanitary Landfill ▪ Shredded tires are used as cover material at the landfill

Table 20: *Current management method of major waste streams in Saint Lucia (Source: SLSWMA)*

Grenada

Box 25. General country context –Grenada

Grenada is small island state located in the Lesser Antilles in the eastern Caribbean Sea adjacent to the North Atlantic Ocean. The country relies on tourism and revenue generated by St. George's University - a private university offering degrees in medicine, veterinary medicine, public health, the health sciences, nursing, arts and sciences, and business - as its main source of foreign exchange.

In the past two years, the country expanded its sources of revenue, including its citizenship by investment program. These projects produced a resurgence in the construction and manufacturing sectors of the economy.

In 2017, Grenada experienced its fifth consecutive year of growth and the government successfully marked the completion of its five-year structural adjustment program that included among other things austerity measures, increased tax revenue and debt restructuring. Public debt-to-GDP was reduced from 100% of GDP in 2013 to 71.8% in 2017.

Relevant data for SWM:

- Total population: 113,094 (July 2020 est.);;
- Approximately one third of the population is found in the capital of St. George. The island's population is concentrated along the coast;
- Urban rate: 31.2% of total population (2020);
- Rate of urbanization: 0.2% annual rate of change (2015-20.);
- Environment - current issues: deforestation causing habitat destruction and species loss; coastal erosion and contamination; pollution and sedimentation; inadequate solid waste management;
- Capital: SAINT GEORGE'S
- Population of main city: 39,000 (2018)

SWM SYSTEM	DESCRIPTION
PRODUCTION	▪ Composition of waste in Grenada (GSWMA, 2019[240]):Organic waste 28.7 % (27.1% in 2009), Plastics13.7% (16.4% in 2009), Site cleaning waste 21.3% (20019), Construction and demolition waste 2.7% (11.6% in 2009), Street sweeping 8.1% (0.6% in 2009), Used tires 0% (0.9% in 2009), Glass 7.9% (3.1% in 2009), Metals 6.5% (2.4% in 2009), Textiles 5.9% (2.3% in 2009), Paper and cardboard 13.9% (13.6% in 2009), Bulky household waste 0.2% (0.7% in 2009), other hazardous waste 6.0% and special care waste 6.4%. ▪ Amount of waste generated from different sources (GSWMA, 2009): Families 61.7; Business 16.7; Construction and demolition 14.6; Others 7.0 ▪ The highest volume of waste in 2009 was produced by households (61.7%). The share of waste generated by businesses was 16.7%, with construction and demolition equal to 14.6%. Organic waste represented the main waste stream (27.1%), while site cleaning waste was 21.3%. Plastic accounting for 16.4% represented the third form of waste disposed of in Grenada. Very little information is available on the amount of waste produced in Carriacou and Petite Martinique. ▪ Considering that almost no waste separation is carried out in Grenada, household waste contains

[240] *GSWMA. National Experience in Waste Statistics, 2019.* https://unstats.un.org/unsd/envstats/meetings/2019-Grenada/documents/Session%204.5.1%20GSWMA%20National%20experience%20in%20waste%20statistics.pdf

	a significant share of recyclable materials including organic matter, plastics and paper. This is proof of the important potential for the recovery and recycling of waste, if an adequate recycling centre is installed. In 2013, per capita waste stood at 1.02 kg per day. In 2014, this increased 5.9% to 1.08 kg per day. During consultations undertaken for the current study, the GSWMA confirmed that the average generation rate for household solid waste is 1.13 kg/person/day (2021). ▪ The Grenada Solid Waste Management Authority (GSWMA) argues that the current waste stream (2019) is likely to be similar to that of 2009, although more plastics are likely to be in circulation due to the perceived increase. In Grenada, the disposal of plastic for human health, tourism and environmental conservation is a dramatic problem.
COLLECTION	▪ According to the GSWMA (consultations undertaken for the present study in 2021), Grenada has an average collection rate of household solid waste of 98%. ▪ Waste contractors collect co-mingled waste, transport to dumpsite and disposed. ▪ In order to ensure that waste collection coverage extends as far as possible across the islands, the State of Grenada has been divided into five SWM zones: Zone 1 - South and North St. George's and St. George's Town; Zone 2 - St. David and South St. Andrew; Zone 3 - St. Andrew and St. Patrick East; Zone 4 - San Giovanni, San Marco and San Patrizio Ovest; Zone 5 - Carriacou and Petite Martinique. ▪ Each zone is subcontracted to a private contractor responsible for the efficient and effective collection of household and institutional waste, as specified by GSWMA. Contractors must provide twice a week the collection service on the pavement in each inhabited centre and the daily collection along the main roads of the territory (towns of St. George and Grenville). The 2001 Waste Management Act specifies that commercial entities must be responsible for the waste they generate. In practice, a large number of businesses use GSWMA-operated curbside collection services. The street cleaning services provided in all cities also take care of the maintenance of sewers, sidewalks and seafront areas. ▪ The Solid Waste Management Authority's zone supervisors monitor the daily performance of their contractors to ensure they are adhering to best practices. Authority officials and other key stakeholders positively assessed the collection system and stressed the compliance of private contractors. In fact, the current roadside collection rate for municipal solid waste is estimated at 98%. The few uncovered areas are generally inaccessible and / or located in illegal areas. ▪ Currently there is also a consolidated separate collection. A survey on the territory revealed about 50 people, both male and female, visit the landfill almost every day in search of potentially useful objects (mainly metal scrap) that can be used or sold.
RECYCLING	▪ Grenada also benefits from an informal sector that collects recyclable materials. In nearly every major city in the country, a number of people scour the streets and drains for glass bottles, which they return for a refund of XCD 0.25. ▪ Materials recycled: o Bulky Metals (bailed by solid waste equipment, recycler pays for cubes and find his own market...number of bail or tons of material bail o Bottles reused; waste pickers collect and return breweries bottle, Clarkes Court and other rum bottles o Copper wires, aluminium, stainless, scrap iron (softer material) motors area collected by pickers for export. ▪ According to the GSWMA (consultations undertaken for the present study in 2021), Grenada recycles about 5% of the collected solid waste, mainly scrap metal, bottles and batteries. ▪ Underlining the importance of plastics in SWM, several possible policy tools were evaluated in terms of practicability to reduce the amount of plastic bottles that end up in the sea around Grenada. Two of these tools were subsequently pre-selected: (1) a refund of the deposit and (2) a system for the separate collection of plastic bottles at source delivered together with incentives for the local population. ▪ Most stakeholders are in favour of the deposit refund system, especially considering that such a system has already been introduced for glass bottles produced by Grenada Breweries. ▪ The main constraints that condition the introduction of a deposit-reimbursement system are the identification of the funds to finance the initial investments (the Special Fund for Climate Change is a possibility) and the modification of the Law on environmental levy, which must be analysed by the waste management authority. In order to make the system commercially sustainable, the existing environmental levy on plastic bottles should be extended to preform containers, which are now exempt. In addition to the deposit of approximately XCD 0.10 per bottle, importers would have to pay part of the environmental tax, up to XCD 0.20, into a fund as a management fee. Collection companies are obliged to reimburse the deposit to anyone who returns empty bottles. ▪ In addition, a waste compaction centre should be established to compress and package collected recycled materials for export or transfer. Further tools and measures are proposed to improve waste management performance, such as increasing the quantity and density of covered public waste bins or limiting the use of plastic bags.

RECOVERY	▪ Some small-scale efforts are underway to minimize waste, including composting, waste separation, source reduction, and re-use, among other aspects
LANDFILL	▪ In Grenada the main form of waste disposal is landfilling. ▪ The solid waste collected is transported to the Perseveranza landfill site for final disposal. This site is located on the west coast of Grenada, just 500 meters from Halifax Harbor. ▪ A second smaller landfill (Dumfries Landfill) operates in Carriacou. In Petite Martinique's case, private contractors transport the waste to Carriacou for disposal at the Dumfries landfill. ▪ Importantly, none of these landfills were designed and built using recognized techniques or standards. Waste is dumped in open landfills, which poses potential risks to human health and the environment. The Authority is currently working with the aim of transforming the Perseverance site into a model structure. ▪ There are no tipping fees at the dumpsites. Co-mingled wastes are spread over areas at the dumpsites, and in some cases covered with soil. In other cases the waste is just left in the open to decompose.

Table 21: *Overview of SWM Systems in Grenada*

MAJOR WASTE STREAM	CURRENT MANAGEMENT METHOD
USED LED ACID BATTERIES (ULABS)	▪ The company Spice Isle Recycling (SIR) started operations in 2013 and focuses on the collection and subsequent export of a range of recyclable products, including PET plastic bottles, cardboard, scrap metal, used engine oil, aluminium cans and batteries.
BIOMEDICAL WASTE	▪ The GSWMA does not handle biomedical waste; It is the responsibility of the Ministry of Health or the private medical facility generating the waste.
WASTE OIL	▪ Spice Isle Recycling (SIR) focuses on the collection and subsequent export of a range of recyclable products, including used engine oil.
E-WASTE	▪ The capacity of the GoG to manage e-waste is low, and although Government reports that the current e-waste stream is small, it all ends up at the city dump.
END OF LIFE VEHICLES	▪ Copper wires, aluminum, stainless, scrap iron (softer material) motors area collected by pickers for export[241].
PLASTICS	▪ Spice Isle Recycling (SIR) focuses on the collection and subsequent export of a range of recyclable products, including PET plastic bottles, ▪ Bottles reused; waste pickers collect and return breweries bottle, Clarkes Court and other rum bottles ▪ A deposit-refund system for glass bottles was introduced in the early 1970s by Grenada Breweries Limited.
PERSISTENT ORGANIC POLLUTANTS (POPs)	▪ Grenada does not seem to have joined the Stockholm convention on POPs.
FLUORESCENT BULBS & LAMPS	▪ According to the consultations undertaken, this type of waste seems to be dropped at landfill.
ORGANICS	▪ Almost no waste separation is carried out in Grenada.
SHIP WASTE	▪ While Grenada is seeing larger ships arrive with more waste per call, the country is currently not a party to MARPOL and SGW is handled in a manner similar to land generated waste. Upon notification by ship representatives, shipping agents contact a Ministry of Agriculture representative stationed at the port as well as a service provider licensed to operate on the port. ▪ Collection of waste from the port zone is done by specialized vehicles and trucks. The waste is then transported to the Perseverance dumpsite on the Main Island (Grenada) and Dumfries on the Island of Carriacou. ▪ The port mostly receives limited dunnage and some food waste, though there are some local companies that may receive waste oil. Stakeholders indicated that the receipt of

[241] *GSWMA. National Experience in Waste Statistics, 2019. https://unstats.un.org/unsd/envstats/meetings/2019-Grenada/documents/Session%204.5.1%20GSWMA%20National%20experience%20in%20waste%20statistics.pdf*

	sewage is a challenge, and not often done[242].
REGULAR HOUSEHOLD WASTE	▪ Two new landfills were constructed and became operational in February 2001. The two new landfills replaced the three open dumpsites[243]. ▪ Each zone is subcontracted to a private contractor that is responsible for the efficient and effective collection of household and institutional waste, as specified by GSWMA. Contractors are expected to provide twice weekly kerbside collection services in each village, and daily collection along the islands' main roads. ▪ Collected solid waste is transported to the Perseverance Landfill site for final disposal. A second, smaller landfill (Dumfries Landfill) operates on Carriacou. In the case of Petite Martinique, assigned contractors ferry waste over to Carriacou for disposal in the Dumfries Landfill. ▪ Importantly, none of these landfills has been engineered and built using industry techniques or standards.
GLASS, TEXTILES AND FURNITURE	▪ Bottles reused; waste pickers collect and return breweries bottle, Clarkes Court and other rum bottles. ▪ A deposit-refund system for glass bottles was introduced in the early 1970s by Grenada Breweries Limited. ▪ Bulky waste: special collection service. ▪ Construction and demolition waste is not collected by the GSWMA but the material is accepted at the Landfills for safe disposal.
TIRES	▪ Tires seem to be dropped at landfill.

Table 22: *Current management method of major waste streams in Grenada (Source: GIZ, 2015[244]; World Bank, 2019[245]; GSWMA 2019[246])*

RECOMMENDATIONS:

The deposit-refund system is expected to significantly contribute to reducing the amount of plastic bottle waste that ends up in the sea and, as such, would help protect the marine environment.

With regards to estimates regarding the expenses and income related to the creation and operation of a deposit repayment system, the incomes would probably exceed the expenses, especially when the system is maintained for a longer period. This means that the development of a self-financed and self-sufficient waste management system for plastic bottles is entirely possible. The deposit refund system would also create other economic and social benefits, such as new jobs and a cleaner environment for Grenada. For example, to make the system work, more than 20 full-time positions would need to be created.

Discussions also led to the recommendation to extend the system to include other beverages and packaging products in the future. However, before introducing the system, a detailed feasibility study should be carried out to ensure that the system is introduced correctly and that its design is successfully adapted to the local context.

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242 *Feasibility Study on the Development of a Regional Reception Facilities Plan for the Small Island Developing States of the Wider Caribbean Region. ANNEX H, Grenada (http://www.racrempeitc.org/sites/default/files/Annex%20H%20-%20Grenada.pdf)*

243 *http://www.gswma.com/general.htm*

244 *Reducing the input of plastic litter into the ocean around Grenada. Applicability and effects of selected instruments. 2015. Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH*

245 *Environmental and Social Review Summary Appraisal Stage. Grenada Digital Governance for Resilience (P167588). The World Bank, 2019.*

246 *GSWMA. National Experience in Waste Statistics, 2019. https://unstats.un.org/unsd/envstats/meetings/2019-Grenada/documents/Session%204.5.1%20GSWMA%20National%20experience%20in%20waste%20statistics.pdf*

In light of the amount of waste being sent to landfill, the Government of Grenada has been looking at the possibility of establishing a waste incineration plant, which would also reduce electricity generation costs[247]. However, to make incineration effective, the facility must always operate at capacity.

A better solution, taking into consideration resource efficiency, would be to introduce the at-source separation of recyclables and, at the same time, build a mechanical biological treatment plant with a fermentation facility to generate power using the biodegradable waste. This kind of unit is also a better option when dealing with smaller operating capacities.

Perseverance Landfill: Currently, Grenada is working on closing its existing landfill and building a new cell, funded by the Caribbean Development Bank (CDB). A precondition of this funding is that Grenada must update its National Waste Management Strategy. Therefore, the Clinton Foundation is providing an expert on a pro bono basis to analyse the current waste management situation and develop a holistic waste management concept that diverts waste from the landfill and increases recycling and the reuse of valuables. This concept will also include the separation of waste at source.

During this project, information has been exchanged with the Clinton Foundation consultant who is also in favour of a deposit-refund system for plastic bottles. The deposit-refund system could therefore be integrated into the Grenada National Waste Management Strategy.

Jamaica

Box 26. General country context –Jamaica

Jamaica is one of the medium island states and the third largest island and largest English-speaking island in the Caribbean. It is one of the Greater Antilles and is located south of Cuba (150 miles) and west of the island of Hispaniola (180 km). It is one of the most Western countries in the region. A former British colony, in terms of development, it compares with intermediate regional countries with much larger populations and some dynamic private sector.

Jamaica's most important modern economic activities are tourism, bauxite mining, agriculture and manufacturing. Tourism is now the country's largest earner of foreign exchange and Jamaica receives over 1 million visitors per year.

The country has some quite good influence in the region through its universities and headquarters for some institutions like UNEP.

Relevant data for SWM:

- Total population: 2,961,167 (2020, est. according to UN data).
- Population growth rate: 0.5%
- Urban rate: 56.0 % (2019)
- Capital: KINGSTON
- Population of main city: 1,243,000

SWM SYSTEM	DESCRIPTION
PRODUCTION	▪ According to a first estimate based on a production ratio of 1.00 kg/inh/d (quite high), the total production of household waste in the country is around 1071,000tons per year, with more than half (56%) concentrated in urban areas. In addition, some little commercial waste has to be considered and also some tourism waste to be added in some regions.µ

247 *Rothenberger (2015), Waste-to-Energy Scoping Study for Grenada, final report, Renewable Energy and Energy*
Efficiency Technical Assistance (REETA) of the Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH, March 2015.

	▪ Around 50% of household solid waste is organic and could be partly managed locally. About 30% of household solid waste are recyclable so likely to be processed. This production is expected to grow with local population (about 0.5% yearly) and some further tourism. The amount of household and tourism waste per person is likely to be stable because already high but possibly different in composition. ▪ Around 15% of the annual residential waste in Jamaica is estimated to be plastics[248].
COLLECTION	▪ Most of the collection is performed by the National Solid Waste Management Authority through some 65 recent trucks plus three times more hired trucks all over the country. The country is divided into 4 regions to achieve coverage of 80 to 90%. Most trucks especially in cities are compacting but others are just tippers. ▪ Some residential areas or poor neighbourhoods are organized with a pre-collection service. The collection is usually operated directly from the households and businesses to a landfill without transfer stations. From 3 to 4 transfer stations are planned with 1 for St. James and 1 for St. Thomas. There should be an additional one for Kingston if a new site of final treatment is planned.
RECYCLING	▪ A municipal MRF was operated privately near the landfill at Riverton but stopped many years ago. Some separation is still performed through scavengers on the landfill and some private workshops to condition metals and plastics possibly under the NGO Recycling Partners of Jamaica and just one converting plastics into flakes (GRAVITO). ▪ Little markets seem to exist in the country along with industries and most of recyclable waste is therefore exported to the US or other countries. A PPP project supported by NESTLE is likely to prepare e-waste items also for export. Willingness for change is shown especially for separation at source of recyclable and organic waste. Awareness-raising campaigns could be released.
RECOVERY	▪ Some composting is performed locally in major cities and provides compost to parks. However, there is no central treatment of organic waste which is planned. A waste-to-energy project has been mentioned. It could be in the pipe of the new government but has to be confirmed since it would compete with all initiative of plastic recycling.
LANDFILL	▪ Some 8 disposal sites exist in the country to serve all of the 4 regions and 14 parishes with the largest one being located in Kingston. They are operated sanitarily except for leachates and biogas with various cells. A cell is reserved for hazardous waste. Some of hazardous waste is exported for treatment. A new sanitary landfill is in project for St Thomas. A new site should also be identified for Kingston, since the current seems too close to the city and to the sea with some contamination possibly seen.
FINANCIAL SITUATION	▪ No figure was collected about the SWM budget that is centralized nationally by NSWMA. In addition, some private collection services have to be paid by clients. The main funding of SWM is from property taxes which have coverage of about 60% in the country and help the State to cover all the SWM expenses. Some environmental levy also exists for imported products (0.5% of the value) but is used for other purposes.
MAIN STAKEHOLDERS	▪ The main public stakeholders are: o The Ministry of Local Governments and Community Development / NSWMA, o The Ministry of Economic Growth and Job Creation / National Environmental Protection Agency - Jamaica. ▪ Some active local stakeholders are: o Jamaica Business Development Corporation, o Recycling Partners of Jamaica. ▪ No large SWM projects funded internationally have been reported. Only EU, IDB and JICA seem to be locally represented with some thematic activity from the two last ones.

Table 23: *Overview of SWM Systems in Jamaica*

MAJOR WASTE STREAM	CURRENT MANAGEMENT METHOD
USED LEAD ACID BATTERIES (ULABS)	▪ In 2007 the Ministry of Local Government and Environment (MLGE) estimated that about 500,000 lead acid batteries are generated annually with only about 30.0 per cent being collected and exported for recycling[249]. ▪ The Government of Jamaica in partnership with several private retailers of used lead acid

248 https://www.unep.org/news-and-stories/story/jamaica-plastics-ban-creates-new-opportunities

249 *Management of Hazardous & Solid Wastes in Jamaica. Sustainable Development and Regional Planning Division Planning Institute of Jamaica, November 2007*

	batteries developed and implemented a National Used Lead Acid Battery Project in 2006. Under this Project, over 60,000 units of used lead acid batteries were exported for recycling to countries within the Latin America and Caribbean region which possessed facilities to recycle the batteries in an environmentally sound manner. ▪ A number of private companies in ULABS sector as well as Individuals have been collecting used lead acid batteries for export and recycling since the conclusion of the project[250]. ▪ List of recycling outlets in Jamaica: 2 are for used cars batteries[251].
BIOMEDICAL WASTE	▪ Medical waste capability to dispose was significantly boosted, with the opening of the National Medical Waste Management Plant in 2012. It is the island's first state-of-the-art non-incineration automated medical waste plant, expected to improve the management of waste from healthcare facilities, using a steam sterilisation and shredding technology. ▪ Prior to the establishment of the facility, most of the medical waste generated in the island was treated by onsite incineration technology predominantly at the hospitals and some health centres island wide. Most facilities opted to treat their wastes with old, inadequate, inefficient incinerators or burn boxes[252].
WASTE OIL	▪ Some used oils have been recovered and incinerated at the Caribbean Cement Company Limited (Kingston) and Noranda Bauxite (St. Ann). In addition, environmental permits have been issued to used oil recovery and transport facilities with several NRCA Approved Hazardous Waste (Waste Oil) transporters and end users[253].
E-WASTE	▪ Waste disposal sites do not accept e-waste[254]. However, this waste as well as other HHW[255] are not segregated and are collected and disposed of with municipal solid wastes. ▪ Senior Investigator at the NSWMA, Phillip Morgan, explained that e-waste ought not to be found on disposal sites and must be "treated differently from the regular domestic waste"[256]. ▪ National Solid Waste Management Authority (NSWMA) Executive Director Audley Gordon indicated that 18,910 square metres of land were identified in St Catherine to temporarily store e-waste. Gordon also pointed out that the divestment of the Riverton City landfill was still a priority for the NSWMA[257].
END OF LIFE VEHICLES	▪ At present there is no formal mechanism for the disposal of end of life vehicles (ELVS) although some metal parts from ELVs are being exported as scrap metal[258].
PLASTICS	▪ There are several recycling outlets for plastics in Jamaica[259]. ▪ Three-quarters are disposed of at legal disposal sites; the remainder often ends up in drains, rivers, gullies, beaches and, ultimately, the ocean. ▪ November 2019 saw the launch of a flagship Plastic Recycling Pilot Project. Under this initiative, Rae Town residents were encouraged to participate in clean-up activities following the 4 R's of: Refuse, Reuse, Reduce, Recycle. Environmental wardens have been trained in the community to prevent improper waste management and the country has received the first government-owned plastic collection truck. From plant pots to playground furniture, Rae Town residents are repurposing plastic in collaboration with 360 Recycle (a local social

250 National Policy for the Environmentally Sound Management of Hazardous Wastes (Green Paper). Government of Jamaica. December, 2017 (https://megjc.gov.jm/docs/policies/august_2018_national_hazardous_waste_policy.pdf)

251 https://wisynco.com/recyclingoutlets/

252 https://jis.gov.jm/modern-medical-waste-management-plant-opens/

253 National Policy for the Environmentally Sound Management of Hazardous Wastes (Green Paper). Government of Jamaica. December, 2017 (https://megjc.gov.jm/docs/policies/august_2018_national_hazardous_waste_policy.pdf)

254 http://electronicwastejacomp1220uwi.weebly.com/electronic-waste-in-jamaica.html

255 Wastes classified as HHW included expired or unwanted (sent for disposal) medications, paints, cleaners, solvents, pesticides, fluorescent lamps, batteries and electrical and electronic equipment.

256 https://jis.gov.jm/nswma-to-host-consultations-on-e-waste-regulations/

257 http://jamaica-gleaner.com/article/news/20190220/govt-looks-turn-discarded-electronic-devices-cash-new-guidelines-e-waste

258 Management of Hazardous & Solid Wastes in Jamaica. Sustainable Development and Regional Planning Division Planning Institute of Jamaica, November 2007

259 https://wisynco.com/recyclingoutlets/

	enterprise that manufactures and sells recycled plastic products). The project also recently launched an Eco-Rewards Plastic Recycling Pilot with Lee's Food Fair, one of the largest supermarkets in the Kingston metropolitan area. Through the store's customer loyalty scheme, customers earn eco-reward points for every 10 pounds of plastic they bring in to be recycled. A "no plastic" pledge board encourages people to publicly commit to reducing their consumption of plastic materials.
PERSISTENT ORGANIC POLLUTANTS (POPs)	▪ Jamaica is a party to the Stockholm Convention which has as its objective the protection of human health and the environment from specific Persistent Organic Pollutants (POPs). ▪ Jamaica is strengthening its national and local capacities to effectively manage POPs. However, much more work needs to be done. UNDP is providing support to the Government of Jamaica in updating its NIP through the "Review and update of the National Implementation Plan for the Stockholm Convention on POPs"[260].
FLUORESCENT BULBS & LAMPS	▪ The majority of HHW are disposed of at the island's solid waste disposal sites. These wastes are not segregated and are collected and disposed of with municipal solid wastes. In some instances, household hazardous wastes are disposed of, by some members of the public, directly into the gullies, rivers or other waterways and on open lots[261].
ORGANICS	▪ Tons of untreated organic waste brought to the dump have triggered spontaneous combustion incidents in the past from the decomposition process. These natural combustions were made worse by the unseparated inorganic material, such as tires, which facilitated the growth and spreading of fires. ▪ Community members have not gravitated towards the separation and processing of organic waste because the process lacks the financial reward that plastic waste collection has[262].
SHIP WASTE	▪ Two years ago, CEAC Outsourcing started operations under its HazPro brand and constructed a facility off the port, located in Hill Run, St Catherine. They collect waste from vessels under very strict and controlled conditions, take it to their facility, where ordinary combustible waste, food waste and medical waste are incinerated. "CEAC Outsourcing provides the best and most organised waste reception facility in Jamaica" (Captain Steven Spence, director of Safety Environment and Certification, MAJ. Through an agreement with another facility in St James, the company also collects sludge, which is oil waste. This is recycled and used in resurfacing of roads, among other recognised applications[263].
REGULAR HOUSEHOLD WASTE	▪ Regular household waste is collected by the National Solid waste management authority and brought to disposal sites. ▪ In 2006, approximately 55.0 per cent of Jamaican households disposed of their garbage via garbage trucks while 38.0 per cent burn their garbage (mostly in rural areas).
GLASS, TEXTILES AND FURNITURE	▪ Bulky waste is collected by national solid waste management authority. ▪ There are several glass recycling outlets in the country[264]. ▪ Some companies (e.g. Red Stripe) are increasing the price of empty bottles to boost recycling[265].
TYRES	▪ Post-use tyres are often discarded in normal garbage and end up at the dumpsites where they are often burnt.

Table 24: *Current management method of major waste streams in Jamaica*

260 https://procurement-notices.undp.org/view_notice.cfm?notice_id=65079

261 *National Policy for the Environmentally Sound Management of Hazardous Wastes (Green Paper). Government of Jamaica. December, 2017 (https://megjc.gov.jm/docs/policies/august_2018_national_hazardous_waste_policy.pdf)*

262 *Participatory Solid Waste Management. A proposal for Jamaica's Informal Settlements. 2018 (Student: Dorraine Duncan; Adviser: Michael Elliott). https://smartech.gatech.edu/bitstream/handle/1853/59971/dorraine_duncan_participatory_solid_waster_management.pdf?sequence=1&isAllowed=y*

263 http://jamaica-gleaner.com/article/shipping/20200211/jamaica-effectively-addressing-disposal-ship-generated-waste

264 https://wisynco.com/recyclingoutlets/

265 http://jamaica-gleaner.com/article/shipping/20200211/jamaica-effectively-addressing-disposal-ship-generated-waste

CONCLUSIONS:

The country of Jamaica is quite organized in terms of SWM with a central institution managing all SWM systems, from collection to treatment, and quite an involved private sector. However, there seems to be some gaps in terms of treatment with little diversion from a final treatment which is not fully sanitary.

The needs of the State for the next 10 years might be summarized by the following items:

- 3-4 transfer stations;
- Expansion of recycling pilot projects;
- 2 sanitary landfill design, supervision and construction.

To some extent, the EU could possibly be involved for funding the necessary support expressed by the Ministry for these needs.

RECOMMENDATIONS:

Commitments on soft investments like SWM master plans and awareness raising campaigns will be needed in the short term. JICA could possibly continue to ensure some capacity building.

With Regards to infrastructures that will be needed in the medium term, the involvement of international partners such as the EIB could be envisioned for construction. Some design-supervision-construction contracts could be interesting for some facilities like transfer stations or MRF.

Dominican Republic

Box 27. General country context –Dominican Republic

The Dominican Republic is one of the largest countries in Northern Caribbean islands; it is one of the Greater Antilles. The country shares the island of Hispaniola with Haiti, a former French colony. It is a Spanish-speaking country with a culture closer to the Central and South American countries than to the Caribbean countries. The Caribbean nation is a major tourist destination. It is also one of the very few countries in the Caribbean to have some food and manufacturing industry.

The economy of the Dominican Republic is the second largest among Caribbean countries. The country once was known primarily for sugar production, but today, mining, manufacturing, services, and tourism are some of the most important industries. Agriculture still makes up about 11 percent of the economy, industry another 24 percent, and services generate nearly two-thirds (65 percent) of the country's GDP.

It has a population of more than 10 million inhabitants, the majority of which live in cities.

Relevant data for SWM:

- Total population: 10,965,972 (*Source: https://countrymeters.info/es/Dominican_Republic, 2021*)
- Population growth rate: 1.1%
- Urban rate: 81.8 % (2019)
- Capital: SANTO DOMINGO
- Population of main city: 3,318,000 (*Source: https://www.macrotrends.net/cities/20898/santo-domingo/population#:~:text=The%20metro%20area%20population%20of,a%202.52%25%20increase%20from%202017* .)

SWM SYSTEM	DESCRIPTION
PRODUCTION	▪ According to a first estimate based on a production ratio of 0.85 kg/inh/d, the total production of household waste in the country is around 3 298 000tons per year with a major part (around 80%) concentrated in urban areas. In addition, some commercial waste has to be considered and also the solid waste produced by the tourism sector representing about 7 million people producing 3.62 kg/inh/d.

	▪ Around 50% of household solid waste is organic and could be partly managed locally. About 30% of household solid waste are recyclable so likely to be processed. This production is expected to grow with local population (about 1% yearly) and further tourism (6% yearly). The amount of household and tourism waste per person is likely to be stable but possibly different in composition according to the local industry.
COLLECTION	▪ In cities, some long-term contracts are usually passed with local private companies that are responsible for collecting both household and commercial waste while in smaller communities the municipality collects waste directly. With a collection coverage of 90% according to the Ministry of Environment, waste is brought directly to the final treatment locally planned which can be a central dumpsite, without any transfer station to reduce the amount of transport. ▪ In the future, some new contracts will be signed involving some transfer with seven sites in the region of Gran Santo Domingo. Some pre-collection could be involved in some areas.
RECYCLING	▪ With regards to solid waste recovery, the recycling rate is said to be around 7% but there is almost no recycling happening through a public organization from separation at source of households. An initiative called NUVI is starting to encourage people to bring PET bottles for recycling. No organized sorting facility nor Material Recovery Facility (MRF) exist except in Santiago, but only small private companies that collect paper, plastics and e-waste to sell them for recycling following just a first preparation. ▪ No MRF is planned by the government. It seems to be left to the specialized private sector which appears to be quite weak according to the exchanges performed.
RECOVERY	▪ For now, no large-scale composting facility is implemented. There is no biogas or incineration plant working. Obviously, no waste-to-energy project is considered. A composting and biogas plant is projected in Punta Cana with a funding from GIZ and IDB.
LANDFILL	▪ A central dumpsite is usually implemented as final treatment facility. In the country, there are only two semi-sanitary landfills in Villa Altagracia and Santiago while all other ones including the Duquesa landfill are run with very limited treatment of outflows. In the future, some new sanitary landfills are planned with one in each of the 10 sub-regions including the metropolitan region where a site has already been identified. In most of the regions, they should be managed by communities still to be set.
FINANCIAL SITUATION	▪ According to IDB, the current expenses for SWM are 26 USD per ton for collection and 3 USD per ton for treatment in average. This level is quite representative of the region for a quite populated country. A local tax is normally planned in municipalities to cover the costs of waste collection and treatment with quite a good coverage. In the National district of Santo Domingo, this tax is between 50 and 100 DOP per household which is about 1 and 2 USD. It is probably not enough to cover all expenses related to SWM. The expenses will probably be higher in the future with more collection and better treatment.
MAIN STAKEHOLDERS	▪ The main public stakeholders are: o The Ministry of Environment and Natural Resources (Ministerio de Medio Ambiente y Recursos Naturales), o ADN (Ayuntamiento del Distrito Nacional), Municipality of the capital city of Santo Domingo, o The 10 Regions. ▪ Some active local stakeholders are: o AIRD (Asociación de Industrias de República Dominicana), Association of Industries of the Dominican Republic; o NUVI (NGO responsible for a new PPP recovery program), o ECO-RED (network of big companies committed to a better environment). ▪ In relation to international funding, the most active institution in the sector is JICA and it sometimes collaborates with IDB in support of the government. The projects have mostly focused on waste disposal and capacity building.

Table 25: *Overview of SWM Systems in the Dominican Republic*

MAJOR WASTE STREAM	CURRENT MANAGEMENT METHOD
USED LEAD ACID BATTERIES (ULABS)	▪ Industrias Meteoro SA has constructed a recycling plant for these used batteries in the Haina industrial zone, utilizing internationally recognized and proven "Green Slag" technology of Lead Metal Technologies (LMT), designed by Sr. Flordualdo Lima[266]. ▪ Blacksmith's Lead Poisoning and Car Batteries Project is currently active in DR and seven

266 https://www.sica.int/busqueda/Noticias.aspx?IDItem=64828&IDCat=3&IdEnt=889&Idm=2&IdmStyle=2

	other countries. It aims to end widespread lead poisoning from the improper recycling of ULABs, and consists of several different strategies and programs, with the most important priority being the health of children in the surrounding communities[267].
BIOMEDICAL WASTE	▪ Hazardous waste management, including biomedical waste is not handled separately from municipal waste[268]. ▪ The regulation for non-hazardous solid waste includes guidelines as to the precautions and requirements for handling certain types of waste, such as biomedical or nuclear waste. Some industries and special activities may also require an environmental authorisation that includes an approval for waste disposal[269].
WASTE OIL	▪ In September 2019, Cibao Metal Recycling (CIMER) Srl, a subsidiary of the Yeyo Ochoa Group in the Dominican Republic, announced the startup of its new three-in-one recycling plant. It is designed to process up to one ton per hour of oil filters, two tons per hour of electronic scrap, and approximately five tons per hour of car parts and metal sheets, the provider Andritz MeWa informed[270].
E-WASTE	▪ Private companies like Winfield Company partnering with third party logistics companies in DR are providing responsible and ethical electronics waste recycling[271]. ▪ The Ministry of Environment and Natural Resources of the Dominican Republic published in September 2019, a draft Technical Regulation for Management and Final Disposal of Waste Electrical and Electronic Equipment (WEEE)[272].
END OF LIFE VEHICLES	▪ In September 2019, Cibao Metal Recycling (CIMER) Srl, a subsidiary of the Yeyo Ochoa Group in the Dominican Republic, announced the startup of its new three-in-one recycling plant. It is designed to process up to one ton per hour of oil filters, two tons per hour of electronic scrap, and approximately five tons per hour of car parts and metal sheets, the provider Andritz MeWa informed[273].
PLASTICS	▪ PET plastics are sent to the dumpsites or end up in the ocean[274]
PERSISTENT ORGANIC POLLUTANTS (POPs)	▪ DR has ratified the Stockholm Convention (National Implementation Plan of the Stockholm Convention in the Dominican Republic, 2008).
ORGANICS	▪ Less than 10 of the 150 municipalities have a waste separation system in place to sort between organic and inorganic waste[275].
SHIP WASTE	▪ Waste taken off ships is mixed together as either garbage (solid waste), or sludge (liquid waste). Sewage and oily waste is taken to private treatment facilities outside the port; and garbage is taken to a private incinerator or sterilization facilities, also outside the port[276].
REGULAR HOUSEHOLD WASTE	▪ Once the collected waste reaches the landfill, only a miniscule proportion of it goes through recycling by manual processes[277].
GLASS, TEXTILES AND FURNITURE	▪ A new container glass manufacturing plant is set to be built which will manufacture 500 million bottles a year. It is set to start production in March 2021. An important part of its

267 https://www.bioenergyconsult.com/recycling-lead-acid-batteries/

268 *Health in the Americas, 2007. Volume II. Countries. Dominican Republic (https://www.paho.org/hq/dmdocuments/2010/Health_in_the_Americas_2007-Dominican_Republic.pdf)*

269 https://www.lexology.com/library/detail.aspx?g=e403141a-1f26-4ebb-b8c9-a05795517143

270 https://global-recycling.info/archives/2557

271 https://windfieldalloy.com/about/global-service/electronic-recycling-solutions-in-dominican-republic/

272 http://blog.complianceandrisks.com/news-resources/new-weee-rules-for-dominican-republic

273 https://global-recycling.info/archives/2557

274 *A Needs Assessment of a Municipal Compost Pilot Project in the Dominican Republic. Amanda Brinton. University of Florida. 2017 (https://ufdc.ufl.edu/AA00060784/00001)*

275 *Ibid*

276 *Feasibility Study on the Development of a Regional Reception Facilities Plan for the Small Island Developing States of the Wider Caribbean Region. ANNEX G, Dominican Republic (http://www.racrempeitc.org/sites/default/files/Annex%20G%20-%20Dominican%20Republic.pdf)*

277 https://woimacorporation.com/drowning-in-waste-case-santo-domingo-dominican-republic/

	production will use locally collected glass[278].
TYRES	▪ Grupo SPR supplied, installed and commissioned the Dominican Republic's first large-scale end-of-life tyre (ELT) shredding facility in December 2017[279].

Table 26: *Current management method of major waste streams in the Dominican Republic*

CONCLUSIONS:

The Dominican Republic is probably at a cornerstone of its development towards a sound SWM with the new law and its translation into specific regulations. However, there will be several steps before specific policy implementation actions, such as master plans, happen on the ground and actual changes can be observed.

The needs of the State for the next 10 years may be summarized in the following items:

- SWM master plans at national and regional level;
- New infrastructures (*sanitary landfills, transfer stations, MRF*) design, supervision and construction;
- Awareness rising to reduction and sorting towards circular economy;
- Capacity building about SWM monitoring.

To some extent, the EU could possibly be involved for funding the necessary support expressed by the Ministry for these needs.

RECOMMENDATIONS:

Commitments on soft investments like SWM master plans and awareness raising campaigns will be needed in the short term. JICA could possibly continue to ensure some capacity building.

With Regards to infrastructures that will be needed in the medium term, the involvement of international partners such as the EIB could be envisioned for construction. Some design-supervision-construction contracts could be interesting for some facilities like transfer stations or MRF.

Guyana

Box 28. General country context –Guyana

Guyana is quite a large country located in North-eastern side of South America and is culturally part of the Anglophone Caribbean. It is bordered by the North Atlantic Ocean, and the countries of Suriname, Venezuela, and Brazil. It is the only English-speaking country in South America.

Its territory has an area of more than 200.000 square kilometres with a majority covered by forest. Culturally, its population comprises ethnic groups of African and East Indian descent.

Agriculture and mining are Guyana's most important economic activities, with sugar, bauxite, rice, and gold accounting for 70–75 percent of export earnings. Other economic assets include its natural resources, mainly its pristine rainforests, and rice fields.

Relevant data for SWM:

- Total population: 779,004
- Population growth rate: 0.5%
- Urban rate: 26.7 % (2018)
- Capital: GEORGETOWN
- Population of main city: 245,000

278 https://www.glass-international.com/news/dominican-republic-to-build-container-glass-manufacturing-facility
279 https://futurenviro.es/en/dominican-republics-first-large-scale-elt-shredding-plant/

SWM SYSTEM	DESCRIPTION
PRODUCTION	▪ According to a first estimate based on a production ratio of 0.56 kg/inh/d (quite low), the total production of household waste in the country is around 159 000 tons per year with only a small part (around 25%) concentrated in urban areas. In addition, some minor commercial waste has to be considered. ▪ Around 50% of household solid waste is organic and could be partly managed locally. About 30% of household solid waste are recyclable so likely to be processed. ▪ This production is expected to grow with local population (about 0.5% yearly) and maybe also by some increase of the ratio of production per capita. The amount tourism waste per person may be assumed to be stable because it quite environmentally responsible through eco-tourism.
COLLECTION	▪ Collection of household solid waste is quite efficient in the city of Georgetown with both municipal services and private services from contracted companies to achieve a collection coverage rate of 90% with a frequency of once a week. However, it seems to be different within the country depending on the local capacity with a level of 70 to 80% achieved in the 10 central municipalities of the country. ▪ There is no transfer station in place since the dumpsite is quite close to the city centre of Georgetown (4-5 km) but a feasibility study is in progress about it. In other parts of the country, distance is probably a problem.
RECYCLING	▪ No public MRF does exist in the country. Some private enterprises are active for paper (a local paper factory being reported), metals and plastics achieving some 3% of recycling rate nationally but usually encounter difficulties because of low international prices and almost no local markets. ▪ A new private project of tyre recycling was reported at a HLF conference organized by CWWA but could not be confirmed locally. CIEVONS Waste Management runs a new scrap metal recycling facility mostly for export and looks interested into plastics.
RECOVERY	▪ No significant composting platform was identified. A project of bio-digestion plant is being studied in partnership with the Ministry of Agriculture to produce both energy and fertilizer out of the 50% of organic waste with regard to the promotion of large-scale agriculture. No WtE plant is reported. The final treatment should definitely remain landfill in relation with the available space.
LANDFILL	▪ There is a significant landfill for the city of Georgetown and Region 4 surrounding it comprising 5 cells in total (4 cells left) with about 300 tons per day being treated (250 t/d from Georgetown). It is operated daily by a local private company called CIEVONS but not sanitarily with no treatment of leachates or capitation of biogas. In other regions, just central dumpsites are implemented especially for municipalities. ▪ All of the 10 regions would need a sanitary landfill to be operated according to the Ministry. For hazardous waste, a first central treatment would be relevant.
FINANCIAL SITUATION	▪ The SWM monthly budget of the city of Georgetown is reported to be around 130 000 USD (28 million GYD): this could be considered as a reference for a full service. In addition, some private collection services have to be paid by clients. No SWM fee is in place nationally but a property tax is implemented in Georgetown and used for SWM expenses. Outside Georgetown, the Ministry is expected to pay for all services.
MAIN STAKEHOLDERS	▪ The main public stakeholders are: o The Ministry of Local Governments and Rural Development, o Environmental Protection Agency - Guyana, o Georgetown City Council, o The 10 Municipalities. ▪ Some active local stakeholders are: o Georgetown Chamber of Commerce and Industry; o CIEVONS Waste Management Inc. (local private company present nationwide). ▪ No large SWM projects funded internationally have been reported. Only EU and IDB seem to be locally represented.

Table 27: *Overview of SWM Systems in Guyana*

MAJOR WASTE STREAM	CURRENT MANAGEMENT METHOD
USED LED ACID BATTERIES (ULABS)	▪ The National Solid Waste Management Strategy includes the design and implementation of a deposit/refund programme for lead acid batteries (as well as food and beverage

	containers, used tyres, and other priority waste streams) as a target by 2019.
BIOMEDICAL WASTE	▪ Infectious waste from GuySuCo's healthcare facilities are sent to the Georgetown Hydroclave or incinerated on GuySuCo's estates. Empty chemical containers are shredded and incorporated into the construction of roads on GuySuCo's estates. ▪ Infectious waste and sharps from this hospital and from several healthcare centres in other regions are sterilised in a Hydroclave, which was commissioned on March 2012. ▪ In general, there are no appropriate protocols or systems in place to manage other non-infectious waste types arising from healthcare. The majority of pharmaceutical wastes are either burnt under supervision of the Ministry of Health Food and Drug Department or returned to the Materials Management Unit.
WASTE OIL	▪ The implementation of recycling programmes for hazardous material such as used oil (as well as e-waste, vehicles and tires) is a priority included in the National Solid Waste Management Strategy, but it is not being undertaken at present.
E-WASTE	▪ There is no e-waste recycling company in Guyana ▪ Some computer and cell phone sellers and importers have been doing some recycling in an informal way and these could be the bases of the recycling companies. ▪ One scrap metal company, Eternity Investments, has been licensed by the Environmental Protection Agency (EPA) to collect and deal with/export e-waste since 2018 ▪ A number of manufacturers have a system where persons can return their e-waste to them. However, from the survey, a large number of persons said that they do not return items to manufacturers because they fear that their data would get exposed. As such, they either keep the items, burn them, or throw them into the garbage.
END OF LIFE VEHICLES	• Scrap metal recycling is coordinated through the Guyana Metal Recycler's Association which has a membership of 23 scrap metal dealers. In 2013, just over 20,115 tonnes of ferrous and non-ferrous scrap metal and used lead acid batteries were exported, while 11,103 tonnes were exported during the first half of 2014[280].
PLASTICS	• Plastics are currently taken to the landfills in Guyana. • The National Solid Waste Management Strategy contemplates the design and implementation of a container deposit programme for food and beverage containers of all types (including glass, plastics, aluminium, tin, Tetra Pak).
PERSISTENT ORGANIC POLLUTANTS (POPs)	• Guyana counts with aNational Implementation Plan under the Stockholm Convention on Persistent Organic Pollutantsdated March 2013[281].The Plan was approved to be reviewed in 2019 with a GEF grant[282].
ORGANICS	• According to the National Solid Waste Management Strategy, a community composting pilot was completed in 2 NDCs in Region 4 as part of the GSWMP implementation. Participating households were asked to bring their organic waste to the communal composting site where it was composted and the finished compost was distributed to the residents.
SHIP WASTE	• Ship representatives notify shipping agents of their intent to discharge SGW in port. Ship agents then contact the Port Health authorities to get permission for receiving the SGW. Service providers receive the waste and Port Health officials are to issue certificates authorizing proper disposal[283].
REGULAR HOUSEHOLD WASTE	• Most of the legal dumping is done by sanitary service companies which take the garbage by truck to the Haags Bosch Landfill at Eccles. • The top two garbage collection companies are Puran's Disposal Services and Cevons Waste Management. • The most common waste receptacle provided for household use as part of a private fee-for-

280 *Putting Waste in its Place: A National Solid Waste Management Strategy for the Cooperative Republic of Guyana 2013-2024 (2016). Ministry of Local Government and Regional Development (https://mlgrd.gov.gy/wp-content/uploads/2016/08/National-Solid-Waste-Management-Strategy.pdf)*

281 *https://www.informea.org/en/action-plan/republic-guyana-national-implementation-plan-guyana-under-stockholm-convention-0*

282 *https://www.thegef.org/project/review-and-update-national-implementation-plan-guyana-under-stockholm-convention-persistent*

283 *Feasibility Study on the Development of a Regional Reception Facilities Plan for the Small Island Developing States of the Wider Caribbean Region. ANNEX I. Guyana (http://www.racrempeitc.org/sites/default/files/Annex%20I%20-%20Guyana.pdf)*

	service waste collection service is the 205-litre (45 gallon) steel drum, which may weigh in excess of 32 kg when filled, and requires no less than two workers to lift and empty each bin. In addition to being a health and safety hazard, the use of the steel drum contributes to an inefficient waste collection system. • Rear-loading waste compactor trucks are typically used to transport waste; however, dump trucks and flatbed trucks with temporary side walls have also been observed in use[284].
GLASS, TEXTILES AND FURNITURE	• Banks DIH operates an ongoing beverage bottle return programme, which involves charging a deposit of $200 on each case of beer sold in refillable glass bottles, and issuing a full refund when the bottles are returned in good condition. • A cardboard recycling programme is implemented by Caribbean Container Incorporated (CCI) whereby CCI buys, collects and recycles approximately 80 tonnes/month of office-paper and old corrugated cartons to make new corrugated packaging.
TYRES	• Tyres are currently dumped at the landfills[285].

Table 28: *Current management method of major waste streams in Guyana (Source: Putting Waste in its Place: A National Solid Waste Management Strategy for the Cooperative Republic of Guyana 2013-2024[286])*

CONCLUSIONS:

The country of Guyana is definitely contrasted between the city of Georgetown which is quite well served in terms of SWM and the remote municipalities representing the majority of the population. Consequently, the situation of solid waste is not very advanced, with no good collection service and no sanitary final treatment.

The needs of the State for the next 10 years might be summarized in the following items:

- National SWM master plan;
- 10 sanitary landfill design, supervision and construction;
- National hazardous waste treatment facility;
- Capacity building about SWM monitoring.

To some extent, the EU could possibly be involved for funding the necessary support expressed by the Ministry for these needs.

RECOMMENDATIONS:

Commitments on soft investments like SWM master plans and awareness raising campaigns will be needed to better balance both type of territories. Awareness raising could be relevant in the short term.

With Regards to infrastructures that will be needed in the medium term, the involvement of international partners such as the EIB could be envisioned for construction. Some design-supervision-construction contracts could be interesting for some facilities like landfills.

284 https://www.arcgis.com/apps/MapJournal/index.html?appid=e14caae2d77c4f5092ce2377253ad6db

285 https://www.inewsguyana.com/tyre-build-up-a-major-challenge-at-haags-bosch-landfill/

286 *Putting Waste in its Place: A National Solid Waste Management Strategy for the Cooperative Republic of Guyana 2013-2024 (2016). Ministry of Local Government and Regional Development (https://mlgrd.gov.gy/wp-content/uploads/2016/08/National-Solid-Waste-Management-Strategy.pdf)*

Annex 6: High-Level Forum of Caribbean Ministers on Waste Management

Recognizing the need for coordinated efforts to tackling waste management, under the leadership of UN Environment - through its Caribbean Sub-Regional Office -, and in cooperation with the Dutch Ministry of Infrastructure, the first **Caribbean Waste Management Conference**, "**SIDS approaches to waste management and the circular economy**", was organized in Kingston, Jamaica, in July 2017. This first conference aimed to help ministers define regional and island-specific waste management priority actions. Specifically, this first forum had the following purposes: i) to introduce participants to global solid waste agendas and protocols; ii) to inventory the existing solid waste management systems throughout the Caribbean to assess strengths and weaknesses, and begin establishing a platform for a regional solid waste strategy that fosters an environmentally and financially sustainable solid waste management system; iii) to create a dialogue about the Circular Economy in the Caribbean region and explore opportunities for island nations to incorporate the Circular Economy principles and characteristics into their waste systems. This dialogue included creating baseline of what individual islands are currently doing with respect to promoting a Circular Economy and how to regionally-scale individual island initiatives.

The 2nd High Level Forum (HLF2 – Waste) of Caribbean Ministers Responsible for the Waste Management sector was held in Montego Bay (Jamaica) in October 2018, with the support of the Caribbean Water and Wastewater Association (CWWA[287]). A **draft for a Caribbean WM Regional Action Plan** was compiled with the main objective of establishing: i) adequate strategies to regional and national level for the sector; ii) sustainable systems in environmental and financial terms; iii) a global plan shared and supported by civil society.

The 3rd High Level Forum (HLF3 – Waste) of Caribbean Ministers Responsible for Waste Management was held in St. Kitts & Nevis in October 2019. The objectives of this forum, held under the theme "**From Awareness to Action**", were to identify actions and milestones for the regional agenda on waste management by highlighting the key solid waste issues faced by the islands including emerging issues (*i.e. the contributions of the tourist sector to waste*) and identifying opportunities for projects and identifying sources of financing.

The 4th High Level Forum (HLF4 – Waste) of Caribbean Ministers Responsible for Waste Management was held virtually, in November 2020, and included several hands-on working sessions aimed to facilitate communication and cooperation between Caribbean Member States and actors, and support them in strategic integrated planning: i) fostering PPPs and enhancing opportunities for better and innovating SWM funding systems, ii) improving and expanding the SWM infrastructure, iii) managing disaster debris, iv) preventing waste pollution, and v) increasing landfill diversion and recycling. A summary of the main priorities identified during this forum are included in the next table.

	Identified priorities and needs for action, including on-going initiatives
Strategic Planning	▪ Strategic plan development under way through GEF Islands Project, and specific individual initiatives at country level (i.e. Jamaica Waste Minimization project); ▪ Key Performance Indicators identified in most of the territories; ▪ Proposals for a Regional Waste Management Database and Waste Reporting, Monitoring & Evaluation templates; ▪ On-going efforts to support national Action Plans declining the Regional Actions, strategies, targets and indicators, through on-going regional projects;

287 The Caribbean Water and Wastewater Association (CWWA) is a regional non-governmental organization established by an Act of Parliament in Trinidad & Tobago in 1991. The CWWA is a grouping of water, wastewater and solid waste professionals in the public and private sectors.

Funding SWM systems	▪ Create Data Base of the capital costs linked with various SW equipment; ▪ Benchmark how SIDS fund their SWM systems and identify case studies repository (*on improvement of effectiveness of SW operation or on inaction effects on performance, local economy or environment*); ▪ Explore interest in regional Memorandum of Understanding between Caribbean islands to commit allocating revenue from SWM levies to fund SWM programs; ▪ Identify mechanism to increase the cost-effectiveness operating SWM systems; ▪ Work on each island nations to adopt a "polluter pay principle"; ▪ Gather information on criteria for investment in / financing of SWM by multilateral agencies and banks, as well as private investors;
Infrastructures	▪ Landfill being developed in Grenada, Suriname. Planning for new landfills underway in T&T, Antigua & Barbuda; ▪ Some countries landfills have reached capacity and no alternatives are in place; ▪ Recycling facilities being developed /expanded in T&T, Guyana, St. Lucia, St. Vincent. Shedding facilities in Antigua. Consideration of WtE in St. Lucia, Trinidad, St. Kitts, Aruba; ▪ Feasibility study was conducted by RAC /REMPEITC- Caribe for the possible development of regional reception facilities plan for SIDS of the wider Caribbean Region. The study includes an assessment of and site visit to the ports of 16 UN members SIDS and identification of possible measures to address the inadequacy of port reception facilities in the wider Caribbean region; ▪ The Cartagena Convention secretariat aims to build a new ACP MEA Project;
Waste Pollution	▪ Ban on single use of plastics implemented in several Caribbean Countries; ▪ Beverage Containers DRS in place in some countries (i.e. Barbados, SVG). Draft Regulation in T&T. Litter laws in place / enforced in many Caribbean territories; ▪ Pilot Project for Tyre Recycling being developed in Guyana; ▪ Regulation Impact Assessment Work ongoing in Jamaica; ▪ Increase in ratification of MEA's such as land-based sources of Marine Pollution Protocol of the Cartagena Convention Forum of UNEP and UNDP Programs; ▪ SW Authorities have been established in many territories. White paper still to be developed; ▪ Regional Database for Plastics and Styrofoam related regulations / bans available through UNEP / Cartagena Convention (to be further developed);
Landfill diversion and Recycling	▪ Established recycling systems in Barbados, Martinique, Guadalupe; ▪ Early stages of recycling in T&T, SVG, Guyana, Suriname, Belize, St. Lucia, St. Eustatius, Aruba, St. Marteen. It is noted that for small countries (*for example St. Kitts*) efforts at recycling are very costly; ▪ RePLAST OECS Pilot Recycling Project. SIDREP Plant in Martinique (closed since then). GEF ISLAND Project; ▪ New Cartagena Convention Project funded by the Government of Germany is expected to support 3-5 SIDS with a focus on reducing plastic leakage;
PPP - Innovation	▪ IDB Partnership with Jamaica for PPP; ▪ IDB incubator facilities; ▪ Opportunity to learn from the experience of Barbados, Belize; ▪ Need for more training capacity building related to PPPs;
Next steps and priorities	▪ Session to update and approve Regional Action Plan and to **develop key-monitoring indicators as well as implementation schedule;** ▪ Finalize formal proposal for **regional date-base and WTE template** and seek funding for his proposal; ▪ Quarterly training programmes for i) landfill management; 2) data monitoring and reporting (benchmarking); 3) managing special wastes (including disaster debris);

Table 29: *Main priorities identified during the 4th High-level Forum of Caribbean Ministers on Waste Management*

During the HLF4 – Waste sessions, the Caribbean Tourism Organisation[288] highlighted the priorities for project interventions on (i) supporting governments on drafting and/or enforcing ban on single use of plastics and Styrofoam containers, (ii) leading role to be played by the hospitality sector (e.g. Bay Garden Hotels in St Lucia replacing Styrofoam with biodegradable materials, Eco Lodge / Eco Retreats engaging in innovative Waste Management and WTR approach for composting, recycling/WtE cooking oil for fuel as biogas), (iii) replacement of packed soap and toilet products with refillable containers; (iv) consumable/food service switching to proper products and reusable cutlery and containers; (v) food waste reduction and composting. PPP and innovative financing are supported (*e.g.* Jamaica attracted philanthropic interest from Sandal Foundation to help with the restauration of its dying coral reefs, while creating a gateway for value added visitor experiences, where guests can participate in restoration efforts). There is also a focus on partnerships with (local) communities on various

288 Amanda Charles, Caribbean Tourism Organisation

thematic (*e.g. sustainable agriculture and consumption, beautification actions and competitions, disposal and composting practices*).

In parallel to these HLFs on Waste Management, in 2020 the region also saw the birth of a regional movement on Sustainable Development through the **inaugural Sustainable Development Movement (SDM 2020) Summit,** hosted by the Organization of Eastern Caribbean States (OECS) and held virtually in September 2020. During the opening day of SDM 2020, the Blue Economy Investors Forum[289] proposed a Blue Economy Investment Portfolio comprising ten regional project concepts, five areas of interest for private sector development, as well as a range of priority national interventions. Several concepts are highly relevant to the SWM in the region as they could contribute to an operational integration of initiatives such as:

- A Blue Economy Incubator and an Accelerator program, which could pitch and support initiatives related to marine litter reduction;
- A Marine Services Training School, which could propose accreditation of Marine and Coastal Guards entitled to enforce the environmental and waste management regulations

EU cooperation in the region in terms of Green and Blue investments, online with the ***EU Green Deal*** orientations for external cooperation, will be aimed at **d*e-risking private sector investments in sustainable development initiatives***, by putting in place a system of guaranties and mechanisms for leveraging extra funding from public and private sector.

Most recently, the **XXXII Forum of Ministers of Environment of Latin America and the Caribbean**, virtually organized in February 2021 by the Government of Barbados and the UNEP addressed opportunities for green recovery and urgent actions for nature, in the context of the COVID-19 pandemics. **Voluntary coalitions and a concerted regional approach** are recommended to (i) effectively address waste and chemical management[290,291,292], (ii) to encourage and monitor progressive closure of dumpsites[293,294], and effective transition towards integrated waste management, and (iii) to prevent marine litter[295] through the adoption and enforcement of national plans and regulatory measures such as bans and restrictions on single-use plastics, as well as awareness raising activities including within the framework of the Clean Sea Campaign.

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289 Organized as a virtual forum in September 2020 by the OECS, with the participation of the World Bank, EU, EIB, Norwegian Ministry of Foreign Affairs, the Government of Canada, GEF, the Caribbean Development Bank and of the Inter-American Development Bank https://pressroom.oecs.org/global-partners-pledge-support-for-blue-economy-investments-in-the-oecs

290 UNEP. (Final Draft January 13th, 2021). Action Plan for regional cooperation in the sound management of chemicals and waste. Latin America and the Caribbean Biennium. Progress Report 2019 – 2020. Intergovernmental Network on Chemicals and Waste for Latin America and the Caribbean

291 UNEP. (Final Draft December 1st, 2020). Priority issues on chemicals and waste management in Latin American and the Caribbean and potential priority cooperation activities for 2021-2022. Report prepared by the Secretariat of the Intergovernmental Network on Chemicals and Waste UNEP Latin America and the Caribbean Office.

292 UNEP. (Final Draft December 1st, 2020). Action Plan for regional cooperation on chemicals on waste management: 2021-2024 – Latin America and the Caribbean. Intergovernmental Network on Chemicals and Waste for Latin America and the Caribbean

293 UNEP. (Final Draft January 7th, 2021). Roadmap for the Progressive Closure of Dumpsites in Latin America and the Caribbean. Voluntary Coalition of governments and relevant organizations for progressive closure of dumpsites in Latin America and the Caribbean

294 UNEP (Final Draft January 7th, 2021). Baseline – Coalition for the Progressive Closure of Dumpsites in Latin America and the Caribbean.

295 UNEP. (Draft January 13th, 2021). Policies, Regulations and Strategies in Latin America and the Caribbean to Prevent Marine Litter and Plastic Waste. Information Report to the XXII LAC Forum of Ministers of Environment UNEP – Latin America and the Caribbean Office.

Annex 7: List of identified SWM projects

#	Location	Type	Scope	¨Project Name and Contact	Institution	Funding organisations / Partners	Hyperlink
1	Antigua & Barbuda	Landfill	Design and construction of a sanitary landfill	Cooks Sanitary Landfill	State of Antigua & Barbuda	State of Antigua & Barbuda	https://ministryofhealth.ag/departments/national-solid-waste-management-authority/
2	Antigua & Barbuda	Recycling	Design and construction of recycling facilities		State of Antigua & Barbuda	State of Antigua & Barbuda	
3	Barbados	Recycling	Design and construction of a sorting facility		State of Barbados	State of Barbados	https://www.sbrcinc.com/about/
4	Barbados	Reduction	Ban of single use plastics		State of Barbados	State of Barbados	
5	Belize	Landfill	Design and construction of new sanitary landfills and transfer stations	Solid Waste Management Project	State of Belize (BSWaMA, Belize Solid Waste Management Authority)	State of Belize / IADB (Inter-American Development Bank)	http://belizeswama.com/
6	Dominican Republic	General	Design and construction of identified transfer stations and sanitary landfill (Full SWM infrastructure in Gran Santo Domingo)	SWM master plan implementation	State of Dominican Republic	State of Dominican Republic / JICA	
7	Dominican Republic	General	Design of the SWM strategic plan	National SWM strategic plan	State of Dominican Republic	State of Dominican Republic	
8	Dominican Republic	Landfill	Design and construction of 1 sanitary landfill in each region	Sanitary landfill	State of Dominican Republic	State of Dominican Republic	
9	Dominican Republic	Recycling	Design and construction of at least a sorting facility (Collection and recycling of plastic bottles)	Development of NUVI initiative	State of Dominican Republic	State of Dominican Republic	https://dominicantoday.com/dr/economy/2020/10/26/adn-and-aird-sign-an-agreement-for-the-collection-of-plastic-bottles/
10	Grenada	Landfill	Design and construction of a sanitary landfill	Perseverance Landfill	State of Grenada (GSWMA, Grenada Solid Waste	State of Grenada / CDB (Caribbean Development Bank)	https://www.hydea.it/en/portfolio/gestione-integrata-dei-rifiuti-solidi/

					Management Authority)		
11	Guyana	Landfill	Design and construction of 1 sanitary landfill in each region	Haags Bosch Sanitary Landfill	State of Guyana (Ministry of Local Government and Rural Development)	State of Guyana / IADB (Inter-American Development Bank)	https://www.puranbrothers.com/landfill-operations-
12	Guyana	Landfill	Design and construction of a special cell for hazardous waste (Means of local treatment for hazardous waste)		State of Guyana (Ministry of Local Government and Rural Development)	State of Guyana	
13	Guyana	Recovery	Design and construction of a biodigester used for waste from households and agriculture		State of Guyana (Ministry of Local Government and Rural Development)	State of Guyana	
14	Guyana	Recycling	Design and construction of a sorting facility		State of Guyana	State of Guyana	
15	Guyana	Recycling	Design and construction of tyre recycling facility		State of Guyana	State of Guyana	
16	Haiti	Landfill	Design and construction of a transfer station and a sanitary landfill in Cap-Haitien	Landfill and infrastructure for waste recycling and composting, located in Mouchinette, Cap-Haitian	State of Haiti	State of Haiti / IADB (Inter-American Development Bank)	https://www.devdiscourse.com/Article/agency-wire/189501-idb-approves-usd-335-mln-to-finance-solid-waste-management-in-haiti
17	Jamaica	Collection	Design and construction of transfer stations across the country (3-4 Transfer stations)		State of Jamaica (Ministry of Local Government and Community Development)	State of Jamaica	
18	Jamaica	Landfill	Design and construction of 2 sanitary landfills (in St James and St Thomas)		State of Jamaica (NSWMA, National Solid Waste Management Authority)	State of Jamaica	https://jamaica-gleaner.com/article/news/20201117/nswma-ready-proceed-work-new-disposal-site-st-thomas

19	Jamaica	Recycling	Design and operation of a recovery project for e-waste (PPP about e-waste)		IDB	IDB / NESTLE	
20	Jamaica	Recycling	Design and operation of larger recycling facilities according to the current pilot projects		State of Jamaica (Ministry of Local Government and Community Development)	State of Jamaica	
21	St. Lucia	Recovery	Design and construction of an incineration plant (Waste To Energy)	*Justin Seley*	State of St. Lucia	State of St. Lucia	
22	St. Lucia	Recycling	Extension of the current project to more locations and HDPE (Collection and preparation for recycling)	RePlast *Shanta King*	UNITE-Caribbean	State of St. Lucia, State of France / St. Lucia Solid Waste Management Authority (SLSWMA), OECS	https://unite-caribbean.com/public/replastoecs/About.html
23	St. Vincent and the Grenadines	General	Operation of the refund system (under a PPP)		State of St. Vincent and the Grenadines	State of St. Vincent end the Grenadines	
24	St. Vincent and the Grenadines	Recycling	Design of the recycling of e-waste		CYEN (Caribbean Youth Environment Network)	Ocean Conservancy (USA)	
25	St. Vincent and the Grenadines	Recycling	Design and construction of a sorting facility		State of St. Vincent	State of St. Vincent	
26	Suriname	Landfill	Design and construction of a sanitary landfill		State of Suriname	State of Suriname	
27	Trinidad & Tobago	Landfill	Design and construction of a sanitary landfill		State of Trinidad & Tobago	State of Trinidad & Tobago	
28	Trinidad & Tobago	Recycling	Design and construction of recycling facilities further to the sorting facility in place		State of Trinidad & Tobago	State of Trinidad & Tobago	
29	19 countries	Reduction	Design and implementation of the reduction of household solid waste from source (Zero waste)	*Joshua Parris*	CYEN	Ocean Conservancy (USA)	

30	Eastern Caribbean	Reduction	Design and implementation of the reduction of all solid waste from source (Reduction of marine litter)	ReMLit *Susanna Scott*	OECS	State of Norway	https://www.oecs.org/en/our-work/knowledge/library/remlit-project-fact-sheet/viewdocument/2704
31	Eastern Caribbean	Reduction	Design and implementation of the reduction of single use plastics at consumption	Plastic Waste Free Island project	IUCN	Norwegian Agency for Development Cooperation / IUCN, FAO	https://www.iucn.org/theme/marine-and-polar/our-work/close-plastic-tap-programme/plastic-waste-free-islands
32	Regional	Reduction	Awareness raising of reduction best practice for all solid waste	*Amanda Charles*	CTO	UNEP	
33	Regional	Reduction	Construction of a regional databasis for the consumption of plastics and styrofoam	Cartagena Convention	UNEP	UNEP	https://www.unep.org/cep/news/blogpost/styrofoam-and-plastic-bag-bans-caribbean-interactive-map
34	SIDS	Collection	Design and construction of a regional marine transfer station for solid waste from ports		SIDS	SIDS / RAC-REMPEITC Caribe	
35	SIDS	Reduction	Design and implementation of a better management of dangerous chemical waste	GEF island initiative *Jewel Batchasingh*	Basel Convention Regional Center	SIDS	https://www.thegef.org/news/taking-fight-frontline-island-states-unite-end-pollution

Annex 8: Map of identified SWM projects

Annex 9: Action Fiches for Three Thematic Areas Relevant for the Improvement of SWM in the Caribbean Region

Action fiches presented in this Annex are in no way an exhaustive list of measures which should be taken in order to improve solid waste management in the Caribbean region. These fiches must be understood in the light of the comprehensive analysis made in the main text of the report. However, they are, in some way, a selection of proposals. They deliberately focus on 3 domains:

- Marine litter;
- Waste management in the tourism industry; and
- Waste management by ports.

As described in ***Sections 1, 2 and 12*** in the main report, the rationale behind this choice is to focus on sectors which are of importance both for the economy and the environment of the highest possible number of countries of the region.

The fiches have a common structure, including a brief description of the importance of the issue at stake, what has been done until now and what the way forward could be.

The measures which are proposed in the 'way forward' try to build on existing experiences and success stories in the region and also elsewhere (for instance. experiences implemented by the European Union). Even though due consideration was given to existing institutions, mechanisms and practices, some proposals go farther and some of the suggestions expressed would be innovative in the region.

Proposals have a common denominator:

- They aim at a greater regional integration;
- They aim at a greater involvement of stakeholders;
- They aim at paving the way for circular economy.

No priority is given in the list of measures proposed since the diversity of the countries of the Caribbean region make illusory the hope that "one size fits all".

ANNEX 9.I. ACTION FICHE I – Marine Litter in the Caribbean

- Action Fiche on Marine Litter in the Caribbean
- List of Contacts – Marine Litter

ACTION FICHE I:
"Marine Litter in the Caribbean"

1 Why is this issue particularly important?

Marine debris/litter is defined as any persistent solid material that is manufactured or processed and directly or indirectly, intentionally or unintentionally, disposed of or abandoned into the marine environment.

In the Caribbean, this problem is such that it has attracted attention of policy makers for more than 15 or 20 years.

The challenge of reducing Marine litter is recognised internationally, even though there is currently no international convention dealing specifically with this issue. Marine litter, which originates both from land and marine sources, is an environmental, human health and economic problem.

Marine litter is an environmental problem because it is a danger for marine biodiversity and marine/coastal ecosystems. Marine debris can damage important marine habitat, such as coral reefs and mangroves. Many of these habitats serve as the basis of marine ecosystems and are critical to the survival of many species.

One of the most notable types of impacts from marine debris is wildlife entanglement. Derelict nets, ropes, line, other fishing gear, and a variety of marine debris can wrap around marine life. Many animals, such as sea turtles, seabirds, and marine mammals have been known to ingest marine debris.

If a marine organism attaches to debris, it can travel hundreds of miles and land on a shoreline where it is non-native. Invasive species can have a devastating impact on fisheries and local ecosystems and can be costly to eradicate.

Marine litter has also the specificities to ignore borders, to be partly visible and partly invisible, and (in particular for plastic debris) to be transformed after decades if not centuries into micro-particles with at least the same negative impacts on the environment.

Marine litter is a direct danger for human health because the food chain suffers from contamination by plastics and their additives. Plastics – and their fragments called micro-plastics – consumed by fish and other seafood can leach toxins such as mercury and other suspected carcinogens which can bio-accumulate in animal tissue and be transported up the food web to humans.

Improperly disposed medical wastes can spread diseases and cause injury from needles. The transference of pathogens from medical waste, sanitary products and discarded diapers also puts swimmers and beach goers at risk for serious bacterial infections.

Discarded litter can also provide a reservoir for stagnant water providing a breeding ground for mosquitoes and flies that spread diseases such as Dengue Fever, Malaria and Chikungunya virus to humans.

Marine litter is also an economic issue, first of all in countries where tourism is highly developed, where attractiveness depends on the beauty of landscapes and clean beaches, where sailing, diving or other recreational activities are linked to the quality of marine waters.

Marine litter can also create a problem for fisheries and for maritime transport since marine debris can be quite large and difficult to see in the ocean, if it's floating below the water surface. Encounters with marine debris at sea can result in costly vessel damages.

Marine litter is from another angle, the indicator of a global failure of waste management systems: marine litter is made of waste, from telluric origin up to 90% in the region, which was not adequately managed through waste prevention, re-use, recycling, composting, or thermal treatment. Marine litter originates from uncontrolled landfilling, through airborne or waterborne transport from cities, factories and other human settlements. Marine litter may come from your own country, neighbouring countries, but also from remote or very remote sources as illustrated by the "gyres" initially discovered in the late 90's. In this respect, reducing marine litter is a challenge to be tackled in a context of regional or global cooperation involving a broad range of stakeholders.

2 What has been done until now?

2.1 The international framework

Even though no specific binding legal instrument deals exclusively with Marine litter in the Caribbean region, a robust legal framework does exist since the entry into force of the Cartagena Convention (*Convention for the protection and development of the Marine environment of the Wider Caribbean region*) in 1986 and its LBS Protocol (*Protocol on land-based sources of marine pollution*) which entered into force in 2010.

Moreover, the International Convention for the Prevention of Pollution from Ships (MARPOL) and its Annex V, (2012) designates the Wider Caribbean Region as a "Special Area" for protection. Almost all discharges from ships into the sea are now prohibited. Guidelines for the Implementation of MARPOL Annex V were adopted in 2012. The Global Programme of Action for the Protection of the Marine Environment from Land-based Activities (GPA) encompasses the issues associated with land-based sources of marine litter and is working to deal with this global problem through UNEP's Regional Seas Programme.

Another piece of legislation of high relevance should be added, following the recent amendment of the Basel convention including plastic waste and making global trade in plastic waste more transparent and better regulated, whilst ensuring that its management is safer for both human health and the environment.

2.2 RAPMaLi: the basis of a regional strategy

A main achievement in fighting marine litter was indeed the adoption of the Regional Action Plan for Marine Litter (RAPMaLi), developed from 2007 onwards under the leadership of UNEP, initially adopted in 2010, and updated in 2014.

RAPMaLi is designed to serve as a comprehensive toolkit to assist SIDS in incorporating components of proper waste management across all sectors.

According to the analysis presented in RAPMaLi, the top marine litter form found was plastic beverage bottles accounting for 19.6% of the total items recorded. This reflects a marked increase of discarded single-use beverage bottles up from 10.6% in the period 1989-2005. In the period 2001 – 2005, plastic beverage bottles accounted for 15.1% of trash collected. The single-use beverage bottles have moved from #4 to #1 as the most prevalent debris item and given current consumption patterns this gap will continue to widen. This information makes a strong case for big impact by creating a recycling program for plastic bottles. Removal of plastic beverage bottles from the waste stream would also remove 20% of the litter from our oceans and coastal areas.

According to RAPMaLi, education and outreach programmes, strong laws and policies, and governmental and private enforcement are the building blocks for a successful marine pollution prevention initiative.

Next steps include:

- working with the 11 contracting parties to the LBS Protocol to improve policies and legislation that will ensure compliance with the Protocol, in particular those policies which address prevention of waste;
- further development of national marine pollution monitoring programs for contaminants and pollutants through partnerships with research and academic institutions;
- secure funding and partnerships for development and/or improvements of waste management infrastructure;
- share best practices and lessons learned for while each country is unique culture, challenges, priorities, sharing of information can save time otherwise wasted by recreating mistakes or flawed policies;
- introduce new concepts and solutions based on greening the waste sector at SCP that are appropriate for SIDS;
- ensure that specific issues are considered at global forums such as the GPA/GPML and other technical waste management forums;
- pilot projects of resource recovery especially of plastics at national, sub-regional or regional levels.

2.3 GPML Caribe: a joint effort of main stakeholders

The Caribbean Node of the Global Partnership on Marine Litter, which is co-hosted by the Gulf and Caribbean Fisheries Institute (GCFI) and the UNEP Cartagena Convention Secretariat, is also a major contributor to the fight against marine litter in. A GPML-Caribe Marine Litter Strategy has been elaborated to support the implementation of RAPMaLi and the LBS Protocol. Four main strategies are proposed to reduce plastic pollution:

- reducing use and manufacture
- increasing reuse and recycling
- reducing plastic leakage
- removing plastic products from ocean and coasts.

GPML-Caribe also facilitates a wide range of projects including awareness raising, capacity building, resource mobilisation, advocacy, promotion of partnerships and more.

2.4 National Marine Litter Action Plans: The example of Belize

The Belize Marine Litter Action Plan, named 'Belize: Blue, Clean, Resilient, and Strong', was validated in August 2019, within the framework of the Commonwealth Litter Programme. It was developed after the Environmental Policy and Strategy 2014-2024, intended to follow a similar path in providing a framework for addressing marine litter and waste management.

One of the key reasons of the country in developing this marine litter tool is due to its waste management challenges (UNEP, 2021).

The purpose of this Action Plan is to provide a framework for policies and actions necessary for Belize to prevent and reduce marine litter and strengthen waste management within the marine environment. The Plan has five main areas of work focused in: i) marine science, ii) land-based sources, iii) sea-based sources, iv) outreach and education, and v) waste removal. The implementation of the Marine Litter Action Plan will be led by the Government of Belize through the Ministry responsible for the Environment over a five-year period (Commonwealth Litter Programme, 2019).

2.5 The Clean Seas Campaign: "Turn the tide on plastic"

The Clean Seas Campaign on marine litter was launched by UNEP in 2017 with the aim of engaging governments, the public, and the private sector in the fight against marine plastic litter. One innovative component of this campaign was to flag the dangers associated to micro-plastics, microbeads and single-use plastics.

8 countries from the Caribbean are already part of the Clean Seas Campaign[296]. Among the more than 700 islands and coastal countries sharing the Caribbean Sea, several Caribbean SIDS joined this campaign in 2019 (see below).

2.6 The World Bank analysis: "Not a minute to waste"

The World Bank report "Marine Litter in the Wider Caribbean: not a minute to waste" (2019) presents a 12-point agenda, out of which 10 are most relevant for dealing with Marine litter:

1. Improve the analytics and knowledge base on marine pollution and water quality throughout the region using common monitoring approaches and guidelines.
2. Step up assessment of the economic impacts of marine pollution, and quantify the costs associated with pollution prevention and management, as well as the costs associated with doing nothing.
3. Strengthen and harmonize existing national institutional structures, policies, and legislation to effectively reinforce regional governance and align with international mandates and commitments.
4. Integrate marine pollution prevention and control policies into the broader context of national policy and planning frameworks.
5. Raise public awareness about the importance of water quality and marine ecosystems to induce behavioural change.
6. Strengthen multi-sectoral mechanisms and establish partnerships to address marine pollution.
7. Prioritize, dedicate, and increase funding within national budgets for marine pollution prevention and control.
8. Make a strategic investment commitment to litter control.
9. Policy makers need to better identify hotspots and understand the volumes of, and reasons for, litter and to develop action plans to control it.
10. Make a decisive commitment to reduce consumption of common and persistent litter items including plastics.

3 The way forward, orientations for future action

Taken into account the considerable amount of work already done for the analysis of the marine litter challenge in the Caribbean, as well as programmes and pilot initiatives implemented in particular by UNEP, GIZ and AFD, new initiatives to be supported should start from lessons learned and gaps already identified. This could be done by focusing on

- Initiatives to be taken at the regional level,
- A better implementation at national level of regulatory measures,
- An integration of fight against ML in a broader and integrated vision of SWM paving the way towards circular economy (to be done both regionally and nationally).

3.1 The regional dimension

Institutional reinforcement of the regional commitment to combat marine litter

The problem of marine litter is common to all countries of the Caribbean. It would therefore make sense to develop a common approach. For instance, bans on plastic items (*see below*) have been decided throughout the region in a rather heterogeneous way, without synchronisation and with significant differences in substance.

296 https://www.cleanseas.org/tide-turners

Similarly, the signature and ratification of relevant international conventions, such as the LBS Protocol to the Cartagena Convention, has been done without coordination: for instance Trinidad and Tobago ratified in 2003, Belize in 2008 as well as Saint Lucia, the Dominican Republic in 2012, Jamaica in 2015, Barbados in 2019, while others have not yet signed (*Haiti*) or not ratified (*Cuba, Dominica, St Kitts, St Vincent and the Grenadines*). There would nevertheless be advantages in increasing harmonisation of legal provisions throughout the region as a support to the common objective to preserve marine and coastal environment. Greater harmonisation and coordination of policies – involving CARICOM Secretariat where appropriate - and relevant legislations in the region would definitely boost the efficiency of efforts to combat marine litter.

Harmonised monitoring and reporting at the regional level

Data concerning marine litter are often incomplete or missing. Even though the World Bank refers to studies estimating an amount of 200.000 pieces of plastic per km2 in the north-eastern Caribbean waters, the Bank explicitly recommends (see above) to "improve the knowledge base on marine pollution and water quality throughout the region using common monitoring approaches and guidelines". Harmonised monitoring would facilitate reporting and knowledge-based decision making. This common approach for monitoring marine litter could first be done thru existing institutions and thru the implementation of more effective cooperation mechanisms. At the CARICOM level, the Draft Caribbean Community Environment and Natural Resources Policy Framework and Action Plan is being designed to achieve enhanced harmonisation and cooperation.

In a more ambitious perspective, in line with the promotion of a circular economy in the region, it could also be considered whether the creation of a potential Caribbean Environment Agency would be relevant, not only for the monitoring of solid waste but for the entire range of environmental indicators. Even though such a move could be expensive and should be carefully designed, it would strengthen considerably knowledge-based policies.

Identification of marine litter hotspots as done at a worldwide scale by GPML

In 2019, GPML, in cooperation with UNEP, UN-Habitats, Waste Wise Cities and the University of Leeds, conducted a GIS modelling to identify, in Africa and South Asia, 50 land-based marine litter hotspots (*top 5 were identified in Tanzania, Nigeria, Pakistan, Liberia and Ivory Coast*). In addition, **Waste Flow Diagrams** (*innovative field observation-based tool developed with the support of GIZ*) were used in Kenya and Seychelles to estimate plastic leakage from municipal solid waste management systems and guide investments in waste infrastructure for marine litter and micro-plastics reduction.

It could be envisaged to follow a similar methodology to identify marine litter hotspots in the Caribbean and define where investments would be urgently needed to reduce this marine and coastal pollution.

Extension of Clean Seas campaign to all countries of the region

The Clean Seas Campaign, implemented with the involvement of GPML-Caribe, started in 2017, and took place in Barbados, Trinidad and Tobago, St Kitts and Nevis, Grenada and St Vincent and the Grenadines (*see in St Vincent the ReMLit project supported by the OECS Commission and the government of Norway*). This initiative is not only an opportunity to improve the attractiveness of touristic resorts, to reduce the negative impacts of marine litter described above, but also an awareness raising campaign and an effort to quantify and categorise marine litter. Other islands in the region, such as Jamaica, expressed interest for coastal clean-up and all countries in the region should benefit periodically from similar campaigns with high visibility, and therefore high impact to modify citizens 'behaviour.

One step further could be the large participation of all Caribbean Member States of the (Latin America and the Caribbean) regional coalition[297] (*gathering under PACE[298] partners such as CTCN[299], EMF[300], IADB[301], KAS[302], UNEP, UNIDO and WEF[303]*) launched in February 2021. The coalition is aimed to create a platform for best practices exchanges and knowledge sharing through collaborative work between governments, companies and society, supporting the region to advance and invest in the circular economy transition as part of the COVID-19 recovery.

It should be considered the creation (under the CARICOM leadership if appropriate) a Caribbean Circular Economy Stakeholders Forum or Chapter, taking into account the specific circular economy vision of the Caribbean SIDS, that could be enriched by the accumulated knowledge and lessons learned from the European Circular Economy Stakeholders Forum.

Audit on re-use potentialities in the region

Given the specific difficulties of recycling, composting, or incinerating waste in small islands where the volume of waste may not always reach the critical mass necessary for elaborating viable projects and attracting investors, re-use should be strongly encouraged. However, potentialities for re-use are not systematically identified and an audit should determine where these potentialities are currently untapped, using a similar methodology throughout the region.

This could include development of business case models, and identification of what type of enabling policy and legislative framework (including incentives) might encourage greater private sector involvement.

Increased cooperation of the Cartagena convention with other Regional conventions.

Several Marine Conventions are active in fighting marine litter such as the Barcelona Convention (Mediterranean Sea), the Bucharest Convention (Black Sea), or HELCOM (Baltic Sea). A cooperation is already in place between the Cartagena Convention and OSPAR (North East Atlantic), but the exchange of experience could take place on a wider basis and be mutually beneficial.

3.2 National implementation measures

Legislative improvements where appropriate with implementation plans

A specific legislation on plastic pollution, beyond bans being put in place where plastic items can be replaced by biodegradable material (*see point 10*), may not be the most efficient approach. Since marine litter originates mainly from a failure of the solid waste management system, preference should be given to an integrated approach reducing first of all the amount of generated waste (alternatives to plastics should be actively encouraged).

Difficulties to implement existing legislation should trigger the preparation of implementation/enforcement plans, including information campaigns, capacity building, targeted education in schools, reporting and monitoring, development of necessary

297 *Platform for Accelerating the Circular Economy Coalition (PACE)* https://pacecircular.org/latin-america-and-caribbean-circular-economy-coalition
298 *Ibid*
299 *Climate Technology Centre & Network (CTCN)* https://www.ctc-n.org/
300 *Ellen MacArthur Foundation (EMF)* https://www.ellenmacarthurfoundation.org/circular-economy/
301 *Inter-American Development Bank (IDB)* https://blogs.iadb.org/sostenibilidad/en/circular-economy-now-or-never/
302 *Konrad Adenauer Foundation (KAS)* https://www.kas.de/de/home
303 *World Economic Forum (WEF)* https://www.weforum.org/projects/circular-economy

infrastructure and services (*for selective refuse sorting*), and finally aiming at the development of more sustainable consumption patterns.

Inventory of uncontrolled/illegal landfills, action plan for their phasing out

It seems that beyond sanitary and controlled landfills, dumping of waste also take place in illegal and uncontrolled sites, with potentially harmful effects on human health and the environment. An inventory of these sites (*building on efforts made under the voluntary coalition put in place in 2018 thanks to UNEP*) should be made urgently in view of their phasing out and where necessary the depollution of contaminated sites if any.

3.3 Mobilisation to promote circular economy

Funding mechanisms (IFIs) for projects dealing with hotspots

Infrastructure will be needed to cope with waste streams currently landfilled. The rationale of corresponding investments is not short-term profitability, but positive externalities generated by such projects. If public private partnership should be considered, International financial Institutions should be asked to establish funding mechanisms in particular to phase out pollution hotspots (*see in **Section 8** the box describing the MEHSIP initiative implemented by the European Investment Bank*).

Waste Reduction thru progressive bans and use of economic incentives

Inspiration could be found in the EU Directive of 2019 on single use plastic. This new piece of legislation started with the identification of the 10 plastic items most frequently found in marine debris on the European beaches. If bans already exist in most Caribbean countries for plastic bags and styrofoam, other plastic items could be targeted throughout the region, as it is done to a certain extent in St Lucia, or Antigua & Barbuda. The Dominican Republic is in process of developing and adopting specific measures (*based to the already existing General Law 225-20 on Integrated Management and Coprocessing of Waste*) to combat marine litter generated by plastic waste. Special attention should be paid to plastic bottles. When a ban is not feasible, quantitative objectives for the reduction of plastic use should be established with appropriate economic incentives and disincentives to facilitate this transition and ensure involvement of the private sector.

Initiative to reduce packaging waste inspired by the experience in Grenada

Due attention should be paid to the conclusion of a study carried out by the Rochester Institute of Technology showing that “most of the plastic entering Trinidad and Tobago’s landfills (49.000 tons a year) was not produced or imported. Rather it entered the country as packaging around imported products. The largest amount of landfilled plastic “came along for the ride” with other things”. Reducing plastic landfilling should be achieved through stricter legislation on packaging waste and its rigorous implementation in all Caribbean countries.

The EU’s plastic strategy targets in reaching all plastics packaging recyclable by 2030.

In Grenada (Environmental Levy Act of 1997), a levy is imposed on (glass) and plastic beverage containers imported. When the importer re-exports the beverage container or disposes of it in a manner acceptable to the Solid Waste Management Authority, 80% of the levy is refunded to the importer. However, preform plastic bottles are currently excluded from this levy (*constituting 84.4% of all imported plastic bottles in 2013*). Experts are generally in favour of expanding such schemes.

Quantitative objectives for progressive reduction of plastic landfilling

In the EU, the European Commission proposed as a binding landfill target to reduce landfill to a maximum of 10% of municipal waste by 2030.

If a similar move towards "zero waste to landfill" seems at short/medium term totally unrealistic in the region, each Caribbean country should assess the percentage of waste currently landfilled and define ambitious reduction objectives for the next 5 or 10 years. A roadmap towards reduction of plastic landfilling could in any case give a clear signal to all stakeholders.

Elaboration of guidelines to promote composting

Even though organic waste is a main component of waste generated in the Caribbean, composting seems currently poorly used in the region in spite of efforts recently made.

In agreement with the CARICOM authorities, IICA[304] organised in 2020 a series of workshop to train Caribbean (*Belize, Jamaica, St Lucia, Trinidad and Tobago, Guyana and the Bahamas*) farmers on how to create entrepreneurship opportunities from managing organic waste. A study in Martinique et Guadeloupe (*Compost ADEME, 2016*) was aimed to identify factors that might encourage farmers to replace chemical fertilizers by compost in Caribbean SIDS.

Based on these first initiatives, it would be useful to prepare a strategy for the development of composting of organic waste in the Caribbean region including guidelines which could benefit all countries in the region.

Elaboration of guidelines to promote recycling based on Tobago's experience

Authorities in Trinidad and Tobago (*where waste generation per capita reaches 1.47 kg, much more than the regional average of 0.99 kg*) took the initiative in December 2020 to create the first recycling plant on the island. Recycled material will be turned into flakes and granules and exported to Central and South America.

This example shows that recycling plastic is feasible even for a small island, and that recycled products can contribute to foreign trade. Guidelines would pave the way to a wider practice of recycling in a region where it is currently an exception and not the rule.

Elaboration of guidelines to promote waste to energy based on the UWI project in Trinidad and Tobago using organic waste

Waste to energy is not yet a developed option in the Caribbean. However, Proman and the University of West Indies launched in January 2021 a project in Tobago to analyse the viability of a process converting waste (*including agricultural by-products such as poultry waste and manure, or food waste*) into biogas (*energy*) and digestate (*fertilizer*), avoiding the current practice of landfilling and the risk of marine litter generation. In case of success, the duplication of this technology could contribute to better management of organic waste -one of the most important waste streams- in the Caribbean. Guidelines could then usefully facilitate its diffusion to other Caribbean islands and clarify under which conditions thermal treatment of organic waste is an appropriate solution.

[304] *The Inter-American Institute for Cooperation and on Agriculture*

List of Contacts – Marine Litter

NAME	ORGANIZATION	ROLE	EMAIL
Carla Bikker	RAC/REMPEITC-Caribe (United Nations), Ministry of Traffic, Transport and Urban Planning	Director (Ag), IMO Associate	carla@cep.unep.org
Captain Keith M. Donohue	U.S. Coast Guard, Sector Houston-Galveston	Deputy Sector Commander	Keith.M.Donohue@uscg.mil; kdonohue@cep.unep.org
LCDR Matt Richards	U.S. Coast Guard Sector Anchorage	Chief, Emergency Management Force Readiness	Matthew.D.Richards@uscg.mil
LCDR Lukas Rodriguez	U.S. Coast Guard		Lukas.G.Rodriguez@uscg.mil

ANNEX 9.II. ACTION FICHE II – Tourism in the Caribbean and Solid Waste Management

- Action Fiche on Tourism in the Caribbean and Solid Waste Management
- Green Globe certified hotels and resorts in the Caribbean region
- The global Tourism Plastic Initiative
- 2 examples of Commitments taken under the Global Tourism Plastic Initiative by Resorts in St. Lucia
- Questionnaire
- List of Contacts - Tourism

ACTION FICHE II:
"Tourism in the Caribbean and Solid Waste Management"

The tourism sector: which contribution to better solid waste management in the Caribbean region?

1 Why is this issue particularly important?

Tourism is a major component of the economic activity in many countries of the Caribbean region. According to the World Travel and Tourism Council, Tourism corresponds to more than 10% of the GDP in the Caribbean region and 15% of employment (2019). But figures are much higher in some territories since tourism contributes to more than 40% of GDP in Aruba, Bahamas, Antigua and Barbuda, Grenada, St Lucia, and more than 25% in Dominica, Belize, Jamaica, Barbados, St Vincent and the Grenadines.

In terms of tourist arrivals, top destinations are the Dominican Republic with 6.5 mio visitors, Cuba 4.6, Jamaica 2.4, Bahamas 1.6, Aruba 1 and Barbados 0.7 (*figures of 2017 or 2018*).

Globally, the cruise industry registered annually between 20 and 25 mio passengers, out of which the Caribbean has a market share of about 1/3, being the most popular destination worldwide. And "waste is one of the most important and specific impacts of cruise tourism to destination"[305].

From a sustainable point of view, tourism can be seen as an activity both generating waste, and suffering in case of poor waste management, since the attractiveness of Caribbean destinations depends closely on the quality of landscapes, beaches and marine waters.

Since flows of tourists also mean flows of waste, it seems important to assess how the key stakeholders of the touristic sector could contribute to an improved management of solid waste. First of all , land-based sources should be taken into account , and this is why particular attention will be paid to hotels and resorts (there would be about 250 000 hotel rooms ranging from very small family-run inns, to large chain hotels), but waste originating from the sea should not be neglected : if marine litter is a wider issue (dealt with separately in this report) , attention should also be paid in the Caribbean region to cruise ships (another issue dealt with separately is how ports could contribute to better solid waste management).

In order to clarify the views of hotels in the Caribbean region on the current state of solid waste management, a survey has been carried out by Luvent. A questionnaire has been sent to a sample of hotels, trying to have a geographical coverage of the most popular destinations and involving the main hotel chains. The closure of many hotels due to the current COVID pandemic made the survey difficult, but significant results were nevertheless collected thanks to feedback received from about 21 hotels and hotel chains.

[305] *Sustainable Cruise Tourism Development Strategies, Tackling the Challenges in Itinerary Design in South-East Asia, UNWTO, 2016*

2 What has been done until now?

The Sustainable tourism concept has been used for more than 30 years by UNWTO and the World Travel and Tourism Council.

In 2008, a major step was taken in the region with the adoption of the Caribbean Sustainable Tourism Policy Framework.

Most of its recommendations are still highly relevant and give useful guidance for countries of the region:

"*Reduce visual pollution from illegal dumping and littering by conducting public campaigns targeted at all levels of civil society. These include, providing environmental education, establishing regular beach cleaning, enforcing fines for illegal dumping, and providing waste bins at strategic locations in public spaces.*

Encourage waste reduction, re-use and recycling in tourism enterprises, in order to minimise the volume being landfilled. Ensure proper sanitary landfilling in order to reduce groundwater and marine pollution by leachate.

Lobby for appropriate waste solutions, for example the use of incineration facilities featuring waste-to-power technology. This is also in line with the MARPOL Convention which requires incineration of ship waste to remove any risk from contaminated waste.

Public sector agencies related to tourism should lead by example and invest in resource efficiency measures themselves and communicate their success over time to stakeholders. At the same time, regional research into sustainable patterns of resource use, such as for example the uptake of alternative forms of energy, needs to be encouraged and the results disseminated. In particular, research directed at the tourism sector would be of importance, given the economic importance of the sector for national economies ".

One of the conclusions of this Tourism Policy Framework is to highlight that all stakeholders have a responsibility in promoting sustainable tourism.

The Caribbean Hotel and Tourism Association Education Foundation (CHTAEF), established in 1986 as a non-profit organization, also contributes actively to the promotion of sustainable tourism. In particular, small tourism enterprises can use toolkits prepared by CHTAEF for putting in place better waste management, through an evaluation of their practices, priority setting and immediate actions, and further improvements and investments.

Benefits of improved SWM according to the CHTAEF toolkit:

- reduced manpower requirements for waste handling and disposal;
- reduced haulage and landfill tipping fees (for example, Half Moon Hotel in Jamaica has been able to reduce its garbage hauling cost from US$1,700 to US$620 per month);
- revenue from the sale of recyclables;
- protection from insect and rodent infestations;
- reduction of fire hazards;
- improved community relations;
- compliance with government regulations and codes,
- reduced odours and improved aesthetics and sanitation,and
- increased guest satisfaction.

Initiatives engaging the private sector in the tourism industry could also be mentioned, such as the project Transforming Tourism Value Chains in developing countries and Small Island Developing States (SIDS), implemented in Dominican Republic and St. Lucia.

It aims to reduce the emission of greenhouse gases and improve resource efficiency in the most relevant links in the value chain of the tourism sector: accommodation, food and beverages, and meetings, conferences and events.

Through the project, the governments have been supported in the development of a National Roadmap for Sustainable Tourism, technical assistance and training has been provided to hotels and other key actors in the sector for the implementation of good environmental practices in areas such as energy efficiency, sustainable gastronomy or waste management on the reduction of single-use plastics.

A number of studies[306] clarified that the main motives for hotels and resorts adopting environmental management best practices were cost reduction, external pressures (*Agenda 21 for the Travel and Tourism industry, CHTAEF recommendations, Caribbean sustainable tourism policy framework) and internal forces (green image welcome by consumers*).

About 100 hotels in the Caribbean have obtained a Green Globe Certification.

The Green Globe certification is a structured assessment of the sustainability performance of travel and tourism businesses and their supply chain partners. Businesses can monitor improvements and document achievements leading to certification of their enterprises' sustainable operation and management.

The Green Globe Standard (*based on international standards*), includes 44 core criteria supported by over 380 compliance indicators. The applicable indicators vary by type of certification, geographical area as well as local factors. The entire Green Globe Standard is reviewed and updated twice per calendar year.

To get certified, Caribbean hotels and attractions have made changes such as:

- Using solar rooftop heaters for all hot water needs
- Getting water from desalinization plants
- Using salt-based pool purification systems rather than chlorine
- Composting waste and raising their own vegetables for restaurant use
- Purchasing fresh fruit and vegetables grown locally and organically
- Incorporating native plants into landscaping
- Using energy-efficient compact fluorescent bulbs
- Putting outside lights on timers
- Turning off air conditioners when rooms aren't occupied

In conclusion, it appears that the Green Globe certification has been instrumental in increasing the sustainability of the Caribbean hospitality sector, but it seems poorly focussed on (solid) waste management. It seems also that some hotel chains are certified in one Caribbean/neighbouring country and not necessarily in all others (*f.i. 4 Hyatt hotels are certified in Mexico, but not those located in Bahamas, Dominican Republic, Jamaica or St Kitts*).

However, these hotels which are committed to sustainable practices could potentially be in the future amongst the first movers working on better SWM in the Caribbean.

The recent Global Tourism Plastic initiative described below is precisely a voluntary initiative targeting waste management and economic operators of the tourism industry.

306 Don Charles "Sustainable tourism in the Caribbean: the role of the accommodations sector", Int. J. Green Economics, 2013

3 The way forward

3.1 Lessons from the survey

The survey carried out by Luvent in January/February 2021 gave the possibility to collect information from 21 hotels and hotels chains established in Barbados, Bahamas, Belize, Grenada, Jamaica, Dominican Republic, Aruba, Cuba, St. Lucia, Trinidad & Tobago.

Some clear conclusions can be drawn from the survey:

- 5 main categories of waste are generated by the Caribbean hotels (*in at least 70% of cases*): packaging waste, cardboard and paper waste, organic waste, plastic, and glass;
- waste management is considered as an important issue since a waste management policy is defined by headquarters in 69% of cases, with a specific manager or a service in charge of waste management in 74% of cases;
- a huge majority of hotels (89,5%) considers that marine litter and other pollution linked to waste management are a handicap for the development of tourism in the region;
- to the question "What is the specific national legislation applicable to waste management by hotels?", one hotel in Jamaica answers "not sure", two in Barbados answer "do not know" and two others "not sure", one in Bahamas says "not available " as well as another one in Dominican Republic, whereas one in Trinidad and Tobago surprisingly says "There is no national legislation on waste management". This feedback illustrates that legislation is not sufficiently connected to daily practices in the touristic sector.

  Reference is often made to general legislation applicable to waste such as the National Solid Waste Management act (Jamaica), or the Saint Lucian Waste Management Act, or even the Barbados Sustainable Development Policy

  It seems therefore that if a specific problem of waste management exists for hotels, the answer is currently not in specific legal provisions.

- the question "Can you identify in which precise areas (of solid waste management) improvements could be made? " was answered by voices in favour of more recycling , better enforcement of environmental laws and procedures (including fines), separated waste collection and educating the community

Hotel Infinity on the Beach (Barbados) concludes "The enforcement of environmental procedures remains the biggest obstacle to progress towards better and more effective waste management".

Bahia Principe Resorts (Jamaica) concludes "More enforcement and education need to be done as it relates to proper separation of waste disposal. At the hotels, we do for the most part the disposal by varied separation, however when they go to the landfill they are placed together".

Iberostar -headquarters (having hotels in **Aruba, Jamaica, Dominican Republic, Cuba)** concludes "I don't believe that the bases of laws are the cause of the problem of waste management. The main problems are (i) do not have enough regulatory bodies to claim and verify that the waste management is carried out correctly; (ii) the Caribbean countries lack of means and collectors companies that provide correct management and a proper disposal, and (iii) there is no investment in public awareness.

An important issue is whether some kind of regional or sub-regional pact on waste management could usefully be developed amongst tourism main actors in the Caribbean.

A vast majority of respondents answers positively, stressing that:

- "all countries benefit from Tourism",
- "yes, in order to create local plans and programs that contribute to improving waste management investment",
- "the quality of our Ocean/beaches is affected by several countries and the solution must be by several countries"
- "yes, because the tourism industry generates a large volume of waste, and because of our industry, the preservation of the environment is of great importance to us. This is something that we can all rally around and this uniting fact will propel us to work together for the long-term viability of our beloved industry".

Finally, respondents generally consider that other stakeholders also have a role to play, in particular manufacturing industry, supermarkets, cruise ships, tour operators, consumers, schools, or the community in general.

3.2 Orientations for future actions

Implementation and enforcement of waste legislation

Waste legislation has to cope with a general problem of poor implementation and enforcement of national environmental legislations, but this issue is not specific to touristic activities. Nevertheless, a better implementation and enforcement of national waste legislations seems a pre-requisite for a better environmental performance of the tourism industry.

Separation of waste collection

Putting in place systematically **separate waste collection** (in order to reduce landfilling) is again a matter of waste policy in general, which should be done with the active involvement of all municipalities when and where this is not currently done. Due attention should be paid to costs associated with infrastructural development needed for separate waste collection and recycling.

In addition, awareness raising should be systematic for employees of the tourism industry, as well as for visitors.

Composting, a high-level priority

Developing composting on a wider scale would also be relevant given that hotels and resorts indicate that organic waste is a significant component of the waste they generate. Organic waste management may probably be improved if partnerships could be concluded between the tourism industry, municipalities and the agricultural sector.

Lessons should be learned from the experience in Barbados of putting in place a National Composting Facility.

Tourism, as first mover to promote better SWM

However, since the touristic sector suffers more than others of the impact of marine litter, uncontrolled landfilling and other impacts of poorly implemented waste policy, there are good reasons for this sector to be a first mover in improving waste management, and to act at a regional or sub-regional level.

Priority could possibly be given to plastic, packaging waste, and organic waste, since they are the main categories of solid waste generated in the region.

There is no specific legislation for waste management by the touristic sector in the Caribbean region, but a good practice of voluntary commitments illustrated by efforts made by the **CHTAEF**, hotels and resorts certified under the **Green Globe scheme**, or participants to the **Global Plastic Tourism initiative**.

These initiatives have some similarities with an instrument which is been used in a number of EU countries and called "voluntary agreements". This approach, considered as particularly relevant for sectors with a limited number of operators (oligopolistic sectors) is often an alternative to legislation where environmental objectives are negotiated with the main stakeholders. Companies usually prefer to avoid binding legislation, and a voluntary commitment can be implemented more easily, in particular if a regional or sub-regional approach is desirable.

For plastic waste and packaging waste, the most promising approach is the Global Plastic Tourism initiative. In place for tourism since January 2020, this is a flexible approach promoted by UNEP, UNWTO and the Ellen Mc Arthur Foundation supporting a shift towards circularity[307].

However, the survey carried out by Luvent revealed that about 60% of respondents are not informed of this initiative, even though 100% agree with some of its objective such as "to take action to move from single-use to reuse models and reusable alternatives by 2025", and about 95% with its other objective "to engage the value chain to move towards 100% of plastic packaging to be reusable, recyclable or compostable by 2025".

It could be proposed to work within this frame in order to develop its influence throughout the Caribbean region, implementing some kind of "Caribbean Plastic Tourism initiative". The objective would be to increase membership and obtain voluntary commitments from hotels and resorts from all the countries of the region.

Cruise industry, key actor for the implementation of voluntary agreements in the region

The cruise industry presents characteristics (limited number of operators, common interest for pristine marine environment, activities in the entire Caribbean region) which pave the way for the conclusion of voluntary agreements on a regional basis. As an illustration of what could be done, we could take the example of the Memorandum of Understanding signed by the Port of Seattle (Washington State) and cruise companies about waste water discharges. It could accordingly be explored in the Caribbean which stakeholders would be ready to work on a project improving solid waste management by cruise ships.

Charter on good practices on sustainable cruise in the Caribbean

The European Commission has launched in 2020 a preparatory action in view of defining a "Charter of good practices for a sustainable cruise tourism in Europe" which will assess the entire eco-system of sustainable cruise tourism. This Charter will most probably include good practices for waste management, and it is highly recommended to follow-up this initiative and to consider whether the Caribbean region could adopt *mutatis mutandis* a similar approach.

Eco-labelling of Caribbean Tourism Industry

In case voluntary approaches are positively considered by stakeholders, this would make of the Caribbean tourism industry a good candidate for the development of (preferably) regional **ecolabels** as they exist for instance in the EU, under the Blue Angel scheme in Germany or AFNOR certification in France. For the time being, the **Blue flag** (Foundation for Environmental Education), which is roughly similar to an eco-labelling scheme for beaches, is used only by a few countries of the region, the Dominican Republic, the Bahamas, Trinidad and Tobago. The challenge would be to develop regional **eco-labelling** not only for beaches, but for hotels,

307 See 2 examples in section's annex. Currently 46 leading tourism companies, suppliers, business associations, NGOs, consultancies and certification schemes announced their signature of the Global Tourism Plastics Initiative

resorts, cruises, marinas and more (possibly sectors that service the tourism sector) , with the objective to include all the Caribbean territories.

Blue Economy in the Caribbean

Reduction of waste generated, increased re-use, recycling, composting and waste to energy projects in the tourism industry should take place in the context of promotion of Blue economy promotion of **Blue economy** (sustainable use of hydric resources) as elaborated by the World Bank and OECS countries (*Unleashing the Blue Economy for Economic recovery and resilience in the Eastern Caribbean*[308]).

[308] *Unleashing the Blue Economy of the Eastern Caribbean (UBEEC) (WB-P171833)* https://ewsdata.rightsindevelopment.org/projects/p171833-unleashing-the-blue-economy-of-the-eastern-caribbe/

Green Globe certified hotels and resorts in the Caribbean region

- Antigua and Barbuda: 7
- Aruba: 2
- Bahamas: 6
- Barbados: 17
- Belize: 8
- Dominica: 2
- Dominican Republic: 20
- Grenada: 4
- Jamaica: 13
- Saint Lucia: 10
- Saint Kitts and Nevis: 1
- Saint Vincent and The Grenadines: 2

The global Tourism Plastic Initiative

The Global Tourism Plastics Initiative requires tourism organizations to make a set of concrete and actionable commitments by 2025:

1. Eliminate problematic or unnecessary plastic packaging and items;
2. Take action to move from single-use to reuse models or reusable alternatives;
3. (Engage the value chain to) move towards 100% of plastic packaging to be reusable, recyclable or compostable;
4. Take action to increase the amount of recycled content across all plastic packaging and items used;
5. Collaborate and invest to increase the recycling and composting rates for plastics;
6. Report publicly and annually on progress made towards these targets.

The Global Tourism Plastics Initiative will support companies, destinations, associations and NGOs through:

- Sharing information about actions and solutions to the plastic pollution challenge being implemented across the sector;
- Fostering sustainable procurement practices and collaboration with suppliers;
- Promoting collaboration at destination level to improve waste management practices;
- Consolidating and disseminating the progress reported by all signatories;
- Showcasing the leadership of the sector.

2 examples of Commitments taken under the Global Tourism Plastic Initiative by Resorts in St. Lucia

Iberostar Group commits to:

- Eliminating from their rooms and bathrooms the problematic or unnecessary plastic packaging / plastic items / single-portion or single-serving packaging / containers for cleaning products / cling films to replace them by reusable solutions by 2020.
    - By replacing in-room amenities such as laundry bags or clothes protectors for reusable, cloth options.
    - Also through change from single-use amenities to bulk dispensers in100% of its rooms by 2020.
    - By increasing the amount of recycled content in its plastic packaging by working with suppliers to, at a minimum, purchase all multi-use amenity dispensers for its rooms made from recycled plastic content.
- Eliminating from their food and drink services the problematic or unnecessary plastic packaging / plastic items / single-portion or single-serving packaging / containers for cleaning products by 2020.
- Replacing plastic packaging / plastic items / single-portion or single-serving packaging / containers for cleaning products/ cling films from their food and drink services by reusable solutions by 2020.
    - At a minimum double the quantity of kitchen items purchased in single-serve units to larger serving units to reduce overall packaging used for products.
    - By starting to produce a majority of its own bread, ice cream, and pasta products amongst others in-house in at least 80% of its properties to make them packaging free.
- Eliminating from their wellness facilities, conference centers, meeting rooms, food and handcraft or on-site stores, lobby and reception and other areas the problematic or unnecessary plastic packaging by 2020.
- Introducing reusable solutions in their service areas (*e.g. wellness facilities, conference centers, meeting rooms, food and handcraft or on-site stores, lobby and reception and other areas*) to replace plastic packaging / plastic items / single-portion or single-serving packaging / containers for cleaning products / cling films by 2020.
    - Moving away from single-use plastic water bottles by investing in reverse osmosis water fountains in its hotels by 2020, then exclusively offer water to clients through refillable bottles.
- Implementing corporate level training for employees to adopt behaviours for a circular economy in its operations, including the innovative reuse of materials used within the hotels.
- Having100% of its employees' polyester uniforms to be made of recycled plastic.
- Hiring a director of strategy for circular economy in its Sustainability Office to interface with international partners and organize operations internally. This position will be charged with

implementing and developing a strategy to move Iberostar towards a highly functional circular economy by 2030.

The Jade Mountain Resorts (St Lucia) commits to:

- Eliminating problematic or unnecessary plastic packaging / single-portion or single-serving packaging / plastic items and introduce reusable solutions from their rooms to replace those by 2022.
- Eliminating problematic or unnecessary plastic packaging / single-portion or single-serving packaging / plastic items from their bathrooms by 2022.
- Introducing reusable solutions in their bathrooms to replace plastic packaging /plastic items / cling films by2022.
- Eliminating problematic or unnecessary plastic packaging / single-portion or single-serving packaging / plastic items/ cling films from their food and drink services by 2022
- Introducing reusable solutions in their food and drink services to replace plastic packaging / single-portion or single-serving packaging / plastic items by 2022.Jade Mountain Resorts aims to own water bottling equipment and remove all PET drinking water bottles from their operation.
- Engaging the value chain to provide data on recyclability and compostability of plastic packaging to facilitate the move towards 100% of plastic packaging to be reusable, recyclable, or compostable by 2025. They will do so by designating relevant information on alternatives specific to Saint Lucia and the ability of local solid waste systems to manage alternatives as waste streams.
- Taking action to increase the amount of recycled content across all plastic packaging and items used by 2025and reaching 20% recycled content on average through waste diversion via the informal recycling sector.
- Collaborating with others and investing in collection and segregation of recyclable and organic materials in their facilities to help increase recycling and composting rates in practice.

Questionnaire

Hotel Information

What is the name of your hotel?

Please indicate to which chain your hotel belongs to, if any.

In which Caribbean countries is/are your hotel(s) located?

What are the main categories of solid waste generated by your hotel's activities?

- Organic waste
- Packaging waste
- Cardboard and paper waste
- Tin waste
- Plastic waste
- Glass waste
- Textile waste
- Bulky waste (supply, furniture, etc.)
- Demolition and renovation waste
- Hazardous waste (electronics, batteries, refrigeration, etc.)

Is there a service or a manager in charge of waste management at the hotel level?

Feedback on national waste legislation

What is the specific national legislation applicable to waste management by hotels?

Should it be made stricter and in which respect?

Is there a waste management policy defined by the hotel headquarters?

- Yes
- No

Is it more ambitious than national legislation? If so, in which aspects?

Can you identify in which precise areas improvements could be made?

Should incentives be put in place by public authorities to improve waste management by hotels? If so, which ones?

Feedback on the Global Tourism Plastic Initiative (CTPI)

Are you aware of the Global Tourism Plastic Initiative led by UNEP, the UN World Tourism Organisation and the Ellen McArthur Foundation?

- Yes

- No

One of the objectives of the GTPI is “to take action to move from single-use to reuse models and reusable alternatives by 2025”. Do you agree?

- Yes
- No

Another objective is “to engage the value chain to move towards 100% of plastic packaging to be reusable, recyclable or compostable by 2025”. Do you agree?

- Yes
- No

Should more ambitious targets be proposed by GTPI? In which respects?

Would you favour some kind of regional or sub-regional pact on waste management to be developed amongst tourism main actors in the Caribbean? Why?

Final thoughts on waste management

Does tourism in the country/countries where you operate suffer from marine litter and other pollution linked to poor waste management?

- Yes
- No

What actors (other than hotels) of the touristic sector could contribute to better waste management? How?

What would you suggest to improve the situation (short and medium-term measures)?

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ANNEX 9.III. ACTION FICHE III – Caribbean Ports and Solid Waste Management

- Action Fiche on Caribbean Ports and Solid Waste Management
- Guidance - Waste management (Ports)
- Eco-Ports
- Guidelines for Developing a Regional Reception Facility Plan (RRFP)
- Questionnaire on Solid Waste Management in selected Ports & Port Authorities of the Caribbean
- List of Contacts – Ports

ACTION FICHE III:
"Caribbean Ports and Solid Waste Management "

1 Why is this issue particularly important?

Even though their dimension could be considered as relatively small on a continental scale, Ports are cornerstones of the Caribbean economic system, and maritime transport is expected to grow in the future, be it for containers or for cruise ships (*once the Covid pandemic is over*).

Experts consider that shipping accounts for about 20% of the global discharges into the sea (EMSA). From another angle, according to a GIWA study, "70 to 80% of marine debris originates from the shipping traffic in the region. The ports in the region lack waste reception facilities and many ships dump their wastes at sea which is then transported to distant locations by winds and currents".

Waste Management generated by ships in the Wider Caribbean has been an item on the agenda for many years.

There are basically several two ways to improve the performance of ports in the Caribbean region as far as solid waste management is concerned.

The first one is to rely on legislation[309], to improve it when necessary, but mainly to ensure a better implementation of existing legislation. The example of MARPOL shows that existing obligations are often difficult to comply with.

The second one would be to expect that the main ports of the region agree to apply on a voluntary basis a stricter approach, finding inspiration for instance in methodologies such as the Eco-port scheme developed by ESPO[310] (European Sea Ports Organisation), the OECD Port-Cities programme, or the ISO 14001 certification.

Both could be used simultaneously, since efficient implementation of legislation could be facilitated by a variety of initiatives by economic operators.

Another one would be for the region to rely on the creation of adequate port reception facilities (see below), with specific countries being the nodes for receiving certain categories of ship generated waste, in line with the experience put in place between Pacific islands.

These approaches would not be contradictory, since efficient implementation of legislation could be facilitated by commitment of economic operators and regional cooperation creating port reception facilities.

2 What has been done until now?

The most relevant piece of legislation to be taken into account is the International Convention for the Prevention of Pollution from Ships (IMO), known as MARPOL (Marine Pollution) and

309 In the EU, the PRF Directive 2000/59/EC required vessels to land the waste they produce during voyages to and between EU ports to ports reception facilities (PRF). It also required ports to develop Waste Handling Plans and provide PRF to the ships using their ports. The Directive was replaced in 2019 by Directive EU 2019/883 which includes new requirements related to the adequacy of PRF and the delivery of waste from ships on land.

310 See in particular the ESPO Green Guide 'Towards excellence in port environmental management and sustainability', chapter 4.5 on Waste Management.

focussing on ship generated waste. Its Annex V deals with Prevention of pollution by garbage from ships.

Moreover, a Code of Conduct for the Prevention of Pollution from Small Ships in Marinas and Anchorages in the Caribbean was published in 1997. This study could assess the effectiveness of these guidelines.

In addition, since 2011, the Wider Caribbean region[311] is considered by IMO as one of the Special Areas "*a sea area where, for recognised technical reasons in relation to its oceanographic and ecological condition and to the particular character of its traffic, the adoption of special mandatory methods for the prevention of sea pollution by garbage is required*".

Consequently, strict rules apply for the disposal of garbage from ships, and adequate port reception facilities are needed accordingly. This requirement is clearly problematic in the Caribbean region.

Another legal framework of particular relevance is the Convention for the Protection and Development of the Marine Environment of the Wider Caribbean Region, or Cartagena Convention. This Convention aims inter alia at reducing pollution from ships, pollution caused by dumping and pollution from land-based sources and activities. It works in support of other global environmental conventions, be it UN Agreements (*f.i. Basel convention on hazardous waste*) or IMO Agreements (*f.i. MARPOL*) or others.

Regional Activity Centers (*RAC*) have been designated by the parties to the Cartagena Convention to coordinate or carry out specific tasks and activities in support of the Convention and its protocols. Of particular importance (*see below*) for involvement of ports in better waste management is RAC-REMPEITC Caribe (*Regional Marine Pollution Emergency, Information and Training Center*) in Curacao.

The issue of Port Reception Facilities was identified as an important challenge in the region due to lack of appropriate infrastructure for waste management in islands where landfilling is the most common practice.

In 2017, a workshop organised under the umbrella of the Cartagena Convention suggested to carry out a feasibility study on the development of a Regional Port Reception Facilities Plan for the Wider Caribbean Region. This feasibility study, supported by Norway, IMO, UNEP, and RAC-REMPEITC was indeed published in May 2018 ("Feasibility study on the development of a regional reception facility plan for the SIDS of the Wider Caribbean region")[312].

A major conclusion presented in the feasibility study is the relevance of a Regional Reception Facility Plan which would include:

- Regional Ships Waste Reception Centers; potential candidates (*identified on the basis of 16 criteria reflecting location, connection, legal environment, technical capabilities, stakeholder cooperation,…*) could be located in the Bahamas (*Freeport , Nassau*), Jamaica (Kinston , Montego Bay), Trinidad and Tobago (*Port of Spain, Point Lisas*), or the Dominican Republic (*Caucedo, Rio Haina*);
- Ports with limited facilities (many potential candidates throughout the region).

Besides, in order to clarify the views of ports and Port Authorities in the Caribbean region on the current state of solid waste management, a survey has been carried out by Luvent. A

311 The Wider Caribbean region includes 16 UN Members (Antigua and Barbuda, Bahamas, Barbados, Belize, Cuba, Dominica, Dominican Republic, Grenada, Guyana, Haiti, Jamaica, St Kitts and Nevis, St Lucia, St Vincent and Grenadines, Trinidad and Tobago, and Suriname) and 7 non-UN Members.

312 This study is neither limited to Solid Waste nor to MARPOL Annex V waste.

questionnaire has been sent to a sample of ports and Port Authorities, trying to have a geographical broad coverage of their diversity. The closure of several offices due to the current COVID pandemic made the survey difficult, but significant results were nevertheless collected thanks to feedback received from some 11 ports/Port Authorities.

3 Way forward, orientations for future actions

3.1 Lessons from the survey

The survey carried out by Luvent in February 2021 gave the possibility to collect information from 11 ports or Port Authorities located in Antigua & Barbuda, Barbados, Belize, Guyana, St Vincent and the Grenadines, Trinidad and Tobago (and Montserrat).

A slight majority of the respondents would qualify as “not sufficient” the existing legislation. Difficulties are described mainly in the management of ship generated waste, wet waste, chemical and hazardous waste, medical waste, and glass. However, respondents predominantly consider their performance in managing SW as “good” or “average”. “A modern and efficient incinerator” would improve SWM in Barbados. Beyond existing legislation, the Port Authority of Trinidad and Tobago supports the idea of “developing a charter to be signed by sustainable ports”.

Ports would welcome increased support from national or regional authorities in the field of capacity building and training (*inspectors, coastguards*), environmental guidelines, legislative adaptation reflecting international commitments, compliance with MARPOL, infrastructure development.

A greater harmonisation between Caribbean ports is unanimously supported by all respondents (“totally in favour” Barbados; “smaller island states might have to rely on SWM practices and capabilities from other states” Montserrat; “yes, this can promote a level playing field, …, a collective effort for the Caribbean is recommended rather than working in isolation” Belize) ; topics for which more harmonisation/cooperation is highly expected include monitoring, waste management techniques, targets for reducing port generated waste (“ship-generated waste is continuously being ignored” Belize), and rules on organic waste. Some respondents would also favour harmonisation of cost recovery systems.

A vast majority of respondents is in favour of implementing a regional reception facility plan (“this is an excellent idea”, Antigua and Barbuda), even though a couple of countries would appreciate more information in this respect, such as Trinidad and Tobago.

3.2 Recommendations

Given the multiplicity of initiatives launched over the last 25 years, it is suggested not to try to reinvent the wheel, but to suggest some avenues towards more sustainable waste management by ports in the region.

A level playing field amongst Caribbean Ports

The survey carried out by Luvent Consulting GmbH, even though it covers a limited number of ports and Port Authorities, shows clearly significant expectations for a more harmonised approach of solid waste management among Caribbean ports. This harmonisation should be developed for policy items, such as dealing with ship generated waste, targets for reducing port generated waste or rules on organic waste management, and methodological issues such as monitoring of waste streams or management techniques.

Incidentally, the 2018 feasibility study on a regional reception facility plan concludes that a standardised minimum for reception and disposal fees should be established, as well as

standardised licenses for service providers to receive Ship Generated Waste within the regional plan.

It would seem appropriate, in order to reach a level playing field in the region, that interested countries give a mandate to the CARICOM Secretariat to pave the way for a greater harmonisation of waste management by the Caribbean ports. A first step would be to provide support to enable Member States that have not already done so, to sign onto the relevant IMO instruments that would yield improvements in waste management at ports.

But a more ambitious target would be a real level playing field contributing to the move towards circular economy of the entire region.

A collective commitment towards sustainability

ESPO (European Sea Ports Organisation), created in 1993, is an organisation whose members are Port Authorities, Port Administrations and Port Associations in Europe. It defines its mission as "to influence public policy in the EU in order to achieve a safe, efficient and environmentally sustainable port sector where free and undistorted market conditions prevail as far as practicable"313. It encourages ports to be proactive in protecting the environment.

ESPO published a Green Guide "Towards excellence in port environmental management and sustainability" which includes inter alia precise guidance on waste management.

Given its mission statement ("to foster operational and financial efficiency and to enhance the level of service to the mutual benefit of Caribbean ports and their stakeholders, through the sharing of experience, training, information and ideas"), the Port Management Association of the Caribbean seems to be in a privileged position to promote a similar approach in the Caribbean. As a first step, PMAC could be asked to carry out assessments to develop a common framework for the region, based on the needs and characteristics of Caribbean ports. It is therefore proposed to explore this avenue with PMAC, with a view to ensure at a later stage how ports could more broadly contribute to a Caribbean circular economy.

Using indicators, preparing a sustainability Charter for Ports

In Europe, ESPO encourages its members to produce environmental reports, considering that "making an environmental report publicly available is becoming an expectation and a standard communication tool in its own right". In 2020, this recommendation was implemented by 69% of European ports. Waste is the most monitored environmental indicator in European ports, with a percentage of 79%[314]. Considerable work has been made to propose indicators related to waste management (*and other components of good environmental performance*) and to define methods for the identification of "ecoports".

One possibility for Caribbean ports to be proactive in improving their waste management performance would be to elaborate a Charter on SWM, or Charter on Port WM, which could itself be an entry gate for the creation of a network of Sustainable Caribbean Ports. It is therefore suggested that CARICOM and the Port Management Association of the Caribbean explore the interest of ports and Port Authorities in the region in view of such a voluntary move towards better SWM in the short term and more sustainability in the medium term.

The challenging PRF issue

The RAC-REMPEITC feasibility study of 2018 includes the following recommendation:

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313 ESPO fully takes into account the ports diversity. "Diversity also exists when it comes to environmental considerations. These can be different for each port and greatly depends on the specific location and the characteristics of the port area".

314 ESPO Environmental Report 2020

- "Looking specifically at The Bahamas, Dominican Republic, Jamaica, and Trinidad and Tobago, it can be deduced that since the ports in these SIDS receive the most ship arrivals, have the most capability (with some exceptions) to accept all categories of Ship Generated Waste (SGW), and have the most regional connections, that improvements at PRFs in these locations could have the biggest impact on waste reception throughout the WCR. It may also be concluded that ports in these four SIDS could have the highest potential to serve as Regional Waste Reception Centers in future regional arrangements within a WCR Regional Port Reception Plan"
- "it is highly recommended that future efforts focus first on: establishing robust cradle to grave waste management techniques for SGW using stakeholder collaboration, market-based mechanisms and reduction, prevention, waste to energy and recycling methods in the key rotational ports of Jamaica, Trinidad and Tobago, Dominican Republic, the Bahamas and Barbados315 ".

Since May 2018, further work has taken place (workshops in Trinidad and Tobago in October 2018, Jamaica in October 2019 and Grenada in November 2019, others planned in 2021), and it can be concluded that there is acceptance of the need for a Regional Reception Facility Plan, however there are a number of push-backs/questions asked and concerns raised at the local and political levels, as follows:

Countries are not equipped to handle RPRF waste as they are overwhelmed with local waste. Landfills are at capacity and land space is limited or non -existent, so solid waste cannot be taken. There are also push-backs at the local level.

No single state seems ready for the setting-up of such a facility, despite the advantages of having such facilities being widely recognised.

Moreover, Port Reception Facilities are not only environmentally necessary, they are also, from a legal point of view, a pre-requisite to acceding to the MARPOL Convention[316]. No surprise therefore if the level of accession is very low in the Wider Caribbean Region. It is therefore suggested to cooperate with RAC-REMPEITC to raise awareness amongst decision makers throughout the region about the need to follow-up efforts made to agree on a regional plan for a PRF. The EU experience could be used, in particular the expertise developed by EMSA (European Maritime Safety Agency), and the lessons learned after 19 years of implementation of the initial Port Reception Facility Directive and its update in 2019. An open question is whether incentives (*co-funding by International Financial Institutions for instance*) should be proposed to countries which would accept PRF waste benefitting to the entire WCR.

A training / capacity building effort

Capacity building is an item frequently singled out as an obstacle to better SWM in ports. Since it may be more difficult to provide capacity building for staff and employees in each port of the region individually, a regional programme would make sense. A preliminary step would be to make a detailed investigation about needs. SWM should also be a building block of a wider capacity building effort targeting not only ports and economic operators such as ports "users", but also final consumers and the public which will be a major player (consumption patterns, waste separation) to promote circular economy.

315 *Barbados is not listed in this group in some other parts of the study*

316 *Possibly through Regional Arrangements, Guidelines for developing a Regional Reception Facility*

Guidance - Waste management (Ports)

Exemplifying; setting the good example when managing own operations

- Establishing a waste management plan;
- Consulting with ship owners, tenants and other port users while planning and designing the port's reception facilities and the waste management plan;
- Demonstrating excellence while managing port authority generated waste (offices, fleet, vehicles, own operations);
- Investing in equipment for optimal handling of waste;
- Setting targets for reducing amount of port authority generated waste;
- Setting targets for increasing recycling and reuse.

Enabling; providing conditions that facilitate users and enhance improved performance

- Building/establishing port reception facilities for different types of waste;
- Facilitating port users (vessels, tenants and operators) to separate and deliver their waste in an effective way;
- Establishing a simple system for notification information on quantities and types of waste that vessels want to deliver, in order to optimise the reception on arrival;
- Providing easily accessible information through the port's web site and through other means (leaflets, newsletters, information meetings).

Encouraging; providing incentives to greener port users

- Monitoring waste volumes and types and reporting those to the vessels;
- Including waste collection fees within the port dues;
- Applying an incentive scheme rewarding waste separation;
- Applying an incentive scheme rewarding vessels with less water in sludge.

Engaging; with users and/or authorities in sharing knowledge and skills

- Cooperating with agents in view of providing accurate and up-to-date waste related information to ship owners;
- Collaborating with other ports and exchanging waste related information (e.g. waste reception facilities);
- Monitoring and communicating the cost reductions due to waste sorting;
- Sorting of biological waste (if possible) and monitoring how much green energy it will produce.

Enforcing; setting rules and ensuring compliance

- Incorporating good waste management practices in tendering procedures associated with concession and lease agreements;
- Monitoring and ensuring that port users comply with the rules and agreements.

Source: ESPO Green Guide (2012)

Eco-Ports

EcoPorts(www.ecoports.com) are the main environmental initiative of the European port sector. It was initiated by a number of proactive ports in 1996 and has been fully integrated into ESPO since 2011.

The founding principle of EcoPorts is to create a level playing field on environment through co-operation and sharing of knowledge between ports. Serving the principle of "ports-helping-ports", EcoPorts is focused on outcomes with applied practical value, namely on tools and methodologies that assist port environmental managers in their daily work. The well-established EcoPorts tools, Self-Diagnosis Method (SDM) and Port Environmental Review System (PERS) actively assist ports in their environmental management and are subject to continuous development and refinement.

Each year the EcoPorts network is growing. It now counts around 90 ports from 23 countries.

One third of the EcoPorts members have now acquired PERS, which is the only port specific environmental management standard. Compliance with the PERS standard is independently assessed by Lloyd's Register and the certificate has a validity of two years. PERS is revised after the 2-year period to make sure that the port continues to meet the requirements. The EcoPorts tools are available to ports and terminals outside Europe through the ECO Sustainable Logistic Chain Foundation (ECOSLC).

Two Ecoports Tools

Self-Diagnosis Method (SDM)

The "passport" to the EcoPorts network is the completion of the Self Diagnosis Method (SDM). SDM is a checklist against which port managers can assess the environmental management programme of their port in relation to both the sector and international standards. As such, SDM assists ports in identifying environmental risks and establishing priorities for action and compliance. The data provided by the individual ports help to build up and update the sector's benchmark of performance in environmental management.

Port Environmental Review System (PERS)

The second tool, the Port Environmental Review System has firmly established its reputation as the only port sector specific environmental management standard. Developed by the ports themselves, PERS incorporates the main general requirements of recognised environmental management standards (e.g. ISO 14001), but is specifically adapted to the realities of port environmental management. The scheme effectively builds upon the policy recommendations of ESPO and gives ports clear objectives to aim for.

Source: ESPO

Guidelines for Developing a Regional Reception Facility Plan (RRFP)

Based on IMO guidance, SIDS may satisfy waste reception facilities regulations through regional arrangements (RAs) when, because of those States' unique circumstances, such arrangements are the only practical means to satisfy these requirements. Parties proposing to participate in such regional arrangements shall develop a Regional Reception Facility Plan (RRFP) to present to IMO's Marine Environmental Protection Committee (MEPC), taking into account the guidelines set out in Resolution MEPC.221(63), 2012 Guidelines for the Development of a Regional Reception Facilities Plan. While the majority of States participating in a RRFP should be Small Island Developing States (SIDS), non-SIDS may also participate but so only as their ports may be Regional Waste Reception Centers (RWRCs), and not to satisfy their own obligations to provide adequate reception facilities in all ports and terminals. The guidelines further prescribe that the development of a RRFP should:

- Identify the region to be covered and include a map that clearly shows the participating States and all ports within the region;
- Identify the nature of the unique circumstances that impact the ability to provide adequate port reception facilities in each SIDS within the region;
- In demonstrating the compelling need for a RA, explore alternatives, costed and assessed in terms of their environmental risk;
- Document how Regional Arrangements would contribute towards efforts aimed at improving the ability of SIDS to effectively fulfil its obligations under MARPOL, or to accede to MARPOL where a State is not already a Party;
- Identify and quantify the types of ships operating in each of these SIDS;
- Describe the overall voyage patterns of ships calling at ports in each of the SIDS;
- Describe all aspects of routing and voyage planning that might affect the amount of ship generated wastes and cargo residues on board ships arriving in each of the SIDS;
- Describe other relevant additional considerations that may influence the demand for port reception facilities in each of the SIDS;
- Identify which ports, if any, may be good candidates for Regional Ships Waste Reception Centers (RSWRC) in each of the SIDS;
- Identify ports with limited facilities (PLF), if any, in each of the SIDS; and
- Identify any potential options suited to the vessels calling at ports in these SIDS that will not encourage any illegal discharge into the sea.

Source: RAC-REMPEITC

Feasibility Study on the Development of a RFP for the SIDS of the WCR (2018)

Questionnaire on Solid Waste Management in selected Ports & Port Authorities of the Caribbean

1 What is the name of your Port / What are the name of your ports?

Click or tap here to enter text.

2 Who is responsible for Solid Waste Management (SWM) in the Port(s)?

Click or tap here to enter text.

3 What is the national legislation applicable to SWM in the Port(s)?

Click or tap here to enter text.

4 How would you describe this legislation?

☐Sufficient
☐Not Sufficient

In which respect?
Click or tap here to enter text.

☐Easy to implement
☐Difficult to implement

How could it be better implemented?
Click or tap here to enter text.

5 How would you assess the performance of SWM in the Port(s)?

☐Very good

☐Good

☐Average

☐Poor

☐Very poor

6 How could this performance be improved?

Click or tap here to enter text.

7 Would you expect more support from national or regional authorities? If so, please elaborate on the type of support desired (e.g. guidelines, capacity building, etc.)

Click or tap here to enter text.

8 Should Port(s) go beyond existing legislation on a voluntary basis? If so, should this initiative be formalized (e.g. a charter signed by sustainable ports)?

Click or tap here to enter text.

9 Are you in favour of more harmonisation in SWM between Caribbean countries ports?

Click or tap here to enter text.

10 If so, what should be harmonized?

☐Monitoring

☐Disposal fees

☐Waste management techniques

☐Licenses for service providers

☐Cost recovery systems

☐Targets for reducing amount of port generated waste

☐Rules on organic waste

☐Others (please indicate): Click or tap here to enter text.

11 Are you in favour of implementing a regional reception facility plan for the region?

Click or tap here to enter text.

12 The feasibility study of 2018 on Port Reception Facilities identified potential Regional Ships Waste Reception Centres in the Bahamas, Jamaica, Trinidad &Tobago and the Republican Republic. Any comment?

Click or tap here to enter text.

13 Are there categories of solid waste for which you have experienced particular difficulties when implementing legal obligations under MARPOL or the national legislation (e.g. organic waste, batteries, others)?

Click or tap here to enter text.

14 Should other stakeholders become more active to facilitate SWM by your Port(s)? If so, which ones?

Click or tap here to enter text.

Thank you very much for your participation!

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Annex 10: Description of the Regional Integrated Pilot Action on Plastic Recycling for the Caribbean

1 Rationale for a regional project on plastic recycling

The development of the present assignment has identified plastic recycling as one of the key priorities in SWM in the Caribbean, revealing a number of facts concerning plastic waste recycling, and furthering the idea of a regional plastic recycling operation. These facts include:

- Caribbean Islands are the biggest plastic polluters per capita in the world;
- There is an urgent need to reduce plastic litter in the Caribbean Sea;
- Stakeholders have expressed their desire to go further towards recycling;
- The majority of the CARIFORUM States are small islands with little amount of waste, weak capacity to develop and no industry;
- There is a clear regional market for recycled plastic;
- Large and strategically located countries, such as the Dominican Republic, with possible local industry and markets for recycled plastic, constitute suitable potential locations for the construction of plastic recycling plants
- The forecasted treatment plant in Le Robert municipality, Petit Galion, Martinique (*financed by the EIB / Jasper*) based on an Integrated Waste Management approach supporting France declared intention to progress towards “zero waste” in its overseas territories, can complement the approach covering the Caribbean Eastern territories, while the proposed location in Dominican Republic would rather tackle with plastic collected in the Western Caribbean and Central Americas.
- Some projects concerning plastic recycling are already being implemented in the region (e.g. GIZ, AFD, UNEP);
- Successful proven approaches to plastic recycling (e.g. RePLAST project) that have already been put in place enhance bankability and support the justification of donors’ and private sector investments in the topic.

In addition to the above drivers, a regional project would bring together several countries in the region, initiate a collaboration trend that could pave the ground and trigger other regional initiatives in other fronts.

2 Description of the Action

The overall objective of this Action is to contribute to solving the dramatic problem of plastic pollution existing in the Caribbean Region, particularly in waterways and in coastal areas. The consequences of this plastic pollution are cumulative over time, endangering the flora, fauna, the tourism-flow sector, and the regional economy, as a whole. The pilot-project will consist of a **recycling centre sited in the Dominican Republic**, using RePLAST–OECS Project experience (*on plastics collection and working with local agents preparing plastics for recycling and on the facilitation of experimental shipment of containers of baled PET bottles*), with replicability characteristics with ten workshops in the Caribbean. A **Caribbean market-on-line for scrap-sourcing or ready-to-be recycled plastics** could be established, engaging local actors to actively propose pet bottle scrap / baled PET bottles for sale (i.e. www.plasticportal.eu), following clearly set rules and standards (i.e. without caps, rings or labels, with >0,01% water content, …).

This gradual project replicability represents a solid and operational pivot of the entire Action Plan. This plastic recycling centre will contain specific objectives to be further developed which will be respectively:

- Increasing landfills diversion;
- Preventing waste pollution;
- Coastal and environment protection;
- Repeatability over 10 island states

This project can easily be replicated in other Caribbean Countries with important economies of scale for both outputs and inputs. It also represents the pivotal investment capable of realizing the collateral activities of an Indicative Action Plan for a gradual diffusion of SWM's integral development: initially at a sub-regional level, and then to cover the Caribbean area. The process of developing the Action Plan can realistically evolve for individual nations that agree on synergistic activities around the setting up of plants for the reduction and treatment of plastics. It is a question of establishing specific agreements around the optimization of a pilot-project, as will be seen in the next paragraphs of this report.

This activity becomes necessary when two or more States decide to enter into agreements around plastic recycling to maximize synergies and economies of scale.

The proposed action is based on data and information that the consultants have put together and collected during the implementation of the current assignment and responds to the SWM priorities identified. With the overall population of the Caribbean as final beneficiaries, this Action brings an opportunity to i) increase the economies of scale both of the market and the treatment of the recyclables, ii) foster collaboration between States, and iii) create a legislative framework adapted to the current circumstances, encouraging environmental protection and promoting a circular economy in the region.

In order to ensure a successful and efficient regional plastic recycling operation, the proposed Action is planned to be implemented around six main complementary activities, as follows:

1) Technical interventions (a concrete plastic recycling pilot project);
2) Setting the components of the project towards a consortium;
3) Population and tourist awareness campaigns;
4) Private sector mobilization;
5) Capacity building of local authorities;
6) Overall project management.

An overview of the activities and tasks proposed as part of this Regional Pilot Action is illustrated in ***Figure 13***.

This Annex provides a description of each of the activities proposed and their operational role, the overall methodological approach, concrete quantitative and qualitative indications on the specific elements of the project, and a preliminary economic analysis (CBA) for the entire technical life of the project as well as a sensitivity analysis. An indicative Action Plan with suggestions for implementation arrangements and sustainability is also presented. Overall, the AF represents a roadmap for the implementation of the proposed regional plastic recycling project, with the final goal of contributing to the development of a regional strategy on SWM in the Caribbean.

The following sub-sections describe each of the activities and components of the Action.

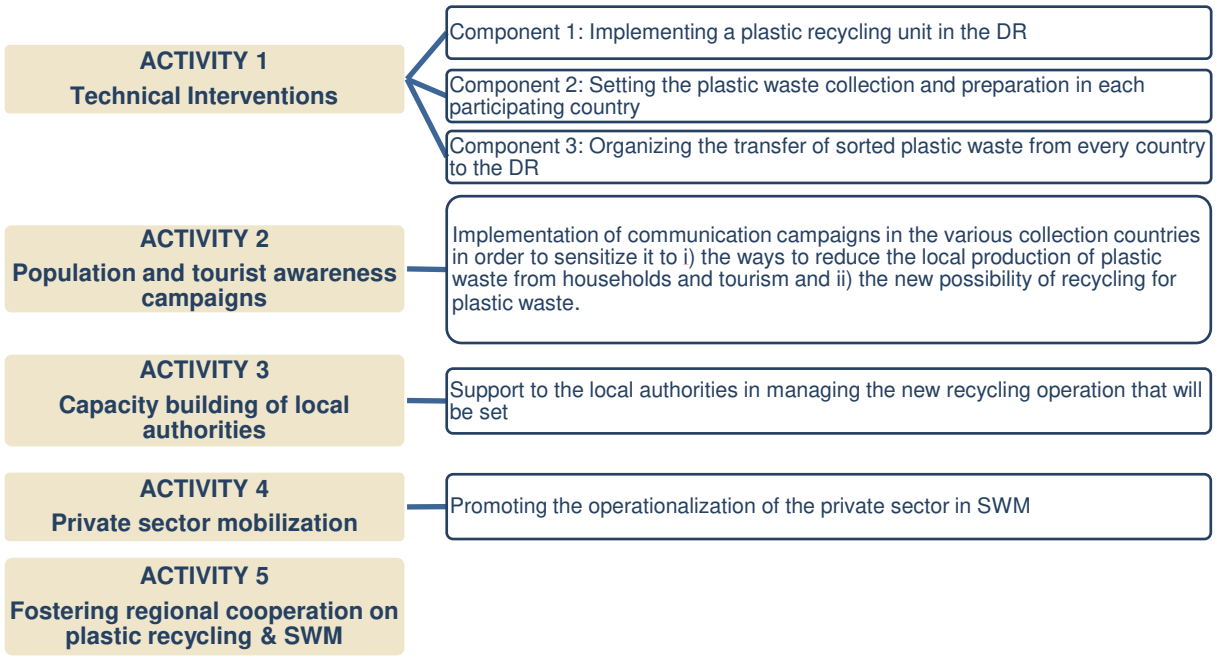

Figure 13: *Overview of activities and tasks for the regional pilot action*

2.1 ACTIVITY 1 - Technical Interventions: An integrated plastic recycling project

Activity 1 will cover the technical interventions of the project and aim at setting up an integrated plastic recycling system in the Caribbean region. As illustrated in ***Figure 14*** hereafter, this activity is broken down in three components.

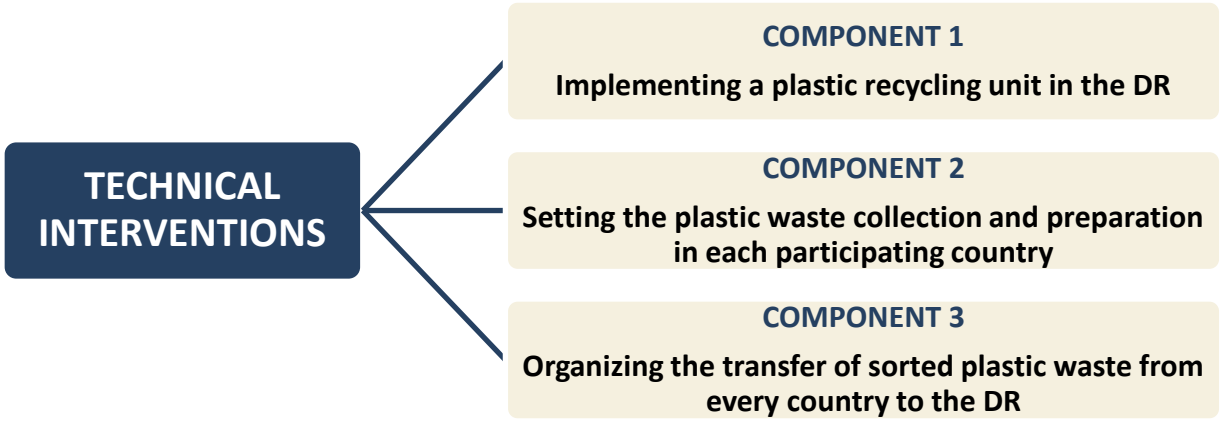

Figure 14:*Technical interventions components*

Component 1: Implementing a plastic recycling unit in the DR

Component 1 will be dedicated to the setting up of a recycling plant for plastic waste to fit the local and regional markets.

A technical analysis was carried out to assess the production of solid waste in the CARIFORUM countries. This analysis showed that the production is scattered throughout the

region but with the Greater Antilles being the main contributors and the highest amount generated in the Dominican Republic (DR). This fact, together with the presence of potential markets for recycled plastic in the local industry and the strategic location within the marine shipping lines that allows the limitation of transportation, justified the choice of the DR as the most suitable location to host a regional recycling plant.

In terms of political acceptance in the DR, the idea of such a recycling plant was discussed during a meeting with representatives of the Ministry of Environment of the DR, and was accepted in principle. The transfer of plastic waste from one State to another in the Caribbean region is authorized by the Basel Convention, provided that it is not hazardous and is sorted. Therefore, in principle, the access to other markets in the region would not represent a challenge.

The fact that GIZ is currently implementing a project to support the private sector of the DR in plastic circular economy certainly reinforces the feasibility of this component. Moreover, a PPP could be considered for the plastic recycling unit that would in the first instance be fed by the plastic waste generated within the country.

With regards to the specific location of the recycling plant, a site located near the major port of Caucedo would be very suitable to facilitate the access to plastic waste received from other Caribbean States. Ideally, it could even be hosted by the Free Zone, which provides some interesting financial assets.

Technically, the industrial unit would consist of a recycling line that would include some sorting, cleaning and pelletizing steps in order to produce a clean and safe secondary material, which would be accepted internationally.

The plastic waste to be targeted would comprise:

- PET, which is largely used in beverages and others and very present in household waste;
- HDPE, which is used under the form of bottles and caps and quite present in household waste;
- PP (similar to HDPE), which is used under the form of caps and somewhat present in household waste.

These three materials would have to be separated all along the supply chain for a better final value.

Component 2: Setting the plastic waste collection and preparation in each participating country

The objective of Component 2 is to expand the plastic waste market to other Caribbean countries. As such, the activities under this component are oriented towards setting up the collection and preparation of plastic waste in potential participating countries, in order to be sent to the DR.

A first step of this component will be the identification of the participating countries. This will require focused discussions with the local authorities and relevant stakeholders in each country, to assess the feasibility of such initiative and to identify the necessary arrangements that should be considered to put in place the collection and preparation operations. A regional workshop with the countries that express interest could be organized to guide the process for setting up these systems.

The RePLAST project provides a good and successful example of the setting up of such a plastic waste collection system and its subsequent transportation to a recycling plant in Honduras. Also, as part of the EU-CARIFORUM Regional Waste Management Programme,

AFD will be implementing a project in Saint Lucia and another Caribbean island (most likely from the Eastern Caribbean), which comprises a replication component focused on structuring the collection of plastics. The overall process that will be followed in these other two pilots will be very useful for replication at a large scale in other Caribbean islands. As part of another component within the same project, AFD will also aim to refine the logistics model, exploring the technical and economic viability of transforming the collected plastic to reduce the density of the plastic collected and therefore its transportation costs. The identified sustainable solution for the preparation of plastic waste before being shipped will also be a key element for replication in other interested countries.

Since the plastic waste will need to go through a preparation stage in each participating country before being shipped, it is expected that specialized local workshops will need to be set up, as well as training and capacity building, and that there will be some job creation associated. These jobs will entail the checking of specifications, the shredding of plastic waste to a size of around 10 mm, and the conditioning of the shredded plastic in big-bags ready to be shipped. In the event that the country does not have the required shredding capacity, plastic baling could be considered instead for conditioning the plastic before being shipped. A **Caribbean market-on-line for scrap-sourcing or ready-to-be recycled plastics** could be established, engaging local actors to actively propose pet bottle scrap / baled PET bottles for sale (i.e. www.plasticportal.eu), following clearly set rules and standards (i.e. without caps, rings or labels, with >0,01% water content, …).

Component 3: Organizing the transfer of sorted plastic waste from every country to the Dominican Republic

Once plastic waste is prepared to be shipped in each of the participating countries, the transfer of the plastic to the regional recycling plant set up in the DR needs to be arranged. The objective of Component 3 is, therefore, to organize the transfer of plastic waste from each country to the DR.

While the region is well supplied in terms of maritime transportation through numerous shipment lines including “dry containers”, existing route maps demonstrate that additional suitable routes to serve the participating countries could be explored. The logistics of such additional routes should be assessed to ensure that the associated transportation costs are not significantly increased.

In order to cover the whole Caribbean Region, two shipping routes to transport plastic waste to the host plant in the DR can already be proposed:

- **Route 1:** a North-South route to serve the Lesser Caribbean, possibly starting in Guyana and passing by all participating small islands in the Eastern Caribbean towards the North up to the DR;
- **Route 2:** an East-West route to serve the Greater Caribbean, possibly starting in Belize and passing by the large countries of Jamaica and Haiti towards the East up to the DR.

The amount of waste to be collected along both shipping lines is expected to be comparable.

The shipment of the big-bags and bales of plastic bottles would be carried out in 30-feet long containers. Such containers have standard dimensions and can bring approximately 42 bales or big bags, which have about the same dimensions (1,200 x 1,200 x 800 mm).

An assessment of plastic production scenarios would have to be undertaken in each participating country, in order to calculate the number of containers that will need to be used. The “Hub and Spoke” approach introduced under BOX 4 of general recommendations, based on the experience of Pacific Islands for a regional cooperation model for managing waste in

the Pacific Region is organized around sub-regional collection points from outer islands and the transfer towards regional centers which regroup and send the containers towards the processing facilities.

2.2 ACTIVITY 2: Setting the components of the project towards a consortium

The objective of this activity will be to implement the practical components of the project stimulating a regional supply chain to recycle plastic waste.

First of all, there is an important benefit of negotiating competitive quantities of plastic on the international markets, in addition to other cumulative benefits concerning the exchange of data, know-how, and information.

The project management will initially have to be a minimum structure that is reliable to SWM experts. For example, who will be able to technically rely on a CWWA, non-governmental association type of structure? The task of project management for a capacity building of the plastic treatment can be temporarily entrusted to consultants by carrying out the following activities expressly requested by the SWM's stakeholders.

- Communication and coordination
- Preparation and renewal of a legislation framework for agreements on plastic recycling
- Funding of the SW system
- Identification, formulation and assessment of other SW projects

To avoid complications and dispersions, project management must be focused on the optimal functioning of the plastic treatment limited only to the nations that have entered into an "ad hoc" agreement around the replication of the pilot plant of plastic recycling.

The carrying out of a legal framework will be perfected on precise sub-regional regulations and clauses on the transport and marketing of the inputs & outputs of the pilot projects. Extensions of the regulations in addition to the need for economies of scale of the plants could slow down the development of the Action Plan.

An important collateral activity concerns the funding of the SW system through an appropriate methodology that makes the projects bankable both for international financing organizations and justifiable for donor Countries. In the funding activity it will be important to quantify the options for establishing priorities, technical and investment alternatives for the development of the SWM.

Component 1: Implementing a plastic recycling unit in the Dominican Republic

In this component which is focused on the recycling part, the project management in place will first have to deal with the feasibility study of the plastic recycling unit in DR. This study could be carried out by some consultancy hired by a tender.

In the meantime, it will have to set the business plan of the unit and especially the required partnership with the private sector. It should involve a few interested companies including industrial factories that will have interest in purchasing some recycled materials.

Then, it will be important to obtain all the authorizations needed to implement a new plant in the free zone. It will also be the time to recruit the design and supervision teams in order to be ready for construction and implementation.

Component 2: Setting the plastic waste collection and preparation in each participating country

In this component which is more focused on the collection part, the project will have to imply the creation of local workshops that will have to coordinate the collection and carry out the preparation of waste (on the basis of St. Lucia experience) and to select around 10 workshops in different countries. It will then start by some prospection in the various interested countries in order to evaluate the feasibility of such collection and preparation, which will be integrated into the feasibility study.

The next step will be to actually set and coordinate the construction and supervision of all workshops in order to get a good quality of plastic waste that will be controlled before shipping according to specifications to be set. The quantity of waste should increase starting by the one coming from St. Lucia.

Component 3: Organizing the transfer of sorted plastic waste from every country to the Dominican Republic

This component will make the link between the two other ones by organizing the shipment of plastic waste from the workshops in various countries to the recycling plant in DR. It will involve some negotiation including the conditioning of waste that should be through big-bags inside containers, which will be integrated into the feasibility study.

Another step will be the optimization of the shipments according two routes: the western route from Belize and the Southern route from Guyana. The number of big bags will be provided by the project according to the quantities planned and to a recovery after delivery of waste.

2.3 ACTIVITY 3: Population and tourists awareness campaigns

The objective of this activity will be to implement some regional communication campaigns towards the population and tourists in the various collection countries in order to sensitize it to:

- the ways to reduce the local production of plastic waste from households and tourism,
- the new possibility of recycling for plastic waste.

This activity will first have to be designed by a communication agency in the various languages used in the countries, which should be at least English and Spanish. It will use the most popular canals like the local radios and TVs, in order to reach all the territory including the small islands where there can be some resorts.

The campaigns will then be implemented with a regional coordination. Two phases might be useful: one at the start of the collection and one 6 months later.

The awareness activity is a key-social component of the Action Plan which concerns in particular the PPA (People Participation Approach) to all State-islands of the Caribbean population. Currently, there are already organised awareness campaigns although they should be extended to different social levels be principally focused on other support activities such as the following:

- Women and youth participation
- Tourism sector involvement
- Remote islands and isolated communities

The awareness campaigns can both reinforce and disseminate the importance of environmental protection, then promote waste cleaning and plastic collection campaigns in sensitive areas such as waterways, coasts, beaches, enclosed bays, parks, and suburbs.

In this case it is essential to involve women and youth in these sort of campaigns. It is also important to contact schools, teachers and pupils for activities to be carried out on holidays and free time.

The tourism sector, as it is well known, plays a key role in the Caribbean economy. In the context of waste management and tourism, it is worth highlighting the issues and challenges reported by stakeholders as follows: i) agricultural pollution; ii) the discharge of liquid waste into the marine environment, collection and disposal practices; iii) food service industry, such as restaurants, hotels, supermarkets; iv) pollution caused by tourists in visit and cruise liners.

Finally, a pollution component of SW is attributable to remote islands and isolated communities where both awareness campaigns and penalties, joint and several liability, are difficult. In this regard, successful experimental social projects based on PPA at community level have been carried out in Caribbean area as well. The approach consists of visits by trainers and periodic controllers who reward or sanction the community as a whole. So, the behaviour turns to people and not to individuals to carry out awareness campaigns. In this particular approach, women and young people play a decisive role.

Based on PPA, projects carried out in other sectors such as energy access in isolated communities, require the initial presence of a trainer capable of forming and motivating active groups for environmental conservation and for the SWM. In particular, plastics and paper collection is crucial. Based on the social environment and participation, an in-depth cleaning programme will be set up for the community area. An inspector will be sent periodically for checking by assigning rewards or penalties to the community. The PPA is very effective if well motivated especially in youth and women.

2.4 ACTIVITY 4: Capacity building of local authorities

The objective of this activity will be to support the local authorities in managing the new recycling that will be set.

This activity will involve some time spent locally with the SWM authority team, focused on supporting and monitoring the supply chain of recycling. It will be both in DR and in all involved countries of the region.

At the end of the program, it could comprise a regional workshop to allow some further exchange between all stakeholders and finalize the network. It should be useful for the sustainability of the project.

2.5 ACTIVITY 5: Private sector mobilization

The SWM experts in the Caribbean area consider the presence and operational participation of the private sector to be of great importance in many activities concerning:

- The tourism sector;
- The collection and transport of SW in homes;
- The cleaning of urban areas;
- Separate waste collection
- Recycling and disposal activities with international operators
- The creation of more advanced Composting systems, W-t-E, Electronic-Waste, etc.

The main issue of the private sector is the return on investment at an appropriate opportunity cost. Since now the full cost of an efficient & complete service for the SWM is no longer affordable by a State. The solution adopted by most Countries is to make the user pay an adequate waste tax and tipping fees. There are numerous well-known constraints and problems on the payment of taxes and penalties, but the problem must somehow be solved using parameters already tested in other context, such as the calculation of waste tax on the square footage of the home, or on declared income of the user.

Furthermore, to connect waste taxes to the supply of water and electricity with the possibility of cutting the service to non-compliant parties. In many Caribbean countries this is a serious political problem. In any case, if the private sector is not adequately remunerated for the activity engaged, it cannot be used. The PPP model in the construction of advanced SWM systems, in particular for composting and for the production of electricity with an approach close to the Project Financing could be very interesting. In these specific investment opportunities, the development of bankable projects with exhaustive economic and financial feasibility studies becomes essential.

2.6 ACTIVITY 6: Overall project management

The objective of this activity will be to manage all the other activities of the project.

The project management will involve a team of at least two people: the project manager and his assistant. They will have to coordinate all the activities involving all necessary stakeholders including consultants and especially Activity 1 with all its components.

Annex 10.1: Logical framework of the regional action

LOGICAL FRAMEWORK FOR THE PROJECT

	Intervention logic	Objectively verifiable indicators of achievement	Sources and means of verification	Assumptions
Overall objective(s)	*- To reduce plastic litter from population and tourism* *- To create added value and employment in the region*	*- Amount of plastic waste accepted in the local dumpsite* *- Number of employments created*	*- Local authority for SWM*	*- The local authority exists and is involved* *- There is some transparency*
Specific objective(s)	*1. To create a plastic recycling plant in the region (possibly DR) and sell the production locally* *2. To improve the collection and preparation of recyclable plastics in participating countries* *3. To organize the shipment of collected plastic waste from participating countries to the recycling plant*	*1. Actual construction and operation of the plastic recycling plant* *2. Actual collection and preparation of plastic waste in the operating countries* *3. Actual shipment to the recycling plant*	*1. Observation and information in the field of hosting country* *2. Observation and information in the field of participating countries* *3. Observation and information in the field of the hosting country*	*- There is some international funding approved at the required level for all components* *- There is no legislative obstacles to the circulation of sorted plastic waste in the region*
Expected results	*1.1. A plastic recycling plant is designed and constructed.* *1.2. The plastic recycling plant is operated by a private stakeholder.* *2.1. Plastic waste preparation workshops are designed and constructed.* *2.2. The plastic waste collection and preparation workshops are operated by the local authorities.* *3.1. Maritime routes are prepared and negociated with fret companies.* *3.2. The shipment of plastic waste is operated from the participating countries to the recycling plant.*	*1. Actual construction and operation of the plastic recycling plant with a capacity of at least 2 000 tons per year* *2. Actual collection and preparation of at least 1 000 tons per year of plastic waste in the operating countries* *3. Actual shipment of at least 1 000 tons per year to the recycling plant*	*1. Observation and information in the field of hosting country* *2. Observation and information in the field of participating countries* *3. Observation and information in the field of the hosting country*	*- The component are covered in the mentioned order* *- All construction authorizations are obtained in due time*
Activities	*Activity 1: Setting the components of the project towards a consortium* *Activity 2: Population and tourism awareness campaigns* *Activity 3: Capacity building of local authorities* *Activity 4: Mobilization of the private sector* *Activity 5: Overall project management*	***Means:*** *- Activity 1: Experts for feasibility studies; Finances for the facilities planned in the components* *- Activity 2: Communication agency; Finances for the implementation of the campaigns* *- Activity 3: Expert in training about SWM* *- Activity 4: Mobilization of the private sector* *- Activity 5: Management team including a project manager and an assistant; Finances for travels*	***Costs*** *- Activity 1: 2 200 000 USD* *- Activity 2: 200 000 USD* *- Activity 3: 200 000 USD* *- Activity 4: 0 USD* *- Activity 5: 400 000 USD* *TOTAL: 3 000 000 USD*	*- The whole project is actually funded* *- The hosting country and the participating countries get actually involved* *- The private sector is involved into the operation of the recycling plant*

Annex 10.2: Estimate of recyclable plastic waste

Country	Population (inh)	Ratio (kg/inh/d)	Total production (t/y)	Production of plastics (t/y)	Recycable plastics (t/y)
0- Dominican Republic	10 630 000	0,85	3 297 958	395 755	98 939
1- Belize	383 071	0,77	107 662	12 919	1 615
1- Haiti	11 120 000	0,58	2 354 104	282 492	35 312
1- Jamaica	2 935 000	1,00	1 071 275	128 553	16 069
2- Antigua and Barbuda	98 179	0,89	31 893	3 827	478
2- Barbados	294 560	1,80	193 526	23 223	2 903
2- Dominica	74 243	0,84	22 763	2 732	341
2- Grenada	113 094	0,80	33 023	3 963	495
2- Guyana	779 004	0,66	187 662	22 519	2 815
2- Monserrat	5 373	1,00	1 961	235	29
2- Saint Christopher and Nevis	53 821	1,50	29 467	3 536	442
2- Saint Lucia	166 487	1,16	70 491	8 459	1 057
2- Saint Vincent and the Grenadines	110 598	0,79	31 891	3 827	478
2- Suriname	609 570	1,67	371 563	44 588	5 573
2- Trinidad and Tobago	1 390 000	1,40	710 290	85 235	10 654
Bahamas	385 640	1,87	263 219	31 586	0
Cuba	11 059 062	0,67	2 704 494	324 539	0
	40 207 702		11 483 242	1 377 989	177 202

Annex 11: Renewable Energies Enabling Environments in the Caribbean Countries[317]

Country	Electricity Offtake	Biomass Supply Chain	Enabling Environment	Ranking
Antigua and Barbuda The power generation sector appears to be closed to utility scale biopower projects, but more permissive for small scale (<1MW) bioenergy projects	Grid connection via net metering opportunities are forecasted for residential producers (*up to 50kW*) and a small number of commercial producers (*50-225 kW*) Antigua Power Company (APC) contracted an IPP with APUA for supplying power grid since 1996	Some waste streams are diverted to the Antigua and Barbuda Recycling Centre (ABREC), which is a facility that is operated by the Rotary Club of Antigua. The facility recycles paper, cardboard and plastic waste, and is likely to be receptive to a bioenergy facility that diverts organic waste from landfill	Renewable Energy Act (2015) envisages to support conversion waste to energy	3
Bahamas Main electricity utility enjoys a monopoly on power generation Law of clearly defined policies and targets for RE	The Electricity Act established the Bahamas Electricity Corporation (BEC) as the primary agency managing the generation, transmission and distribution of electricity	A network of private companies provides waste recycling, reuse and disposal services to residential and commercial customers in Nassau for waste streams including organic / agricultural	It does not appear to be any regulation governing the use of organic fertilizer and ash in agriculture	3
Barbados Power generation sector is open, subject to a successful application for a licence	Barbados Light & Power Company Limited (BL&P) has the sole right to transmit and distribute power in the country. Law provision for small-scale generation for residential use (up to 5 kW) and commercial use (up to 50 kW)	Studies / trials to determine the effectiveness of various organic fertilizers (notably in cabbage production)	Electric Light and Power Act (2013) appeared to pave the way for bioenergy project developers for grid access There does not appear to be any specific legislation dealing with the use of organic fertilizer and ash in agriculture	1
Belize Power generation sector is open, with several renewable energy IPPs operating on the market	Utility scale biopower exists in Belize since 2010 in the form of the 31.5 MW Belize Cogeneration Energy Limited (BELCOGEN)	It does not appear to be any regulation governing the use of organic fertilizer and ash in agriculture	Procedures for obtaining planning permission are clear and documented Report on ways to overcome barriers' to RE and Energy Efficiency was published in 2014	1
Dominica Potential for biomass-based energy project is recognized but regulatory and legislative frameworks need to be reinforced. Geothermal resources.	DOMLEC dominated the market (until 2015), but IPP's were permitted	Dominica Organic Agriculture Movement (DOAM) promotes organic farming including the use of organic fertilizers in the country; an extension officer is dedicated to organic farming According to the UN FAO's Forestry Division, the opportunity for biomass energy utilization in Dominica is high	Investment incentives for potential project developers	3
Dominican Republic Liberalised electricity sector (since 1999), good oversight and regulation	86% of installed generating capacity is privately owned by a series of foreign IPP's Renewable energy generators are guaranteed equal price for power	Sufficient data not available	Renewable Energies Incentive Law 57-07 provides supportive measures for biopower project developers Target: 25% of traded	2

317 Adapted from GIZ. (2015). Bioenergy Assessment in the Caribbean. Report on Legal Framework Conditions. Lincoln, E. and Schaubach, K. GFA Consulting Group and Deutsches Biomasseforschungszentrum. It is noted that an update of the latest development on both national and regional (CARICOM / OECS) legal and regulatory frameworks is needed, as the figures date back in 2015.

Country	Electricity Offtake	Biomass Supply Chain	Enabling Environment	Ranking
			power to be RE by 2025	
Grenada Power generation is a closed market, but prospects for private investors (especially in biopower) appear as from 2021	GRENLEC enjoys of monopoly of 80 years (with effect from 1961)	Opportunities to develop joint ventures (JV) or joint development agreements (JDA) with waste-to-energy project developers Organic fertilizers seem to be actively in use	No legislation governing the use of organic fertilizer and ash in agriculture Government pledged to promote the development of small-scale grid-connected renewable generation capacity	**2**
Guyana Electricity sector dominated by a few companies, lacks of independence and transparenct	IPP's collectively own and operate 45% of the installed generation capacity (large corporate firms generating power for own needs and selling excess capacity)	No clear legislation governing the organic fertilized and ash in agriculture However, organic fertilizers seem to be actively used	Lack of clearly defined incentives for bioenergy project developers No guarantee of access to organic waste material for conversion No legally binding PPPs between IPPs and N Utility Low Carbon Development (LCD) Strategy includes biomass power generation	**2**
Jamaica Power generation is liberalised and bioenergy benefits of clearly defined legislative and regulatory processes Waste-to-energy and renewable energy benefit of specific support	IPP's produce 30% of the electricity consumed. Office of Utilities Regulation (OUR) established in 1995 processes licenses for utility services	The use of organic fertilizer is established Small scale initiatives already actively present The Scientific Research Council (SCR) supplies the farmers with biodigester systems to treat organic farm waste to generate biogas / fertilizer	Entrepreneurs benefit of a one-stop shop approach for construction and building permission approvals REEED Renewable Energy and Energy Efficiency Department (division of Petroleum Corporation of Jamaica) promotes RE initiatives	**1**
Haiti Electricity sector is closed and lacks of transparency, and largely unregulated	Electricity of Haiti (EdH) Gov-owned faces little or no competition (from some IPP's	Sufficient data not available	Min of Environment is the lead agency in providing government support to bioenergy projects	**4**
Montserrat Main utility company enjoys a monopoly in power generation	MONLEC could be involved in licencing independent power providers RE target by 2027	Organic fertilizers seem to be actively in use	No legislation governing the use of organic fertilizer and ash in agriculture	**4**
St Kitts and Nevis Power generation is limited to the established utility companies, but strong engagement from the Government to open the generation market up to the private sector	No formal feed-in arrangements for IPP's to access the grid, while fair access of small scale household power generation is intended to be supported	Organic fertilizers seem to be actively in use	No legislation governing the use of organic fertilizer and ash in agriculture Interest in biomass to electricity production plant of 10MW (from sugar cane production), but issues of land availability	**4**
St Lucia Power generation market is dominated by the established utility company	LUCELEC is mandated as single producer, transmitter and distributor of power until 2045 (exclusive licence) LUCELEC has the possibility of establishing joint venture operation with RE developers or subcontract suitable IPP's to generate under PPA's	Organic fertilizers seem to be actively in use Interest to identify "waste-to-energy" projects that would sell electricity to LUCELEC via PPA's Promotion of special development areas, with incentives for investors	No legislation governing the use of organic fertilizer and ash in agriculture "Specific" renewable energy projects should be part of the Power Extension Plans (if prevent national potential and cost-effectiveness) 15% of RE as target	**3**

Country	Electricity Offtake	Biomass Supply Chain	Enabling Environment	Ranking
St Vincent and the Grenadines Power generation market is dominated by the established utility company Willingness of the Government to introduce biogas electricity	VINLEC enjoys generation, transmission and distribution power monopoly until 2033 (exclusive licence) VINLEC can issue licenses to IPP's for generation and selling power to the grid	Organic fertilizers seem to be actively in use	No legislation governing the use of organic fertilizer and ash in agriculture Assessment study (2010) on potential of biomass residues for biogas production (estim 3-4MW)	**3**
Suriname Electricity generation is dominated by the Government Little scope for utility scale biopower, but opportunities for distributed power generation in rural areas	The least fossil fuel dependent country in the Caribbean (75% of sources of energy are hydro-powered), mostly in coastal zones	Private sector involvement is limited to licenced contractors for waste collection and delivery to disposal sites Unclear is organic waste could be privately collected for diversion for use in bioenergy application	Government expressed interest in developing model townships in the *hinterland* using alternative / sustainable sources of energy, and implemented some investor incentives	**4**
Trinidad and Tobago The economics of biopower generation are likely to be difficult given Government subsidies for petroleum-based power generation Lack of clear mandates for renewable energy generation	Power Generation Company (PowerGen) Ltd[318] and Trinity Power Ltd[319] sell electricity to T&TEC under long-term PPA's	Organic fertilizers are considered an attractive agribusiness investment opportunity Network of Industrial Parks managed by Evolving Technologies and Enterprise Development Company Limited (e TecK)[320]	Lack of legislative framework of RE	**4**

318 The Power Generation Company of Trinidad and Tobago Limited (PowerGen) established in 1994, is a joint venture company created out of the partial divestment of the generation assets of the Trinidad and Tobago Electricity Commission (T&TEC). The majority of shareholding in PowerGen is retained by T&TEC (51%), the rest being owned by National Enterprises Ltd Power Holdings Ltd and Marubeni Corporation.
https://www.powergen.co.tt/

319 *owned by US based Carib Power Management LLC*

320 https://eteck.co.tt/