## PLASTIC WASTE MINIMIZATION PROJECT:

Enhancing the Legislative Framework in Jamaica to Support the Development and Implementation of a National Sustainable Consumption and Production Programme to Reduce Marine Litter from Plastics Generated from Land-Based Activities.



# FINAL REGULATORY IMPACT ASSESSMENT

Submitted: July 31, 2020

# **Plastic Waste Minimization Project**







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#### **Final Regulatory Impact Assessment Report**

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## GLOSSARY

**Biodegradable** A product that is able to break down, safely and relatively quickly, by biological means, into the raw materials of nature and disappear into the environment<sup>1</sup>.

- Circular A Circular Economy is an alternative economic model for exchange and production that seeks to decouple economic growth from material dependency. The idea is to increase resource efficiency use and reduce environmental impact at all stages of the product (goods and services) life cycle, reducing resource waste, ensuring the reduction of environmental impacts, while allowing us to meet our needs within planetary boundaries and developing the well-being of individuals<sup>2</sup>.
- **Compostable** A product that is capable of breaking down into natural elements in a compost environment.<sup>3</sup>

ExtendedA policy approach under which producers are given a significant responsibility – financial and/orProducerphysical – for the treatment or disposal of post-consumer products.Responsibility

(EPR)

- Marine Litter Any persistent, manufactured or processed solid material discarded, disposed of or abandoned in the marine and coastal environment. It consists of items that have been made or used by people and deliberately discarded into the sea or rivers or on beaches; brought indirectly to the sea with rivers, sewage, storm water or winds; accidentally lost, including material lost at sea in bad weather (fishing gear, cargo); or deliberately left by people on beaches and shores<sup>4</sup>. Marine Litter can have a sea-based or land-based origin. Sea-based origin relates to litter that is directly (accidently or purposely) released into the sea by maritime activities e.g. shipping, fishing, offshore installations or dumping of refuse at sea. Land-based origin relates to activities which cause littering directly on the coast, such as beach tourism, but can also refer to litter generated in more distant areas, such as towns and industrial sites, and blown or washed into the sea.<sup>5</sup>
- **Microplastics** Microplastics are small plastic pieces less than five millimetres long which can be harmful to our ocean and aquatic life<sup>6</sup>.
- **Polystyrene** A polymer of styrene especially: a rigid transparent thermoplastic that has good physical and electrical insulating properties and is used especially in molded products, foams, and sheet materials.

<sup>&</sup>lt;sup>1</sup> <u>https://www.naturespath.com/en-us/blog/whats-difference-biodegradable-compostable/</u>

<sup>&</sup>lt;sup>2</sup> UNEP, https://www.unenvironment.org/news-and-stories/blogpost/circular-economy-indicators-what-do-they-measure

<sup>&</sup>lt;sup>3</sup> https://www.naturespath.com/en-us/blog/whats-difference-biodegradable-compostable/

 <sup>4</sup> International
 Maritime
 Organization,
 Marine
 Litter.

 http://www.imo.org/en/MediaCentre/HotTopics/marinelitter/Pages/default.aspx
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<sup>10/</sup>pdf/MSFD identifying sources of marine litter.pdf

<sup>&</sup>lt;sup>6</sup> NOAA. <u>https://oceanservice.noaa.gov/facts/microplastics.html</u>

- **Plastics** Plastics are produced by the conversion of natural products or by the synthesis from primary chemicals generally coming from oil, natural gas, or coal<sup>7</sup>. Plastics covers a wide range of synthetic or semi-synthetic materials.<sup>8</sup> It is a lightweight, hygienic and resistant material which can be moulded in a variety of ways and utilized in a wide range of applications which has resulted in their increase in use over time.
- Single-useAlso known as disposable plastics, tend to be used for plastic packaging and include itemsplasticsintended to be used only once before they are thrown away or recycled. These include, among<br/>other items, grocery bags, food packaging, bottles, straws, containers, cups and cutlery. In 2015,<br/>nearly 50% of the plastic waste generated globally was plastic packaging<sup>3</sup>. For the purposes of<br/>the Jamaica's ban on certain single use plastics, these plastics have been defined in the Trade<br/>(Plastic Packaging Materials Prohibition) Order, 2018 and the Natural Resources Conservation<br/>Authority (Plastic Packaging Materials Prohibition) Order, 2018:
  - Single use plastic bags;
  - Packaging made wholly or in part of expanded polystyrene foam; or
  - Drinking straws, made wholly or in part of polyethylene or polypropylene manufactured for single use

SustainableSustainable consumption and production refers to the use of services and related products,consumptionwhich respond to basic needs and bring a better quality of life while minimizing the use ofandnatural resources and toxic materials as well as the emissions of waste and pollutants over theproductionlife cycle of the service or product so as not to jeopardize the needs of future generations.9

<sup>&</sup>lt;sup>7</sup> https://plastics.americanchemistry.com/How-Plastics-Are-Made/

<sup>&</sup>lt;sup>8</sup> <u>https://www.plasticseurope.org/en/about-plastics/what-are-plastics</u>

<sup>&</sup>lt;sup>9</sup> Norwegian Ministry of Environment, Oslo Symposium, 1994; UNEP, 'ABC of SCP; Clarifying Concepts on Sustainable Consumption and Production' (2010).

## ACRONYMS AND ABBREVIATIONS

DBJ	Development Bank of Jamaica
DRS	Deposit Refund Scheme
GOJ	Government of Jamaica
HDPE	High-density polyethylene
ICC	International Coastal CleanUP
JET	Jamaica Environment Trust
KMA	Kingston Metropolitan Area
LDPE	Low-density polyethylene
NCRA	National Compliance and Regulatory Authority
NEPA	National Environment and Planning Agency
NRCA	Natural Resources Conservation Authority
NSWMA	National Solid Waste Management Authority
PETE/PET	polyethylene terephthalate
PP	Polypropylene
РРТ	Parts per thousand
PS	Polystyrene
PVC	Polyvinyl chloride
RPJL	Recycling Partners of Jamaica Ltd

### **EXECUTIVE SUMMARY**

Plastics has become a global problem. The way it is used and discarded has resulted in growing marine litter which has adversely impacted ecosystems, biodiversity and potentially human health. Jamaica faces several challenges in managing plastic pollution. In response to the challenges, the Government of Jamaica took the initiative to implement two Orders which are intended to ban the importation, distribution, manufacture and commercial use of certain types of single use plastics beginning January 1<sup>st</sup> 2019<sup>10</sup>:

- 1. The Trade (Plastic Packaging Materials Prohibition) Order, 2018.
- 2. The Natural Resources Conservation Authority (Plastic Packaging Materials Prohibition) Order, 2018.

The ban has been implemented in phases starting January 1, 2019 Certain types of plastics are excluded from the ban including plastic packaging for certain foods, the medical field and straws for persons with disabilities. Recognising that the ban does not cover all types of plastics and more comprehensive measures are required to adequately manage and regulate plastic pollution, the Government of Jamaica continues to explore additional feasible policy options. Immediate future measures under consideration include the introduction of new solid waste management regulations inclusive of requirements for sorting at source and a voluntary Deposit Refund Scheme for PET plastic bottles<sup>11</sup>.

This report presents the **Final Regulatory Impact Assessment** under the Consultancy to prepare a Regulatory Impact Assessment for the Plastic Waste Minimization Project being implemented by the National Environment and Planning Agency. It is based on the findings of five previous deliverables in the project and suggests the best course of action regarding the management of plastic waste, plastic packaging materials inclusive of Polystyrene.

The ten policy options that were considered as part of this Consultancy include:

- 1. Viability for a deposit/refund scheme
- 2. Banning of certain categories of plastics and packaging material, inclusive of polystyrene
- 3. Measures to support use of alternates, including biodegradable material including a preferred tax regime
- 4. Tax on certain classes of plastic packaging
- 5. Recycling and/or resource reuse
- 6. Sorting at source
- 7. No regulations (voluntary/self-regulatory agreements)
- 8. Keeping current regulations (no change)
- 9. Alternative regulations
- 10. Public education and information

<sup>&</sup>lt;sup>10</sup> The Natural Resources Conservation Authority (Plastic Packaging Materials Prohibition) Order, 2018; The Trade (Plastic Packaging Materials Prohibition) Order, 2018.

<sup>&</sup>lt;sup>11</sup> Information received through personal communication with NSWMA and from the Policy Dialogue Session held February 6, 2020

In the analysis, the Consultants suggested that Policy Option 10 (Public Education and Information) should accompany all of the options so it is not discussed separately. Additionally, no other alternative regulation (option 9 above) could be identified. As such, the Draft RIA only focuses on Policy Options 1 to 8.

The proposed general and ultimate Policy Objective of the policy options is **to prevent and reduce plastic waste entering the environment (land, air and water),** and four immediate strategies have been identified to achieve this:

- 1. To reduce the amount of single use plastic imported and manufactured in Jamaica.
- 2. To improve the waste collection and disposal system in Jamaica.
- 3. To minimise the amount of plastic entering the waste stream through adequate recovery and reuse.
- 4. To change public attitudes and behaviour through sensitization, education and appropriate incentives.

Following the cost benefit analysis, each of the Policy Options were scored in relation to their potential economic, environmental and social impacts, as well as their possible enforcement needs or requirements. The outcome of this were the following preferred policy options:

- Policy Options 1, 5 and 7- A Voluntary/ Legislated Deposit Refund Scheme (DRS) with recycling
- Policy Option 3- Measures to support use of alternative biodegradable materials
- Policy Option 8- Keep current regulations

The following table indicates the type of plastic that would be considered under the 3 preferred options.

Policy Options	Type of Plastic Targeted
Policy Option 1, 5 and 7- Voluntary DRS with recycling. This can be revisited after 5 years of implementation to assess its effectiveness and determine whether deposit container legislation should be considered.	Plastic bottles (PET, HDPE bottles)
Policy Option 3- Reduced customs duty on importation of biodegradable alternatives	Polypropylene packaging, plastic cutlery, disposable cups and lids (polystyrene and polypropylene)
Policy Option 8 – Keep existing regulations (ban on certain single use plastics)	Polystyrene packaging and plastic bags and plastic drinking straws (polyethylene and polypropylene)

It is proposed that the voluntary DRS be implemented and evaluated after a 5-year period of operation to determine whether it is effective and sustainable, and whether a legislated DRS should be implemented instead. For the legislated DRS, it is proposed that NSWMA regulations be enacted to provide the legal framework for the legislated DRS. To give effect to Policy Option 3, the House of Representatives will be required to pass a resolution to reduce import customs duties on these materials imported into Jamaica. The Jamaica Customs Agency, inclusive of the Commissioner of Customs and customs officers would be responsible for ensuring compliance under the Customs Act. The Natural Resources Conservation Authority under the Natural Resources Conservation Act, 1991 would be responsible for enforcing the requirement for permits for solid waste treatment and disposal facilities.

## **1** INTRODUCTION

### 1.1 Purpose

This document presents the **Final Regulatory Impact Assessment** - Deliverable 9 (the final deliverable)under the Consultancy to prepare a **Regulatory Impact Assessment** for the **Plastic Waste Minimization Project** being implemented by the National Environment and Planning Agency. This project is funded by the Global Environment Facility (GEF), and other executing partners, namely, the UN Environment (Caribbean Sub-Regional Office, IETC, Global Program of Action for the Protection of the Marine Environment from Land-based Activities-Marine Litter). The main objective of the Project is to enhance the capacity of the country to carry out waste management activities and strengthen the policy and legislative framework for reduction of plastic, inclusive of polystyrene, and marine litter in Jamaica.

This Consultancy had seven (7) tasks with nine (9) main deliverables (Table 1-1). Task 7 involves the preparation of the Draft and Final Regulatory Impact Assessment. This document represents a synthesis of the previous reports prepared under this consultancy and identifies the best course of action regarding the management of plastic waste and plastic packaging materials.

No.	Main Task	No.	Corresponding Deliverable
1	Project Inception	D1	Inception Report and Workplan
2	Hot Spot Assessment	D2	Hot Spot Assessment Report
3	Description of Policy Context and Objectives	D3	Description of Policy Context and Objectives and Identification of Policy Options Report
4	Cost Benefit Analysis	D4	Cost benefit Analysis Report with Options Identified Report
5	Identification of Relevant Enforcement and Compliance Actions	D5	Enforcement and Compliance Report
6	Assessments of Impact and	D6	Impact and Effectiveness Report
o	Effectiveness of Plastic Ban	D7	Draft Regulatory Impact Assessment Report
7	Final Reporting	D8 and D9	Final Regulatory Impact Assessment Report with the Stakeholder Consultation Report Appended

#### Table 1-1: Summary of the Project Tasks and Associated Deliverables

### 1.2 Objective

The primary objective of this **Regulatory Impact Assessment** is to provide recommendations for the best course of action regarding the management of plastic waste, plastic packaging materials inclusive of Polystyrene.

### 1.3 The Approach

#### 1.3.1 Overall Approach

This report has been prepared based on the findings of the previously submitted deliverables and extensive stakeholder consultations held throughout the duration of the project. The TOR required an assessment of ten policy options, either in combination or alone:

- 1. Viability for a deposit/refund scheme
- 2. Banning of certain categories of plastics and packaging material, inclusive of polystyrene
- 3. Measures to support use of alternates, including biodegradable material including a preferred tax regime
- 4. Tax on certain classes of plastic packaging
- 5. Recycling and/or resource reuse
- 6. Sorting at source
- 7. No regulations (voluntary/self-regulatory agreements)
- 8. Keeping current regulations (no change)
- 9. Alternative regulations
- 10. Public education and information

In the analysis, the Consultants suggested that Policy Option 10 (Public Education and Information) should accompany all of the options, therefore it is not discussed as a separate option. Additionally, no other alternative regulation (option 9 above) could be identified. As such, the Final RIA only discusses Policy Options 1 to 8.

The findings of the Hot Spot Assessment Report (D2) were used to focus the other deliverables by identifying the types of plastic that are most abundant in the waste stream and marine litter. On the completion of the Description of the Policy Context and Objectives (D3) and the Cost Benefit Analysis (D4) of each of the policy options, a multicriteria analysis was undertaken and the top 3 policy options were identified. The Enforcement and Compliance Actions (D6) were then identified for each of the preferred options. Further stakeholder consultations were held to validate the findings and to seek feedback so as to prepare the RIA.

#### 1.3.2 Hot Spot Assessment

The main objectives of the Hot Spot Assessment were:

- 1. To identify the main accumulation zones for marine plastic litter and land-based influx areas in the Kingston Metropolitan Area (KMA).
- 2. To identify the priority products and polymers that are in the waste stream.

The assessment was informed primarily by data from secondary sources such as previously undertaken assessments and studies including, but not limited to:

- International Coastal Cleanup Day data and reports prepared by JET
- The Solid Waste Transport Simulation prepared by MGIBlue.
- 2017 Waste Characterization Study for MPM Region

Other sources of information include STATIN and Mona GeoInformatics.

#### 1.3.3 Description of Policy Context and Objectives

The primary objective of this report was to identify possible Policy Options for regulating plastics/plastic packaging including Polystyrene. This was prepared through extensive document review as well as stakeholder consultation. The following tasks were carried out:

- Review of the current state of waste management in Jamaica with specific focus on plastics to determine underlying drivers of plastic pollution (e.g. wide availability, consumer convenience, poor waste management etc.), extent and impacts.
- Review of the existing jurisdiction of the various management entities involved in regulating plastics in Jamaica.
- Review of all relevant and applicable local legislation and policies and international instruments that concern the manufacture, importation, sale, use and disposal of plastics.
- Review of different regulatory regimes for plastics in other jurisdictions in the world such as
  regulatory instruments (limits, bans, sorting, recycling and/or resource reuse, self-regulation) and
  economic instruments (tax regimes, deposit refund scheme, subsidies). The description of each
  regime includes the following: the plastic product targeted, objective, examples of jurisdictions
  and legislation applying the regime, scope of regulation (the regulated activity), stakeholders
  affected, compliance and enforcement, likely challenges and opportunities.
- Review of International best practices and guidance material on the development of regulatory regimes for managing plastics.
- Review of data on the quantities of plastic packaging, inclusive of Polystyrene, manufactured or imported into the island sourced from STATIN and the Jamaica Manufacturers and Exporters Association as well as secondary sources (available reports, studies, previous assessments on plastics regulations).

### 1.3.4 Cost Benefit Analysis

The principal objective of this analysis was to compare the discounted costs and benefits of each of the policy options. This is to serve as one criterion in the assessment by the Government of Jamaica (GOJ) of the feasibility of the policy option that once implemented will achieve the objectives of the Plastic Waste Minimization Project.

The TOR recommended using a multi-criteria approach where costs could not be monetised and the CBA where the costs can be monetised. Where costs, benefits and impacts of one of the specified options could be quantified in monetary terms, this facilitated the comparison of discounted future benefits with costs at the time of investment, and provided a monetary measure of the potential impact of the option.

In cases where no monetary measure was applicable, an appropriate quantitative measure of the impact was selected and aggregated with other similar measures for other impacts in an index to facilitate comparison across options.

The findings of the Hot Spot Assessment (Deliverable #2) and the Description of Policy and Objectives (Deliverable #3) were used to inform the analysis done throughout this report.

#### 1.3.5 Impact and Effectiveness Assessment

There were three objectives of this assessment:

- 1. To understand the public view on the ban and its effectiveness.
- 2. To understand the extent of the reduction of the banned items in the waste stream.
- 3. To determine the extent of compliance with the non-use of the banned plastic by manufacturers, retailers and end-users.

The assessment depended on a combination of primary and secondary data. Primary data was collected via electronic surveys using Google Forms that were designed for three categories:

- 1. Household users/ end users
- 2. Manufacturers
- 3. Retailers

These surveys were designed to get feedback on the public view of the ban and its effectiveness. The survey forms can be found in Appendix 1. In order to get as many responses as possible, the surveys were sent to some Municipal Corporations, organizations/ groups with large networks via email and WhatsApp Groups. It was also placed on several company social media platforms, including ESL and NEPA. Councillors for several communities across Jamaica were also asked to circulate the link in their networks via WhatsApp.

#### 1.3.6 Enforcement and Compliance Assessment

This assessment was based on the findings of the previously submitted Policy Context and Objectives Report and the Cost Benefit Analysis Report. The main objectives were to identify:

- Responsible authority/ies to oversee enforcement/compliance of the proposed option/s
- Enforcement mechanisms (e.g. licensing, prosecutions, ticketing, levies etc.)
- Exemptions, if any.
- Powers of regulator and authorized officers (e.g. power to seize, confiscate and destroy prohibited items, enter premises and ask questions for the purposes of investigation)
- Offences and penalties for violations of the proposed legislation (maximum fines and sentences).
- To prepare a proposal on the legislative, policy and institutional changes that will be required to implement the proposed enforcement and compliance actions.

A matrix was prepared to determine the preferred options. Once this was done the enforcement and compliance needs for the preferred options was outlined and described. Consultations were also undertaken with relevant government, private sector and civil society stakeholders to obtain their views and perceptions.

## 1.4 Stakeholder Consultations

Several stakeholders were consulted throughout the duration of the project (the list is not exhaustive):

- Jamaica Manufacturers and Exporters Association
- Recycling Partners of Jamaica
- National Environment and Planning Agency
- National Solid Waste Management Authority
- The Caribbean Policy Research Institute
- AlterEco
- Jamaica Environment Trust
- Bureau of Standards Jamaica
- National Compliance Regulatory Authority
- Several Manufacturing and Retailing Companies
- STATIN
- JAMPRO
- Ministry of Finance

A stakeholder consultation was held on February 6, 2020 to obtain feedback on the range of policy options outlined in this report. Approximately 23 stakeholders attended the sessions. Views were solicited from the stakeholders based on their agreement with the proposed objectives and the range of policy options being examined. The list of stakeholders and the questions used for soliciting feedback are set out in Appendix 2. An additional stakeholder session was held virtually with the Plastics Subgroup of the JMEA on March 16, 2020 due to the COVID-19 pandemic that began affecting Jamaica. The list of stakeholders is included in Appendix 2. A final workshop was held on June 16, 2020 where the findings the Draft RIA were presented. This stakeholder consultation was also held virtually as a result of COVID-19 and the list of stakeholders are presented in Appendix 3.

## 1.5 Limitations

The following limitations must be noted and understood prior to the review of the findings of this report:

- **Does not consider microplastics** Microplastics are not discussed in this report as agreed with the NEPA due to inadequate data.
- Stakeholder Feedback- Despite several follow up emails, not all stakeholders provided adequate and timely feedback on the proposed options. Also, the project took place during the COVID-19 pandemic as such some stakeholders were not available to provide their feedback on the questionnaires or interviews. Important to note, two of the workshops were held virtually as a result of the government restrictions related to COVID-19.
- **Data** Some of the data required (especially for the Cost Benefit Analysis) was not readily available, and as such the data had to be constructed from stakeholder consultations. There is a lack of data on the utilization of various imports of plastic raw materials as inputs in local manufacturing. There is also a lack of data on the potential biodegradable substitutes, and the technology to support local production.

- No recent waste characterization data from NSWMA- The NSWMA has not done a recent waste characterization study since the implementation of the ban in 2019.
- Detailed information on Waste to Energy. Waste-to-Energy as a policy option could not be considered in this report given the preliminary stage of assessment of the feasibility of a Waste to Energy operation. The technology that will be used for the plant, i.e. whether it will be an anaerobic digestion, pyrolysis or gasification has not been decided. This has implications for the type and amount of waste needed to operate the plant. An anaerobic digestion plant requires organic waste whereas another type of plant that uses incineration technology may not be as effective if plastics are removed from the waste stream. The different types of plants will also have different environmental impacts. It is generally considered that Waste to Energy is of low priority in the waste hierarchy when compared with other methods for minimizing waste. Waste reduction through prevention and thereafter re-use and recycling of waste should be prioritised. Waste to Energy projects, although preferable to waste disposal without energy recovery, should be seen as complementary and used to deal with non-recyclable elements and should not compete with waste reduction, reuse and material recycling measures.<sup>12</sup>

<sup>&</sup>lt;sup>12</sup> Waste-to-Energy Options in Municipal Solid Waste Management: A Guide for Decision Makers in Developing and Emerging Countries, Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH, Eschborn, May 2017, available at https://www.giz.de/en/downloads/GIZ\_WasteToEnergy\_Guidelines\_2017.pdf

## **2 THE POLICY CONTEXT**

This section of the Regulatory Impact Assessment presents a brief description of the policy context, including the impact of plastics on Jamaica. Over the past six decades, plastics has become the leading man-made material due to its affordability, versatility and durability. Since the 1950s the global production of plastics has rapidly increased from 2 million tonnes per year to 381 tonnes by 2015.<sup>13</sup> In some cases the annual global plastic waste can exceed annual production because it incorporates waste generated in previous years. Much of the plastic we produce is designed to be thrown away after being used only once. The most common single-use plastics found in the environment are, in order of magnitude, cigarette butts, plastic drinking bottles, plastic bottle caps, food wrappers, plastic grocery bags, plastic lids, straws and stirrers, other types of plastic bags, and foam take-away containers.<sup>14</sup>

Combined with the fact that plastics do not biodegrade, or take thousands of years to breakdown into harmful microplastics, plastics are considered one of the top global threats to the environment. More than 8 million tons of plastic pollutes the oceans each year.<sup>15</sup> Marine plastic litter is a hazard for wildlife that may accidentally be ingested or become entangled in debris resulting in injuries or death. Plastic bags can block drainage systems encouraging flooding and provide breeding grounds for mosquitoes thereby increasing the transmission of vector-borne diseases such as dengue. Polystyrene products (commonly referred to as Styrofoam<sup>16</sup>), contains carcinogenic chemicals like styrene that when burned or heated can release toxic emissions.<sup>17</sup> There is also a growing concern about harmful microplastics in the food chain.<sup>18</sup>

Plastics also contribute to climate change<sup>19</sup>:

- Plastics refining is greenhouse-gas intensive. Carbon dioxide is emitted from manufacturing ethylene, the building block for polyethylene plastics. These emissions are projected to increase by 34% between 2015 and 2030.
- Incineration of plastic results in carbon dioxide emissions. Projections from the World Energy Council, suggest that if plastics production and incineration increase as expected, greenhouse gas emissions will increase to 49 million metric tons by 2030 and 91 million metric tons by 2050.
- Microplastics have the potential to lower the efficiency of the biologically-driven transport of CO<sub>2</sub> to the seafloor.

<sup>&</sup>lt;sup>13</sup>Geyer, R., Jambeck, J. R., & Law, K. L. (2017). Production, use, and fate of all plastics ever made. Science Advances, 3(7), e170078

<sup>&</sup>lt;sup>14</sup> https://wedocs.unep.org/bitstream/handle/20.500.11822/25496/singleUsePlastic\_sustainability.pdf

<sup>&</sup>lt;sup>15</sup> Geyer, R., Jambeck, J. R., & Law, K. L. (2017). Production, use, and fate of all plastics ever made. Science Advances, 3(7), e170078

<sup>&</sup>lt;sup>16</sup> Styrofoam is a trademarked brand of certain products made from polystyrene foam.

<sup>&</sup>lt;sup>17</sup> UNEP (2018). SINGLE-USE PLASTICS: A Roadmap for Sustainability

<sup>&</sup>lt;sup>18</sup> Lusher, A., Hollman, P., and Mendoza-Hill, J., Microplastics in fisheries and aquaculture: Status of knowledge on their occurrence and implications for aquatic organisms and food safety (FAO Fisheries and Aquaculture Technical Paper 615 (2017)

<sup>&</sup>lt;sup>19</sup> <u>https://www.yaleclimateconnections.org/2019/08/how-plastics-contribute-to-climate-change/</u>

Despite the glaring environmental problems associated with plastics, plastics production is estimated to triple by 2050.<sup>20</sup>

## 2.1 Impact of Plastics in Jamaica

Across Jamaica, particularly in the urban areas, the problem of solid waste disposal and management has been longstanding. The country generates approximately 800,000 tons of residential waste annually<sup>21</sup>, some of which is improperly disposed of. This has contributed to blocked drains resulting in flooding and damage to coastal and marine ecosystems (Figure 2-1).



Figure 2-1: A and B) Solid waste build up in drains and gullies (Source: Gleaner 2015 and 2012 respectively), C) Waste collecting in the mangrove systems along Refuge Cay (Source: KFTL, 2018), D) Waste collecting along the shorelines (Source: JET, 2017). The majority of the waste found accumulating in these sites are plastic that cannot biodegrade.

<sup>20</sup> Ibid.

<sup>&</sup>lt;sup>21</sup> National Solid Waste Management Authority (NSWMA) (2013).

In Jamaica, about 75% of municipal solid waste generated is disposed of at legal disposal sites<sup>22</sup>; the uncollected waste is either buried, burnt or littered, often ending up in drains, rivers, gullies, beaches and ultimately the ocean. Plastics generally make up 15% of the waste collected<sup>23</sup>. Plastics are a major problem because they do not biodegrade, rather they slowly break down into small fragments known as microplastics<sup>24</sup>.

Single-use plastics, or disposable plastics, tend to be used for plastic packaging and include items intended to be used only once before they are thrown away or recycled. These include, among other items, grocery bags, food packaging, bottles, straws, containers, cups and cutlery. In 2015, nearly 50% of the plastic waste generated globally was plastic packaging<sup>25</sup>. In Jamaica, single use plastic and polystyrene (foam) items tend to be the top 10 items collected from coastal areas on International Coastal Cleanup Day. In 2018 and 2019, the top 10 items collected were plastic bottles, plastic bottle caps, foam pieces, plastic pieces, other plastic bags, foam cups and plates, food wrappers, plastic cups and plates, glass beverage bottles, foam take away containers (Figure 2-2 and Figure 2-3).

Based on this information, the type of plastics that tend to accumulate in the coastal areas are Type 1 (PETE), Type 4 (LDPE), Type 5 (PP) and Type 6 (PS) Plastic Pieces could be a combination of the different types of plastics (Figure 2-4).

<sup>&</sup>lt;sup>22</sup>JIS, "NSWMA Undertakes Plastic Bottle Recycling Project," July 30, 2016. (http://jis.gov.jm/nswma-undertakes-plastic-bottle-recycling-project/)

<sup>&</sup>lt;sup>23</sup>NSWMA, "Waste Characterization Study 2015".

<sup>(</sup>www.nswma.gov.jm/resources/NSWMA%20-%20Waste%20Characterization%20Studies%20-%202015.pdf)

<sup>&</sup>lt;sup>24</sup> UNEP (2018). SINGLE-USE PLASTICS: A Roadmap for Sustainability

<sup>&</sup>lt;sup>25</sup> UNEP (2018), ibid.



Figure 2-2: Top 10 Items collected in Jamaica 2018- International Coastal Cleanup Day (Source: JET, International Coastal Cleanup Day, Jamaica, National Report, 2018)



Figure 2-3: Top 10 Items collected in Jamaica 2019- International Coastal Cleanup Day (Source: JET, International Coastal Cleanup Day, Jamaica, National Report, 2019)

# Which plastics are recyclable?



Summary of plastic polymer groups, their common uses, properties and recyclability. Numerical coding (from 1-7) is typically provided on plastic items and gives information of their polymer grouping below. Recyclability is based on common recycling schemes but can vary between countries as well as regionally within countries; check local recycling guidelines for further clarification.



Figure 2-4: Types of Plastic

## 2.2 Imported Plastics vs Manufactured Plastics in Jamaica

### 2.2.1 Imported Plastics

Over the years, Jamaica has increasingly imported more plastic in different forms into the island. Between 2011 and 2015 there was an increase in total imports of plastic items. Plastic bottles and bags account for the greatest number of imported plastic items. Plastic bag imports almost doubled from 2011 to 2015,

going from 4 million kilograms (or 720 million bags) to 7 million kilograms, or approximately 1.3 billion bags<sup>26</sup>.

### 2.2.2 Manufactured Plastics

The main manufacturers of plastic bottles in Jamaica include Bay Packaging & Containers Ltd., Poly Pet Co. Ltd., Sweet Craft Ltd., United Plastics Ltd., Greif Jamaica Ltd., and Versachem International Ltd. Information from the Jamaica Manufacturers and Exporters Association estimated that the amount of PET (Clear) and HDPE plastic bottles sold in Jamaica for 2018 was 807,369,069 and 39,051,547 respectively. Other types of plastics sold in Jamaica in 2018 such PET Blue, PET Amber, PET Green and PET Black bottles amounted to 65,545,081 bottles.<sup>27</sup> Data for 2019 was not yet available at the time of writing this report.

Plastic bags and plastic straws were also manufactured in Jamaica prior to the ban. Plastic straws were manufactured primarily by Wisynco and plastic bags were manufactured by a number of companies such as Wisynco, Flexpak Ltd., Poly-Pak (Jamaica) Ltd., Jamaica Bags Ltd., Jamaica Packaging Industries Ltd., Supreme Bags Limited, National Packaging Corporation, and Agri & Industrial Packaging Limited, AgroPak. The Consultants were not able to ascertain the total amount of plastic bags and straws manufactured locally.

## 2.3 Existing Regulatory Framework

### 2.3.1 The Regional and International Context

There are several international environmental agreements relevant to plastic pollution. However, there is no legally binding global international agreement that governs the wholesale regulation and reduction of marine plastic pollution in a comprehensive manner. The following table presents a summary of multilateral environmental agreements which are binding and their relevance to Jamaica.

Multilateral Agreements	Brief Description	Relevance to Jamaica
United Nations Convention on the Law of the Sea 1982 (UNCLOS)	UNCLOS is a global agreement that regulates the role of States and its territorial jurisdiction over the Seas which also contains provisions more specifically requiring States to act on the preservation of the marine environment from pollution (art. 194). The Convention has a mandatory obligation on States to adopt laws to prevent, reduce and control pollution of the marine environment and establish global and regional rules, standards and recommended practices and procedures thereto (Article 210).	Jamaica became a party to UNCLOS on 21 March 1983. Any legislation that Jamaica adopts to control land- based sources of marine pollution due to plastics, contributes to the fulfilment of the requirements of UNCLOS objectives.

<sup>&</sup>lt;sup>26</sup> International Merchandise Trade, Statistical Institute of Jamaica (STATIN)

<sup>&</sup>lt;sup>27</sup> Jamaica Manufacturers and Exporters Association

Multilateral	Brief Description	Relevance to Jamaica	
The Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal (herein after referred to as the Basel Convention)	The Basel Convention is a global treaty governing the trade and movement of "hazardous" and "other wastes" which requires national measures including consent to regulate transboundary movement of waste and its trade. The Convention requires domestic legislation to be passed for it to be operational. Under the recent Basel Amendment in May 2019, plastic waste was added to Annexes II, VIII and IX of the Convention and the export and importation of unrecyclable and hazardous plastic waste will now fall under the control regime of the Convention. This requires the consent of importing countries to ensure that the waste will be managed in an environmentally sound manner in the importing country before waste can be exported.	Jamaica became a party to the agreement in 2003. Any actions that the Jamaican government does to minimize or prevent the generation of plastic waste will work towards meeting the requirements of the Convention. If Jamaica seeks to export any unrecyclable or contaminated plastic waste it would have to meet the requirements of the BASEL Convention.	
	Convention (2019), the Parties agreed to establish a Plastic Waste Partnership.		
Cartagena Convention	This is a regionally legally binding Convention governing the protection of the marine environment of the Caribbean. It includes a Protocol concerning Pollution from Land-Based Sources and Activities (LBS Protocol) that is directly relevant to the regulation of plastics.	Jamaica ratified the Convention in 1987 and the Protocol in 2015. As a party to this agreement must seek to implement the action plan and conduct such activities to support regional goals and indicators.	
International	This international agreement regulates land-		
Maritime	based waste dumped at sea. It includes		
Organization	obligations on States to 'take all practicable steps		
Convention on	to prevent the pollution of the sea by the	Jamaica is not yet a party to the	
Prevention of Marine	dumping of waste and other matter that is liable	1996 Protocol.	
Pollution by Dumping	to create hazards to human health, to harm living		
of Wastes and other	resources and marine life, to damage amenities		
Matter, 1972 (London	or to interfere with other legitimate uses of the		
Convention)	sea'.		
The International Convention for the Prevention of Pollution from Ships (MARPOL)	MARPOL provides obligations that seek to prevent pollution from ships. It includes Annex V (2013) which governs ocean-based litter pollution and prohibits the discharge of plastics from ships in Maritime zones.	Jamaica became a party to MARPOL in 1991 and must regulate the dumping of materials from ships through its national legislation. A Draft Shipping (Pollution Prevention	

Multilateral Agreements	Brief Description	Relevance to Jamaica
		and Control) Bill is to be enacted which will address the prevention of pollution, response to pollution incidents and compensation for pollution damage.
General Agreement on Tariffs and Trade (GATT)	GATT Article XX—allows conditions in national laws that restrict trade to protect human, animal or plant life.	Jamaica's prohibition on the production and importation of single-use plastic products could be perceived as discriminatory.

In addition to legally binding conventions, many non-binding international resolutions and agreed declarations provide a framework which should be considered to understand necessary national actions that should be taken to regulate Plastics. The following table presents a summary.

Soft Law and Agreed International Resolutions	Brief Description and Relevance	
United Nations Environment Assembly (UNEA-4)	<ul> <li>In 2019 two plastic resolutions were passed – one on single-use plastic products production and the other on marine plastic litter and microplastics. They provide the following context for national action including:         <ul> <li>Encouragement for member states to take comprehensive action on single-use plastics, including through improvements in waste management and infrastructure.</li> <li>Promotion of innovative approaches to solving this problem, including through extended producer responsibility and development of alternatives.</li> </ul> </li> <li>UNEP has in addition, created an Ad Hoc Open-Ended Expert Group on Marine Litter and Microplastics which prepared a guidance report to national governments.</li> </ul>	
The UN Sustainable Development Goals	Provides voluntary guidance on the expectations of States to carry out actions to address plastics. The SDGs address the regulation of plastics at the international level as "marine litter" particularly through SDG 14.1 which states that 'by 2025, prevent and significantly reduce marine pollution of all kinds, particularly from land based activities, including marine debris and nutrient pollution.' Other relevant SDGS relating to targets to address the regulation of plastics include SDG 6.3, SDG 8.4, SDG 12.5 and SDG 14.2.	

#### Table 2-2: Summary of relevant soft law and agreed international resolutions

Soft Law and Agreed International Resolutions	Brief Description and Relevance
Polluter Pays	Principle 16 of the 1992 Rio Declaration requires that polluters bear the cost of environmental pollution. This principle is relevant to the regulation of plastic as it would require persons/ organisations producing plastic to internalize some of the costs for its collection, recycling, reuse and disposal. It is an important principle to consider in the design of legislation to regulate plastics.

## 2.3.2 National Legislation and The Existing Ban

Jamaica faces challenges in managing plastic pollution including:

- The need for more comprehensive and effective laws and policies that address plastics and waste management.
- Inadequate waste management systems for the collection and disposal of waste.
- Lack of infrastructure to handle all types of solid waste and the limited resources and capacity of the National Solid Waste Management Authority (NSWMA).
- Poor behavioural/cultural norms of Jamaicans who litter by disposing of garbage in unauthorized areas.
- Accessibility of affordable alternatives to plastic.
- The financial viability of other alternative waste management options such as a national recycling programme with sorting at the source and a waste to energy programme.

There are a few laws that regulate the importation, local production and disposal of plastics within Jamaica. The main authorities that have the legal mandate over plastics are the Natural Resources Conservation Authority and the National Solid Waste Management Authority as it relates to the disposal of waste; the Minister of Industry, Commerce, Agriculture and Fisheries as it relates to the importation (trade) of plastics; and the Ministry of Finance as it relates to the imposition of taxes.

Plastics, like all other waste, must be disposed of in authorized solid waste disposal sites under section 45 of the National Solid Waste Management Act. It is an offence to throw plastic litter in a public place which includes any beach or foreshore or the bank of any river or stream or the margin of any lake, pond, lagoon or any gully, to which the public have, or are permitted to have, access with or without payment.<sup>28</sup>

There are high penalties for disposal of solid waste (inclusive of plastic waste) in an unauthorized area or manner. This is a fine of J\$1,000,000 and/or up to 9 months imprisonment under the National Solid Waste Management Act, 2001.<sup>29</sup> Littering is considered a lesser offence under the Act and is a ticketable offence that carries a fixed penalty.<sup>30</sup>

<sup>&</sup>lt;sup>28</sup> Section 2 and 46 of the National Solid Waste Management Authority Act 2001.

<sup>&</sup>lt;sup>29</sup> Section 45(a) of the National Solid Waste Management Authority Act 2001.

<sup>&</sup>lt;sup>30</sup> Section 46(a) of the National Solid Waste Management Authority Act 2001.

Further, two laws make it an offence to put any "polluting matter" in any water without authorization.<sup>31</sup> The fines for disposing of polluting matter, which could arguably include plastic, in any water or water containing fish is an offence that carries a penalty of up to J\$100,000 and/or 12 months imprisonment under the Wild Life Protection Act ,1945. The similar offence under the Natural Resources Conservation Authority Act is J\$50,000 and/or 2 years imprisonment; and 1-year imprisonment for default in payment of fine; and J\$3,000 per day for a continuing offence. It should be noted that to date, these offences under the Wild Life Protection Act and Natural Resources Conservation Authority Act have only been used to prosecute actions involve the unauthorized disposal or release of toxic liquids and any prosecutions for the illegal disposal of plastic in waterways under these laws would be considered a test case.

Where anyone disposes of plastic in a manner that is considered an encroachment on the foreshore or floor of the sea, or if damage results to the floor of the sea, the Natural Resources Conservation Authority can apply to the Supreme Court of Jamaica for an order to, inter alia:

- a. Require the person to remove, within a specified period any encroachment erected or permitted to be erected by that person without, or in contravention of, a licence;
- b. Requiring the person to carry out, within a specified period, a rehabilitation of the foreshore or floor of the sea so as to remedy any damage caused by such person; or

In the case of damage to a natural resource, requiring the person to pay to the Authority such sum as the Court may determine by way of an award of damages which may take into account any reasonably foreseeable loss in the economic value of the natural resource to the public

As a result of the global impact of plastics, the UN Environment has identified several priority actions to minimise single-use plastics. Jamaica chose to implement a ban on certain types of plastics (Priority Action #5). Bans are often instituted to address single-use plastic items including bags, cutlery, straws, polystyrene containers and takeaway product containers. The objective of instituting a ban is to eliminate these products from consumption and production in the country and prevent its entry into waste streams.

Bans can cover the importation, exportation, manufacture, distribution, retail and sale of single use plastics items. Bans can be instituted with other regulatory approaches e.g. environmental levies or other funds to support waste management. Bans can be total or partial and usually include exemptions. Bans or partial bans can include restrictions and exemptions based on thickness, material composition, uses for certain purposes, hygiene, disabilities, emergencies, and recycled plastic content or based on business type.

<sup>&</sup>lt;sup>31</sup> Section 12(1) of the Natural Resources Conservation Authority Act 1991, Section 11 of the Wild Life Protection Act 1945

Priori	ty activ	me ta i	minim	170 e	inal	0-1100	nla	etice	
i non	Ly actio			1120 3	myn	c-usc	pia	31103	
1 IMPROVE WASTE MANAGEMENT SYSTEMS	Segregation of waste at sources: plastics, organic, metals, paper, etc.		Effective collection of the segregated waste, transport and safe storage		Cost-effective recycling of materials (including plastics)		Le an the	Less landfilling and dumping in the environment	
2 PROMOTE ECO-FI ALTERNATIVES T PHASE OUT SING PLASTICS	RIENDLY O LE-USE	Introduce Economic Incentives including tax rebates, research and development funds, technology incubation support, public-private partnerships			Support projects to upscale or recycle single-use items transforming potential wastes into a resource			nulate creation of ro-enterprises to e job creation economic growth	
3 EDUCATE CONSUMERS TO I ENVIRONMENTA FRIENDLY CHOIC	MAKE LLY ES	on Awarene		Awarenes	P less campaigns to p		<b>lic pressure</b> rive public and ate sector decisions		
(4)	Reduction strategies can lead to fostering the understandings of people, without the forced sudden change.								
ENABLE VOLUNTARY REDUCTION STRATEGIES	Promotion and adoption of reusable bags, as alternatives to plastic bags       Voluntary agreements between government and retailers/producers         Existence of the raised social awareness and the public pressure would be a pre-condition for the effective reduction strategies.								
(5)		Example of polic	ov toole						
DAN OD INTRODU		Regulatory instru	iments	Ban					
BAN OK IN I RODU	CE LEVIES	Economic instru	ments		nliers	Levy on retailer	c	Levy on consumers	
ON THE USE AND	USE AND SALE OF		f Regulatory Ban and la		v Evtended Brodu		ICOT De	cer Responsibility	
SINGLE-USE PLAS	PLASTIC and Economi		nstruments		y	Extended Froducer Responsibility			

Figure 2-5: Priority actions to minimise single-use plastics<sup>32</sup>

Jamaica introduced legislation to ban the importation, distribution, manufacture and commercial use of certain types of single use plastics beginning January 1<sup>st</sup> 2019<sup>33</sup>:

- The Trade (Plastic Packaging Materials Prohibition) Order, 2018.
- The Natural Resources Conservation Authority (Plastic Packaging Materials Prohibition) Order, 2018

The ban has been implemented with one final phase remaining:

- 1. Phase 1 (implemented January 1, 2019)
  - a. single use plastic bags made wholly or in part of polyethylene or polypropylene of dimensions 610mm X 610mm (24" x 24") and 0.03mm (1.2 mils) in thickness or less;

<sup>&</sup>lt;sup>33</sup> The Natural Resources Conservation Authority (Plastic Packaging Materials Prohibition) Order, 2018; Trade (Plastic Packaging Materials Prohibition) Order, 2018.

- b. drinking straws, made wholly or in part of polyethylene or polypropylene, manufactured for single use.
- 2. Phase 2 (Implemented January 1, 2020)- Packaging made wholly or in part of expanded polystyrene foam used for food and beverage containers;
- 3. Phase 3 (To be implemented January 1, 2021)- Single use drinking straws made wholly or in part of polyethylene or polypropylene used for juice boxes or drink pouches and plastics bags with dimensions of 610 mm x 610 mm (24" x 24") and 0.06 mm (2.5 mils) thickness.

Certain types of plastics are excluded from the ban, these are described in Box 1.



Under the Trade Act 2018, Section 8 (1), (a), (b) and (c), failure to comply would result in a J\$2 million fine, while breaches under the NRCA Act Section 32 (5), would attract a fine of J\$50,000. Note that breaches of the ban, as stipulated by both Acts, carry a penalty of imprisonment for a maximum of two years.

#### 2.3.2.1 Impact of the Ban on Manufacturers, Retailers and Consumers

Since its implementation, the first two phases of the ban have generally been accepted by manufacturers, retailers and consumers. They have acknowledged the positive environmental impacts from the ban on these single use plastics. However, while it has been considered important for the environment, most

have suggested that the real issue is inadequate solid waste management. Improperly disposed of solid waste often leads to blocked drains resulting in flooding and damage to coastal and marine ecosystems. Concerns have been raised as it relates to the the cost of alternative packaging. **Stakeholders consulted felt that incentives need to be in place to make alternative packaging, primarily those made from paper, bagasse and bamboo, more affordable. This includes reductions on taxes currently in place.** 

The ban on Polystyrene foam food containers has led to an increase in the use of Polypropylene food containers on the market primarily for use for take-away meals. Polypropylene food containers are not recyclable in Jamaica and are not banned under the current Trade and NRCA Orders. This is an obvious gap in the legislation to which consideration can be given to by extending the ban to apply to Polypropylene food containers.



Figure 2-6: Plastic food container made from Polypropylene and used by a popular take away restaurant

The third phase of the ban is set to be implemented effective January 1, 2021. This phase extends to single use drinking straws made wholly or in part of polyethylene or polypropylene used for juice boxes or drink pouches and plastics bags with certain dimensions. Concerns have already been raised as to how it may affect businesses and consumers. The alternatives are very expensive, and several manufacturers have indicated that they may not have a solution until 2023. As such, it has been suggested that the timing of this phase of the ban be reconsidered.

#### 2.3.2.2 Impact of the Ban on the Waste Stream

In regard to the waste stream, it is not fully understood what the impact of the ban has been. Most shoppers now carry their own reusable bags to the supermarkets and stores, but many are still willing to accept free paper bags, free paper straws and alternative food packaging. Other types of plastic are now being used as an alternative to the foam food packaging. As such, even if there may be a reduction of

certain types of plastic in the waste stream, there is still a large amount of solid waste being generated because persons are still willing to accept and use the alternative materials provided.

There has not been a recent waste characterization study since the implementation of the ban so it is not clear whether the ban has resulted in a reduction of the banned items in the waste stream. Despite this, data from the recent JET ICC day indicates that plastic bags collected in 2019 have increased by 8.2% when compared to 2018, plastic straws collected in 2019 decrease by 33.4% when compared to 2018 and styrofoam collected in 2019 increased by 1.6% when compared to 2018. It is important to understand that waste collected is dependent on the number of volunteers and the number of sites. Therefore, the increase in total of volunteers and number of sites could account for these increases. A waste characterization study will need to be carried out to confirm if there have been actual reductions in the waste stream.

### 2.3.2.3 Enforcement and Compliance with the Ban

The Trade Board Limited in the Ministry of Industry, Commerce, Agriculture and Fisheries is responsible for monitoring and enforcing the The Trade (Plastic Packaging Materials Prohibition) Order, 2018. While the National Environment and Planning Agency is responsible for monitoring and enforcing the Natural Resources Conservation Authority (Plastic Packaging Materials Prohibition) Order. Both organizations work closely with the Bureau of Standards Jamaica (BSJ) and the National Compliance and Regulatory Authority (NCRA) who conduct several tests on the imported material. These include burn, density, starch and packaging tests (width and height). The burn, density and starch tests are generally done prior to importing in large quantities to confirm if the material meets the legal requirements.

There have been no reported prosecutions under the Trade (Plastic Packaging Materials Prohibition) Order, 2018. However, under the Natural Resources Conservation Authority (Plastic Packaging Materials Prohibition) Order, 2018 forty-one companies and individuals have been brought before parish courts and 370 compliance audit notices served. Of the forty-one, the three main categories were supermarkets/ food marts, restaurants and clothing and accessories. Most of the companies fined were restaurants. Most were in breach of the following:

- For use of single use plastic in commercial quantities contrary to paragraph 3 of the Natural Resources Conservation Authority (Plastic Packaging Material Prohibition) Order, 2018.
- For use and distribution of single use plastics in commercial quantities contrary to paragraph 3 of the Natural Resources Conservation Authority (Plastic Packing Material Prohibition) Order, 2018.

## **3 POLICY OBJECTIVES AND OPTIONS**

This section proposes an overarching policy objective and the immediate strategies that would seek to address the challenges that are being faced by Jamaica as it relates to single use plastic. It then identifies how each of the eight policy options could potentially address each of the strategies and outlines the main advantages and disadvantages of each of the policy options.

### 3.1 Policy Objectives

As examined in the previous section, the policy context outlines serious challenges concerning plastic waste which indicates the use of a significant amount of single use plastic in the island and the improper disposal of plastics:

- 1. A significant amount of single use plastic is imported and manufactured in Jamaica.
- 2. The top ten types of marine litter in Jamaica (based on annual ICC data) are various plastic waste.
- 3. The second largest category of waste in Jamaica's waste stream are plastics.

The immediate strategies should seek to address these challenges. The proposed general and ultimate policy objective of the policy options is to prevent and reduce plastic waste entering the environment (land, air and water).

The immediate strategies directly linked to the policy options include:

- 1. To reduce the amount of single use plastic imported and manufactured in Jamaica.
- To improve the waste collection and disposal system in Jamaica.
- 3. To minimise the amount of plastic entering the waste stream through adequate recovery and reuse.
- 4. To change public attitudes and behaviour through sensitization, education and appropriate incentives.

See also Figure 3-1 below.

<u>Proposed Overarching Policy</u> <u>Objective</u>

To prevent and reduce plastic waste entering the environment (land, air and water).



Figure 3-1: Proposed Policy Objective and Strategies to implement the objectives

Stakeholders consulted during the duration of the project were in agreement with the proposed objectives and strategies. The strategies fall within all tiers of the Waste Management Hierarchy (Figure 3-2) which indicates the preferred order for actions to reduce and manage waste.



Figure 3-2: Waste Management Hierarchy

## 3.2 Policy Options

There are a range of regulatory approaches including those which have a direct and indirect impact on the plastics pollution problem. Regulatory approaches are defined as the tools by which governments use authority in attempting to ensure support and effect social change. They are usually adopted to meet certain objectives. Objectives key to the regulation of plastics (Oceana, 2019) include:

- Measures that increase the provision of funding to improve waste collection.
- Measures that reduce the supply of plastic and reduce the quantity of plastic waste produced by shifting away from the production and use of problematic single-use plastics (SUPs).

- Measures that improve the quality of plastic in the waste stream and reduce dependence on virgin materials by adopting eco-design principles to improve reusability, recyclability and the use of recycled content.
- Measures that increase the demand for post-consumer plastics, including recycling and sustainable solutions for non-recyclable and non-recoverable waste.

The regulatory approaches most evident related to plastics pollution that seek to meet these objectives can be classified into three categories: regulatory instruments, economic instruments, and information instruments, as follows:

- *Regulatory instruments*: measures taken by government to influence people or institutions by means of formulated rules and directives which mandate receivers to act in accordance with what is ordered in these rules or directives;
- *Economic instruments*: characterized as involving the handing out or taking away of material resources (fiscal measures) to influence behaviour;
- *Information instruments*: these attempt to influence people through the transfer of knowledge, the communication of reasoned argument, and persuasion.

Additionally, there are voluntary approaches that can be taken or encouraged. The following Policy Options have been summarized below:

- Policy Option 1- Viability for a deposit refund scheme
  - This can be either a voluntary DRS which is implemented by manufacturers and bottlers on their own initiative or a legislated DRS which would be regulated and would include government oversight with enforcement mechanisms. Under the scheme, depositors are entitled to receive a specific dollar value for the return of plastic bottles.
  - A voluntary DRS has been proposed by Recycling Partners of Jamaica in collaboration with some private sector entities for implementation in 2021. As at January, 2020, there are approximately eleven (11) manufacturers of plastic bottles and beverage bottlers who are members of the voluntary DRS coalition. The scheme is regulated through a Memorandum of Understanding among the members. Plastic bottlers will contribute J\$1 for every plastic bottle of beverage sold to Recycling Partners of Jamaica. These funds will be used to support the infrastructure, equipment, staff and administrative costs associated with the DRF. An additional six (6) depots and 131 drop off points will be established islandwide where any member of the public can deposit plastics bottles. The amount of the deposit has not yet been finalised, although it was previously proposed to be J\$10 per pound of plastic bottles.
- Policy Option 2 Banning of certain categories of plastics and plastic packaging material, inclusive of Polystyrene
  - Bans are often instituted to address single-use plastic items including bags, cutlery, straws, polystyrene containers and takeaway product containers. The objective of
instituting a ban would be to eliminate these products from consumption and production in the country, and prevent its entry into waste streams.

- Policy Option 3 Measures to support use of alternative materials (i.e. biodegradable), including
  a preferred tax regime
  - The objective of this option would be to have more environmentally appropriate materials imported and consumed in the market. It would entail enacting legislation that would indicate, among other things, the customs importation duty for biodegradable, compostable and bio-based plastics as well as other alternatives to plastics (e.g glass) to encourage their introduction and use in the domestic market.

#### • Policy Option 4 - Tax on certain classes of plastic packaging

 This option would result in generating funds that can be used to support recycling or waste management initiatives. An example of this is the Provisional Collection of Tax (Environmental Protection Levy) Order, in 2015. This allows for an environmental levy of 0.5% to be charged on the importation of all goods and sale of all locally manufactured goods. The funds from the environmental levy are paid into the Consolidated Fund.

#### • Policy Option 5 - Recycling and/or resource reuse

- Recycling Legislation is often utilized as part of the Extended Producer Responsibility approach to increase the collection of single use plastic packaging and other Single Use Plastic Products. The objective of recycling is to seek to achieve a circular economy with less use of non-renewable resources. Recycling legislation can support the recycling industry's success in the context of the regulation of single use plastics as well as provision of funding to support technology to convert single use plastics into other forms that can be reused. This legislation can also ensure a market for the use of the recycled products, require recyclability of products through design or by setting targets for use of recycled materials in new products. Recycling legislation is often used in conjunction with Solid waste management legislation that seeks the recovery of specific products e.g. plastic bottles and packaging. A Recycling Policy can create recycling targets or include landfill bans on recycling materials. They can also include mandatory requirements for recycling for commercial and households to prevent people from throwing away these products.
- In 2017, imports into China accounted for 56% (by weight) of the worldwide imports of waste plastic destined for recycling. Since 2018, the Chinese government has implemented a ban on the importation of eight types of plastic scraps including PE, PS, PET and PVC indicating that the move was necessary to protect the environment and public health, since hazardous waste was found mixed inside the waste imported.<sup>34</sup>

#### • Policy Option 6 - Sorting at source

 Source separation is critical to ensure achieving a circular economy and can be applied as a mandatory requirement for householders and commercial entities including placing

<sup>&</sup>lt;sup>34</sup> UNEP Report- Single Use Plastics: Road Map Road to Sustainability (2018)

responsibilities and duties for the purchase of receptacles of different types, design and how collection is managed. Waste management rules can also include tipping and other fees to encourage source separation or otherwise penalise actors who fail to comply with rules.

- Policy Option 7 No regulations (voluntary/self-regulatory agreements)
  - The existing voluntary DRS can be considered under this option.
- Policy Option 8 Keeping current regulations (no change)
  - This option considers the two Orders which are intended to ban the importation, distribution, manufacture and commercial use of certain types of single use plastics beginning January 1st 2019 :
    - The Trade (Plastic Packaging Materials Prohibition) Order, 2018.
    - The Natural Resources Conservation Authority (Plastic Packaging Materials Prohibition) Order, 2018.

Table 3-1 identifies the type of plastic to be regulated by each of the suggested regulatory instruments. It shows the linkage with the proposed policy strategies.

Classification of Policy Options	Policy Option	Description	Type of plastic regulated	Policy Strategy
Regulatory instrument: Extended Producer Responsibility	Policy Option 1	Legislation to support a Deposit Refund Scheme	PET and HDPE plastic bottles	To minimise the amount of plastic entering the waste stream through adequate recovery and reuse. To change public attitudes and behaviour through sensitization, education and appropriate incentives.
Regulatory Instrument: Ban	Policy Options 2 and 8	Current regulations: Ban on manufacture, importation and production of plastic	Single use plastics	To reduce the amount of single use plastic imported and manufactured in Jamaica.
		Extended ban	single use plastics	
Regulatory instrument / Economic instrument	Policy Option 3	Measures to entry into market of alternative materials (i.e. biodegradable, compostable, etc.) e.g. preferred tax regime, incentives/subsidies for development and use of alternatives to plastic	Single use plastics	To reduce the amount of single use plastic imported and manufactured in Jamaica. To change public attitudes and behaviour through sensitization, education and appropriate incentives.
Economic instrument	Policy Option 4	Taxes/ Levies / Fees on certain classes of plastic packaging	Single use plastics	To reduce the amount of single use plastic imported and manufactured in Jamaica. To change public attitudes and behaviour through sensitization, education and appropriate incentives.
Regulatory instrument: Recycling or resource reuse	Policy Option 5	Legislation to support recycling or resource reuse	PET and HDPE plastic bottles	To minimise the amount of plastic entering the waste stream through adequate recovery and reuse.
Regulatory instrument: Solid waste management	Policy Option 6	Legislation mandating sorting at source	PET and HDPE plastic bottles	To improve the waste collection and disposal system in Jamaica. To minimise the amount of plastic entering the waste stream through adequate recovery and reuse.

 Table 3-1: Regulatory Instrument and the type of plastic to be regulated

Classification of Policy Options	Policy Option	Description	Type of plastic regulated	Policy Strategy
Voluntary approach	Policy Option 7	Voluntary/self- regulatory agreements including Public Private Partnerships E.g. Voluntary Deposit Refund Scheme	All	To minimise the amount of plastic entering the waste stream through adequate recovery and reuse.

## 3.2.1 Regulatory instruments- Extended Producer Responsibility (EPR)

Extended Producer Responsibility (EPR) is defined by the Organisation for Economic Co-operation and Development (OECD) as a policy approach under which producers are given a significant responsibility – financial and/or physical – for the treatment or disposal of post-consumer products.<sup>35</sup> Extended Producer Responsibility can include container deposit schemes that provide a deposit for consumers to return products to prescribed locations e.g. Distributors or retailers or manufacturers. EPRs can also include take back schemes, and disposal fees.

Several different countries have adopted EPRs. In Mali, for example the producer and distributor who markets or uses plastics or other non-biodegradable packaging is obliged to proceed to recovery of its plastics and packaging used for recycling.<sup>36</sup> In Bhutan the Government requires producers to take responsibility for the costs of the management of their products, by diverting end of life products to reuse, recycling or other forms of recovery and safe disposal. The law indicates that Producers shall be fully responsible for safe and proper disposal of their waste.<sup>37</sup>

Other countries have adopted EPR through Deposit refund schemes. Fiji, for example, includes a requirement for a permit to manufacture or import plastic bottles, conditioned upon adoption of collection and recycling system, including the establishment of bottle collection centres, individually or jointly with others, deposit-refund schemes, and waste disposal systems, with adequate training of staff.<sup>38</sup> Deposit refund schemes can also include permit requirements for bottling activities, conditioned upon putting in place a collection system, specific measures for recycling a certain quantity of PET bottles and a duty to submit an annual return of PET bottles produced, collected, recycled and exported. Through these schemes, money can be collected from importers and deposited into funds which are then available to consumers or there can be upfront collection at the point of sale which is then returned to customers when packaging is returned at the point of retail.

<sup>&</sup>lt;sup>35</sup> OECD, https://www.oecd.org/env/tools-evaluation/extendedproducerresponsibility.htm

<sup>&</sup>lt;sup>36</sup> Government of Mali. 2001. Decree 01-394. Available at: http://extwprlegs1.fao.org/docs/pdf/mli49662.pdf

<sup>&</sup>lt;sup>37</sup> Government of Bhutan. 2012. Waste Prevention and Management Regulations

<sup>&</sup>lt;sup>38</sup> Environmental Management (Waste disposal and recycling) Guidelines 2007 (Fiji)

#### 3.2.1.1 Other Legislation to Support EPR

EPRs are often instituted with other measures including waste management, recycling and environmental funds and taxes and incentives. Systems have been created with permits and licenses on import, permits to collect and recycle bottles or products of certain types, and requirements on collection, recycling and waste management. Whether this involves a mix of public and/or private operators, there must be clear role definition, governance, oversight and enforcement, and transparent record-keeping. This should include annual returns from recyclers and others in the supply chain. This provides data and assurance as to how many bottles are in the system, how many refunds are being claimed, and levels of funding to/from different sources. This type of approach usually requires scope of coverage of product and its material as well as what the product contains and the source of the products commercial or household. The reliance on customer education is usually high and there may be requirements for labelling products.

Understanding and having rules on how funds are distributed and who bears the costs of these systems are crucial. EPR schemes also have exclusions. Businesses have the majority of the responsibility in funding such initiatives however, ensuring the participation of all stakeholders to ensure the economic feasibility of the system is crucial as well as the administration of the scheme, especially where separate organizations are set up to run the scheme. Compliance and enforcement are also critical to ensure that operators participate in a fair manner and that there are no infringements of the requirements.

## 3.2.2 Economic instruments

Economic instruments seek to shift behaviours so that consumers and producers move away from singleuse plastics. They may include financial penalties, levies, or taxes on importers or producers or consumers of single-use plastic products. They may be instituted to provide funding to pay for the collection, recycling, management or disposal of products or for the development of innovative products. In considering the use of economic instruments there needs to be a decision about the amount of these fees and also which products they should be attached to or which behaviour they penalise or incentivise. Taxes may be imposed on the manufacturer, the importer, the distributor/retailer and/or the customer or taxes or levies can be removed. Antigua and Barbuda, for example, instituted a tax-free requirement for bags made out of alternative materials, specifically Bagasse (sugarcane), PLA Cornstarch (NON –GMO), Bamboo, Wheat Straw, Cardboard/Paper, Areca Palm and Potato Starch bags. Importers of the approved alternatives listed in the legislation must present certificates from manufacturers and accredited labs for verification. Belgium has a packaging tax on single-use plastic bags and disposable cutlery.

How the taxes or levy or other fee is utilized is extremely important in this approach as well as to whom and when the tax or levy is applied, and how it will be collected. Exemptions are also critical to establish as well as the underlying legal and other administrative requirements. Ensuring which businesses or sectors pay and how they are audited, and their contributions used is an important consideration. It is also to assess new economic instruments and how these relate to other pre-established fees on businesses and their impact is critical. Economic instruments can be directly linked to procurement policies which can incentivize the reduction of single use plastic by charging higher prices. Taxes, levies and fees can require the creation of statutory fund and/ or organization to administer the fees. Key challenges include stakeholder and agency coordination, scheme governance and transparency, and limiting administrative complexity.

## 3.2.3 Voluntary approaches

There are both international, regional and national public private partnerships working to address plastic pollution. They are likely to provide different level of success depending on their aims, funding and accountability requirements. Some examples of partnerships are explained below.

**International Partnerships: - GPAP** (<u>https://www.weforum.org/gpap/about-us</u>) The Global Plastic Action Partnership (GPAP) is a global platform for plastic action that enables public, private and civil society leaders and their initiatives to come together. Their goal is to drive the transition towards a circular plastics economy while helping to restore natural systems and creating growth opportunities. Indonesia is one of the countries benefitting from this partnership and has a governance structure and membership. Other partnerships are being built around public private including civil society led initiatives the Ellan MacArthur Foundation's New Plastic Economy Global Commitment; Alliance to End Plastic Waste and Next Wave Plastics.

**Regional Public Private Partnerships:** The EU created an EU-wide pledging campaign to ensure that by 2025, ten million tonnes of recycled plastics find their way into new products on the EU market. They opened this exercise to both private and public actors, inviting them to come forward with substantive pledges by June 2018 to make this a reality. The Pledging Campaign included the following components:

- A call to all stakeholders to come forward with voluntary pledges to boost the uptake of recycled plastics to ensure that by 2025 ten million tonnes of recycled plastics find their way into new products on the EU market.
- Interested companies and/or industry associations were given a deadline to submit their pledges and data illustrating how their pledge contributes to achieving the quantitative objective
- Pledges are reviewed for a quality check, and assessed against their reliability and ability to meet declared deadlines
- The pledges received are made public through a dedicated webpage and if the pledges received and their overall contribution reach the quantitative objective they will support the voluntary partnership, but if they do not, the EU is committed to take regulatory action.

**National public private partnerships:** Colombia is said to be implementing a strategy for packaging and packaging waste to achieve use of 30% of its waste by 2030 and is managing waste through public-private partnerships (PPPs).

Thailand has a Public-Private Partnership for Plastic and Waste Management, established in, 2018, by the Plastic Industry Club and the Federation of Thai Industries, in partnership with the Thailand Business Council for Sustainable Development (TBCSD), organizations from the public and private sectors, and members of society. This Partnership aims to reduce marine plastic debris by at least 50% by 2027 through

solutions such as sustainable waste management, the Circular Economy, and applying the 3Rs (reduce, reuse, and recycle). Six working groups have been formed including ones on 1) Waste separation and management; 2) Innovation development; 3) Policy development and legislative measures; 4) Communications; 5) Managing a database of plastics; and 6) Identifying new sources of capital. They propose to create an operational roadmap for plastic waste management through Education and communications including waste-sorting; integrated waste collection and separation system; recycling and upcycling businesses to add value to plastic waste and increase market demand; and Encouraging retailers to participate in upstream waste management.

## 3.3 Advantages and Disadvantages of the Policy Options

Each of the policy options have their own advantages and disadvantages which have been summarized in Table 3-2 below.

Policy Option		Advantages	Disadvantages
No policy	Ban on	No associated costs to	The ban does not extend to certain single use
change/	manufacture,	introduce new legislation	plastics such as plastic cutlery.
Current	importation	or new/ additional costs for	
regulation	and	enforcement in the short	The ban does not prevent the importation,
(Policy	production of	term.	distribution and sale of food containers made
Option 2	plastic (Policy		from plastic such as Polypropylene.
and 8)	Option 2)		
			The ban does not include plastic bottles which
			is a major issue for Jamaica.
			A public awareness campaign would be
			needed if the ban were extended to include
			other single use plastic items. This would be to
			ensure that importers, manufacturers and
			smaller retailers are able to dispose of their
			existing stock by the end of the mandatory
			phase-out period.
	Taxes on	An additional tax on single	Legislation is required to give legal effect to the
	plastics – The	use plastic items will	imposition of the tax which will attract costs
	Environmental	generate more funds that	for ensuring compliance.
	Levy (Policy	can be used to support	
	Option 8)	recycling or waste	Given the imposition of the environmental levy
		management initiatives.	and the move towards a Voluntary Deposit
			Refund Scheme supported by plastic bottlers,
		The increased costs to the	this option is unlikely to receive support from
		consumer could result in	affected importers and manufacturers.
		reduced demand for single	
		use plastics and make	

#### Table 3-2: Advantages and Disadvantages of the Eight Policy Options

Policy Option	Advantages	Disadvantages
	alternative biodegradable	
	or reusable items more	
	attractive.	
Solid Waste Management	- The introduction of	There are costs associated with introducing
Sorting at Source, Recycling	legislation to regulate	and enforcing legislation requiring tipping fees
Tipping Fees (Policy	tipping fees this can assist	and sorting at source. This will require a
Options 5 and 6)	the NSWMA with enforcing	mechanism to ensure collection of separated
	this requirement. Tipping	waste and to monitor compliance.
	fees can offset the cost of	
	maintaining and eventually	
	closing the waste disposal	
	sites when they have	
	reached their end of life.	
	Legislation to support	
	recycling, such as those	
	that require mandatory	
	residential and commercial	
	sorting of waste, is likely to	
	result in a higher	
	percentage of plastic	
	bottles removed from the	
	waste stream and	
	environment.	
Deposit Refund Scheme	e Generally, private sector	The current scheme is voluntary and at the
(Policy Option 1 and 7)	has greater financial and	time of production of this report it did not
	technical capacities than	include some major producers of plastic
	the public sector and by	bottles. This is significant since refunds will
	them undertaking the cost	only be made on bottles produced by bottlers
	for implementation this will	who are a part of the scheme.
	relieve the government	A such as a second s
	from the costs for ensuring	A voluntary scheme means that the
	compliance and	contributors are not legally bound to comply
	enforcement.	with the DRS and can end their participation.
		Enacting legislation for the denosit schemo will
		ensure that all hottlers have a legal duty to
		narticinate This annroach hrings implications
		for costs to the government to monitor
		compliance with the legislation
Alternative material	These alternative materials	In Jamaica, only certain products made from
(Policy Option 3)	provide consumers with	paper are duty free. Bagasse food containers

Policy Option	Advantages	Disadvantages
	other options than having	attract a 15% duty, corn starch cutlery attracts
	to resort to using plastics.	20% duty, cornstarch-based PLA containers
	The more options for	attract 20% duty and biodegradable white
	alternatives, the less plastic	paper drinking straws attract 20% duty. These
	waste will enter the	alternative products are already more costly to
	environment.	produce than their plastic counterparts and
		the imposition of duties with no consideration
		of an exemption from taxes means that the
		higher sale costs can make these products less
		attractive to the average consumer.

Table 3-3 illustrates the link between the policy options and the four strategies that will be implemented to meet the overall policy objective presented in the report.

Jamaica has already previously implemented some policies including the ban on the importation and manufacture of certain single use plastic products, waste management and pollution control legislation, an environmental levy whose partial proceeds were used to support a recycling programme and more recently a voluntary deposit refund scheme (See Section 2).

## Table 3-3: Policy Options and Strategies to meet the overall Objective

	POLICY OBJECTIVE: TO PREVENT AND REDUCE PLASTIC WASTE ENTERING THE ENVIRONMENT (LAND, AIR AND WATER).						
STRATEGY	POLICY OPTION: "NO POLICY CHANGE"	POLICY OPTION: EXTENDED BAN (UTENSILS, BOTTLES, LIDS, PLASTIC BEVERAGE AND FOOD CONTAINERS)	POLICY OPTION: TAXES/ ENVIRONMENTAL LEVY	POLICY OPTION: WASTE MANAGEMENT: SORTING AT SOURCE, RECYCLING, TIPPING FEES	POLICY OPTION: DEPOSIT REFUND SCHEME (VOLUNTARY)	POLICY OPTION DEPOSIT REFUND SCHEME (LEGISLATED)	POLICY OPTION INCENTIVES FOR ALTERNATIVE MATERIALS
Reduce the amount of single use plastic imported and manufactured in Jamaica.	Х	Х	Х				х
Improve the waste collection and disposal management system in Jamaica			х	x	x	х	х
Minimise the amount of plastic entering the waste stream through recovery and reuse	Х	X		X	X	Х	Х
Changepublicattitudesandbehaviourthroughsensitization,educationeducationandappropriate incentivese.g. recycling, DepositRefund Schemes.	Х	X	x	X	x	Х	Х

## **4 COSTS AND BENEFITS ANALYSIS**

Within this section, the costs and benefits for each of the policy options are summarized. Public Education and information is assumed to be included in all of the options.

Policy Option		Cost Considerations	Benefits Considerations	
urrent Regulations	Keep Current Regulations (Policy Option 8)	<ul> <li>The costs of keeping current regulations consist of:</li> <li>Compliance Costs for Enforcement</li> <li>Compliance Costs for Education</li> <li>Costs to Manufacturers and distributors</li> <li>Costs to Retailers</li> <li>Costs to consumers</li> <li>Costs to workers</li> </ul>	<ul> <li>The benefits of the current regulations include:</li> <li>The avoided costs of waste disposal,</li> <li>The avoided costs of clearing drains clogged by plastic and foam waste</li> <li>The availability of substitute packaging</li> <li>The aesthetic value of a clean environment.</li> </ul>	
No Policy Change/ C	Ban certain plastics (Policy Option 2)	<ul> <li>The costs of the ban on certain plastics consist of:</li> <li>GOJ compliance costs</li> <li>Costs to manufacturers.</li> </ul>	<ul> <li>The benefits of the ban on certain plastics are:</li> <li>The avoidance of waste disposal costs</li> <li>Avoidance of drain cleaning costs</li> <li>A clean environment.</li> </ul>	
ntary Approaches	No regulations (Policy Option 7)	<ul> <li>The costs of abolishing current regulations consist of:</li> <li>GOJ's public education costs to encourage proper disposal practices,</li> <li>Waste disposal of plastic and foam,</li> <li>Cleaning drains clogged by plastic and foam,</li> <li>Loss of opportunities to develop substitutes,</li> <li>The negative value consumers place on an unclean environment.</li> </ul>	<ul> <li>The benefits of abolishing current regulations will be:</li> <li>The savings from not enforcing the regulations,</li> <li>The benefits to manufacturers and distributors of the resumption of pre-ban production</li> <li>Consumer access to plastic and foam packaging.</li> </ul>	
Volu	Measures to support use of alternative biodegradable material including a preferred tax regime (Policy Option 3).	<ul> <li>The costs to be estimated are:</li> <li>The costs to the GOJ for implementing new taxes on polyethylene</li> <li>Providing incentives for alternatives such starch-based resins,</li> </ul>	<ul> <li>The benefits are:</li> <li>For the manufacturers that will have new opportunities for investment in alternatives,</li> <li>Consumers to benefit from more choices of alternative packaging,</li> </ul>	

Table 4-1: Summary	of the Cost and B	enefit Considerations	for each Polic	v Option
	of the cost and b	chefic constactations		y option

Policy Option		Cost Considerations	Benefits Considerations	
		<ul> <li>The costs of increased taxation to suppliers, most, if not all, of which will be passed on to consumers.</li> <li>It is assumed that employees laid off from production based on polyethylene will eventually be re-employed in production based on alternative packaging materials.</li> <li>There are also costs to importers, costs to manufacturers of alternatives, waste disposal costs and drain cleaning costs.</li> </ul>	<ul> <li>Increased taxes to the GOJ, positive impact on the environment for a cleaner environment.</li> <li>Benefits begin to outweigh costs after 10 years.</li> </ul>	
Economic Instruments	Tax on certain classes of plastic packaging (Policy Option 4)	<ul> <li>The costs of implementing taxes on certain classes of plastic packaging will consist of:</li> <li>Costs incurred by GOJ</li> <li>Import duty</li> <li>Additional costs to the consumers.</li> </ul>	<ul> <li>Reduced consumption in response to increased prices will lead to:</li> <li>Reduced demand for the single-use plastics, and by extension, reduced demand for the polypropylene and other plastics that they are made from.</li> <li>This in turn will lead to reduced plastic waste generation, reduced collection, reduced costs for cleaning, and a cleaner environment.</li> </ul>	
Regulatory Instruments	Deposit- Refund Scheme for PET and HDPE bottles (Policy Option 1 and 5)	<ul> <li>The costs of implementing a Voluntary DRS will consist of:</li> <li>Investments and operating costs for the actual scheme</li> <li>Costs to householders for sorting, collecting and delivering the bottles.</li> <li>The additional costs for implementing a Legislated DRS scheme consist of:</li> <li>The cost of drafting a law incurred once at the beginning of the scheme</li> <li>The cost of annual checks for compliance</li> </ul>	<ul> <li>The benefits of the Voluntary DRS plus recycling are:</li> <li>The avoidance of costs of waste disposal of bottles,</li> <li>The avoidance of cost of clearing drains clogged by waste and especially plastic bottles,</li> <li>The revenue received from the sale of bottles to recyclers, income earned by individuals and volunteer groups for collecting bottles,</li> <li>The aesthetic value of a clean environment.</li> </ul>	

Policy Option		Cost Considerations	Benefits Considerations
	Resource re-use (Policy Option 5)	The costs of implementing resource reuse will consist largely of public education costs.	<ul> <li>The benefits of resource reuse will be:</li> <li>less plastic in the waste stream which can contribute to a cleaner environment.</li> <li>Savings from not paying for the use of another packaging or material,</li> <li>Production of less of the reused material.</li> </ul>
Solid Waste Management	Sorting at source (Policy Option 6)	<ul> <li>The costs of implementing these schemes will consist of:</li> <li>Public education costs</li> <li>A collection system for the NSWMA</li> <li>Deposit and storage costs</li> <li>Costs to householders for sorting their own garbage.</li> </ul>	<ul> <li>The benefits of sorting at source will contribute to:</li> <li>A cleaner environment as more material is diverted from improper disposal in the environment and is available for recycling.</li> </ul>

## 4.1.1 Legislated vs Voluntary DRS Scheme

Following the stakeholder consultations held in June, the following analysis was done for the legislated vs the voluntary DRS. The only difference between the two for this comparison is that a law would have to be drafted which would require suppliers of goods in PET and HDPC bottles to charge a deposit – this assume the same deposit that is now being contemplated – which is refunded when the bottle is returned to the supplier or the RPJ. In addition to drafting a new law, the government would also assume the responsibility of monitoring the companies covered by the law for compliance with the law. This assumes that the law applies only to the current participants in the voluntary scheme, which are the major producers of bottled drinks. This also assumes that compliance is checked through the records of the RPJ for deposits by the participating companies into the account of the RPJ, their agent for collecting the returns and paying the refunds.

#### Costs

The following cost are assumed for the government to incur in converting this voluntary scheme as it is currently structured:

- 1. The cost of drafting a law = J\$ 100,000, incurred once at the beginning of the scheme
- The cost of annual checks for compliance = J\$200,000 essentially contribution to annual audit fees – per annum, and that this cost is inflated annually by the average rate of inflation for the period – which was used to inflate all the costs in the voluntary scheme.

The total costs of compliance rise from J\$200,000 in year 1 to J\$270,000 in year 10. If the cost of drafting the law in the total costs for year 1 is included, and discount the 10 year stream of costs at 2% per annum,

the discounted value would be J\$2.1 million. A similar exercise for the stream of costs for 10 years discounted at 4% would be J\$2.0 million. If these are added to the correspondingly discounted streams for the voluntary DRS calculated above, the total discounted costs at the relevant discount rate are shown in **Table 4-2**. Also shown are the discounted costs for the voluntary scheme. It is clear that the difference between the costs for the mandated and the voluntary schemes is marginal.

Recycling Partners Jamaica was granted charity status when it was a partnership between the government and a select group of the major bottlers. It has been reorganized as a private sector body with nominal participation by the government, and major investments by the same private companies that had established the partnered with the government in the inception of the RPJ. Accordingly, unless this status is removed, the government will receive no tax revenues from the RPJ's operations, and no more revenue from the participating companies than it had before it mandated the scheme.

#### Benefits

There is no difference between the discounted revenue for the mandated and voluntary schemes as shown in **Table 4-2** if the following assumptions are made:

- The government derives no tax revenue from the mandated scheme because its agent, RPJ, is a charity and does not pay taxes.
- The government is not a shareholder entitled to any dividends.

Accordingly, the benefits of the mandated scheme will be the same as the voluntary scheme which were the unclaimed deposits, avoided waste disposal costs, avoided costs of drain cleaning, revenue from the sale of bottles to recycling processes, and the aesthetic value of no plastic bottle pollution of the environment. As a result, there is an insignificant difference between the cost-benefit ratios of the mandated and voluntary scheme also shown in **Table 4-2**.

# Table 4-2: Comparison of cost-benefit ratios for the mandated version of the voluntary DRS being implemented

Description	2%	4%
Discounted costs – with mandate	4666.7	4217.2
Discounted costs – no mandate	4664.5	4215.2
Discounted benefits – with mandate	8843.1	8097.4
Discounted benefits – no mandate	8843.1	8097.4
Costs/Benefits – with mandate	0.5277	0.5208
Costs/Benefits – no mandate	0.5275	0.5206

As a mandated scheme, the government will then have the option of widening the scheme by including those suppliers of bottled products who are not in the founding group of the current DRS. The schedule for this expansion will in part be governed by how quickly the current arrangements are finalized and the proposed system is institutionalized.

In summary, a mandated scheme will have marginally more costs incurred by the government's legislation and compliance processes, and no more returns than when it was purely a voluntary scheme. Even if the government includes other bottlers than the current group of investors, that would not likely increase compliance costs in any significant way, and certainly there will be no more revenue accruing to the government.

Accordingly, converting the current voluntary scheme to a mandated one would not change the costbenefit ratios significantly from what they are for the voluntary scheme. It would, however, minimize the risk of arbitrary withdrawal from the scheme, while allowing the government the possibility of bringing more companies into the scheme. This would lead to greater collection rates, and by extension, less bottles going into the waste stream and/or escaping the waste stream.

The voluntary nature of the current DRS reflects the initiative of the major bottlers in assuming responsibility for the post-consumption phase of the lifecycles of their products. This is a positive step by major firms in corporate Jamaica, driven presumably by the companies' own interests in minimizing the contributions of their own products to the challenges of waste management. In the past, firms too often have responded negatively to government regulations. If the government chooses to mandate the existing DRS, it should try to cultivate the goodwill expressed in the initiative by the major bottlers and forge a positive partnership with them and other firms which are potential participants in the scheme.

## 4.2 Results of the Analysis

Table 4-3 presents the summary results of the cost/ benefit analysis for each of the policy options. The assumptions made for each option is presented in Appendix 4. The findings suggest that the GOJ is on solid ground with respect to existing regulations, and should encourage the implementation of the proposed DRS, expanded to include HDPE bottles, as early as possible. Further research into the utilization of other plastic materials as inputs into manufacturing is warranted to confirm the likely impact of changes in supply induced by public policy.

Only Policy Options 6 and 7, have costs greater than the benefits, based on the current estimates. As such these cannot be considered feasible. The estimates that command the most confidence because of the data on which the calculations were based are those for the DRS (Policy Option 1) and for no regulations (Policy Option 7). In the former, the recommendation is to proceed, and in the latter, the recommendation is not to adopt.

#	Policy Option	Cost/Benefit @ 2%	Cost/Benefit @ 4%	
	Viability for a deposit/refund scheme and	0 5275	0 5206	
1	recycling (Voluntary Scheme)	0.3275	0.3200	
1	Viability for a deposit/refund scheme and	0 5277	0 5208	
	recycling (Legislated Scheme)	0.3277	0.5208	
2	Banning of certain categories of	0 1251	0 1422	
2	plastics/packaging material/Polystyrene	0.1331	0.1425	
	Measures to support use of alternative			
3	biodegradable material including a preferred tax	1.4769	1.4025	
	regime			
4	Tax on certain classes of plastic packaging	0.9807	0.9807	
5	Resource re-use	No estimates	No estimates	
6	Sorting at source	67.2	68.6	
7	No regulations (voluntary/self-regulatory	1 4052	1 4025	
	agreements)	1.4055	1.4025	
8	Keeping current regulations	0.8873	0.8967	

#### Table 4-3: Results of the Cost/ Benefit Analysis

*Note: Values with a value greater than 1 have greater costs vs benefits.* 

The two extreme results— are for the ban on certain categories of plastics/packaging material/ polystyrene (Policy Option 2) and for sorting at source (Policy Option 6). In the former case, the data on which estimates are based is not strong. In the latter case, the cost of bins or receptacles to consumers dominates. Further, the assumption here is that the NSWMA will reallocate the waste according to the separation into recyclable and non-recyclable which would mean a reduction in the cost of landfill space, and no additional trips to collect garbage. These are critical assumptions that keep the estimated costs lower than they otherwise would be.

The use of economic instruments – taxes and other incentives (Policy Option 3 and 4) – to restrict or reduce demand and to encourage the importation and production of alternatives made of biodegradable materials require much more research, especially with regard to estimating the responsiveness of producers and consumers to changes in prices. International studies reviewed show only the direction of change resulting from an increase in price, but not the quantum of change. This is crucial to estimate the potential market for substitutes based on how willing consumers are to change their consumption habits and how ready manufacturers are to adjust their manufacturing lines.

Finally, the best estimates of cost- benefit ratios represent only one of several criteria policymakers will take into consideration in their decision-making. An important consideration is the period over which decisions are made. The time horizon used in this study was 8-10 years depending on the policy option, with the shorter time horizon for those measures not yet implemented. Without better quality data, and hence better estimates of costs and benefits, extending the horizon of estimates seems to be of little value. On the other hand, 8-10 years is fairly short for the implementation of some new policies to be effective.

## 4.3 Multi-Criteria Analysis

Using the previous Sections, each of the Policy Options were scored in relation to their potential economic, environmental and social impacts, as well as their possible enforcement needs or requirements (See Appendix 6 for the Scoring Criteria). This section presents the outcome of this analysis and discusses the enforcement and compliance needs for the preferred policy options.

From this analysis (

Table 4-4Error! Reference source not found.), the top option was for a DRS scheme whether it be voluntary or legislated:

- Policy Option 1, 5 and 7- A Deposit Refund Scheme (DRS) with recycling (Voluntary)
- Policy Option 1 and 5 A Deposit Refund Scheme (DRS) with recycling (Legislated)

Policy Options 3, 5 and 6 have similar final scores however it was determined that the benefits become more significant for Policy Option 3 after the initial 10-year period due to the start-up costs. Hence, the consultants chose this as a preferred.

Despite the low score that was received by Policy Option 8, to keep current regulations, it was still included because the third phase of the ban has yet to be implemented and the TOR required that it be included in the assessment. Table 4-5 indicates the type of plastic that would be considered under the 3 preferred options.

	Impacts							
Policy Option	Economic	nic Environmental			Social			
	Cost/ Benefit	Impact on Marine Environment	Reduction in Plastic Waste in the waste stream	Generates alternative waste in the waste stream	Impact on Employment/ personal Income	Impact on Vulnerable Groups	Enforcement needs	Total
Voluntary DRS with recycling	10	5	5	0	10	-5	5	30
Legislated DRS with recycling	10	5	5	0	10	-5	-10	15
Ban polystyrene, single use plastics	10	5	5	-5	-10	0	-5	0
Measures to support use of alternative biodegradable material	0	5	5	-5	5	0	-5	5
Tax on certain classes of plastic packaging	5	5	5	-5	-5	0	-5	0
Resource re- use	n/a	5	5	0	5	0	-10	5
Sorting at source and recycling	0	5	5	0	10	-5	-10	5
No regulations	0	-5	0	0	0	0	5	0
Keep current regulations	5	5	5	-5	-10	0	0	0

## Table 4-4: Options rated with unweighted index

#### Table 4-5: The types of plastic that are considered in each of the preferred policy options

Policy Options	Type of Plastic Targeted		
Policy Option 1, 5 and 7- Voluntary DRS with recycling. This can be revisited after 5 years of implementation to assess its effectiveness and determine whether deposit container legislation should be considered.	Plastic bottles (PET, HDPE bottles)		
Policy Option 1 and 5 - Legislated DRS with recycling			
Policy Option 3- Reduced customs duty on importation of biodegradable alternatives	Polypropylene packaging, plastic cutlery, disposable cups and lids (polystyrene and polypropylene)		
Policy Option 8 – Keep existing regulations (ban on certain single use plastics)	Polystyrene packaging and plastic bags and plastic drinking straws (polyethylene and polypropylene)		

## 4.3.1 Description of Proposed Policy Options

## 4.3.1.1 Policy Option 1, 5 and 7 - Deposit Refund Scheme (DRS)

## 4.3.1.1.1 A Voluntary DRS

A voluntary DRS such as the one planned for implementation in Jamaica is operated solely by the plastic bottle manufacturers and bottlers without any State enforced control mechanism or intervention and does not require legislation to give effect to the scheme.

## 4.3.1.1.2 A Legislated DRS

It is recommended to evaluate the effectiveness of the Voluntary DRS after a period of five (5) years of operation after which a determination will be made whether to continue with the Voluntary DRS or to introduce container deposit legislation. This time period was suggested to ensure adequate time for the following:

- To ensure the Voluntary DRS is fully implemented including all aspects of operations.
- Unlike the plastic ban, the Voluntary DRS requires voluntary active participation not only be manufacturers and bottlers but also "buy-in" from consumers. Appropriate time would be needed for marketing and public awareness campaigns to be effective and for a high percentage of population know about the initiative and/or participate in it.
- To collect data including baseline data during the 5 year period to determine whether there is an actual and significant reduction in marine litter. NSWMA Waste characterization studies are typically published every 2 3 years and are at least a year behind. The most recent NSWMA Waste Characterisation Study is for 2017.

To convert the DRS being established into a mandated scheme, the government would have to draft and pass a law, most probably in consultation with the current companies investing in the voluntary scheme as well as other stakeholders it deems important. After the scheme has been converted, the government will have to monitor the scheme for compliance to agreed performance targets.

#### 4.3.1.2 Policy Option 3– Measures to support alternative and biodegradable materials

This policy option refers to the reduction of customs duties payable on alternatives to plastics, in particular, biodegradable and compostable ready-made biodegradable bagasse and cornstarch-based PLA containers, and cornstarch-based cutlery, cups and lids, among others. Ongoing consultations should be conducted with manufacturers and importers to ensure that all feasible alternatives are considered for this Policy Option. From previous consultations, stakeholders in the manufacturing and importing sector have advised that alternatives are currently being developed for some plastic products (e.g. drinking straws attached to juice boxes and pouches) and are not readily available until 2023). It is likely that an ongoing assessment would need to be done to determine if additional alternative materials should be included in this Policy Option.

Pursuant to the Customs Act, duties are payable on goods imported into Jamaica. The World Customs Organization provides guidance on how goods, including certain alternatives to plastic, are classified. The classification is used to assist customs in determining the categories under which certain goods fall for the purpose of ascertaining the applicable duty. Additionally, as a member of the CARICOM community, Jamaica has agreed to a single tariff rate, the Common External Tariff (CET), on imports of certain products from outside the CARICOM. Goods imported from third countries are subject to the duties listed in the CET but goods imported from CARICOM countries, certified to be of CARICOM origin do not generally attract these import duties. These CARICOM origin goods enjoy duty-free status, that is, they are not subject to customs import duty. In order to reduce or remove these tariffs Jamaica would have to apply to apply to CARICOM Council for Trade and Economic Development (COTED) for the suspension of the CET on these items.

Additionally under the PIR as mentioned above, importers of bagasse, cornstarch and other raw materials not listed under the Fourth Schedule of The Customs Tariff (Amendment)(Revision) Resolution 2013, which are imported for use in the manufacture of locally made goods are exempted from Customs duty.

As a result of the CET classification, in Jamaica, only certain ready-made products made from paper are duty free e.g. Kraft folder boxes and cake boxes. Biodegradable bagasse food containers attract a 15% duty, corn starch cutlery attracts 20% duty, cornstarch-based PLA containers attract 20% duty and biodegradable white paper drinking straws attract 20% duty. These alternative products are unable to compete with their counterpart plastic products on the market due to their pricing which on average is higher.

The Table below shows the current Customs import duty on alternatives to plastic products, specifically: Bagasse food containers, folded paper boxes, cornstarch PLA utensils, cornstarch food containers and bamboo utensils.

Table 4-6: Custon	n import duty	on plastic alternatives	(finished products)
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Item	World Customs Organisation classification	Import Duty			
48.19 Cartons, boxes, cases, bags and other packing containers, of paper, paperboard, cellulose wadding or webs of cellulose fibres; box files, letter trays, and similar articles, of paper or paperboard of a kind used in offices, shops or the like					
Bagasse food container	4819.50 - Other packing containers, including record sleeves	15%			
Paper folding food container (e.g. cake box)	4819.20- Folding cartons, boxes and cases, of noncorrugated paper or paperboard	0-5%			
39.24 Tableware, kitchenware, othe	r household articles and hygienic or toilet articles,	of plastics			
Cornstarch PLA utensils <sup>39</sup>	3924.10 - Cups, forks, knives, plates, spoons and tumblers	20%			
39.23- Articles for the conveyance or packing of goods, of plastics; stoppers, lids, caps and other closures, of plastics.					
Disposable cornstarch food container	3923.10- Other	0% Items on which suspension of the CET under Article 32 of the Common Market Annex has been granted for an indefinite period subject to review by Council, with the rates to be applied by Member States			
44.19 – Tableware and kitchenware , of wood					
Bamboo utensils	4419.90 - Other	20%			

Manufacturers who wish to produce locally made products made from plastic alternatives (e.g. cornstarch or bagasse) already benefit from fiscal incentive legislation. The Customs Tariff (Amendment)(Revision) Resolution 2013, includes in the Second Schedule 'Productive Inputs Relief for the Production of Primary Products and the Manufacture of Goods' (PIR) which provides that goods that are imported by a taxpayer

<sup>&</sup>lt;sup>39</sup> The Customs Brokers and Freight Forwarders Association (CBFFAJ) received an advisory opinion from the Jamaica Customs Agency and Secretariat of the World Customs Organisation dated June 14, 2019 regarding the classification of plastic alternative products including bagasse food container, cornstarch CPLA cutlery, Kraft paper boxes and cornstarch food containers among others. Cornstarch PLA items were classified as plastic due to the polymerisation process that produces the resin (CPLA or Corn Polylactic Acid). It should be noted that corn PLA manufacture releases fewer toxins and greenhouse gases and biodegrades in months when compared with traditional oil-based plastic.

as raw materials or intermediate goods, which, to the satisfaction of the Commissioner of Customs, are for direct use in the manufacture of goods in Jamaica by that taxpayer are exempt from customs duty.

Plastic items	-	Biodegradable/compostable		
Cutlery 6" knife - \$0.011 (wrapped with fork/napkin) 6" fork - \$0.0089 (wrapped with napkin) 6" spoon - \$0.011 (wrapped with		Cutlery 6" knife - \$0.0114 6" fork -\$0.0147 6" spoon - \$0.0147		
fork/napkin) Boxes 3 comp (1000ml) - \$0.057 3 comp (1200ml) - \$0.072		Boxes 3 comp (1000ml) - \$0.1363 3 comp (1200ml) - \$0.1963		
Cups 8oz - \$0.0236 12oz - 0.033 160z - 0.0462	0	Cups 8oz - \$0.0439 12oz - \$0.0643 160z - \$0.0756		

Figure 4-1: Comparison of average wholesale prices for plastic items and biodegradable items

#### Considerations

It should be noted that even with a 0% custom duty on these biodegradable and compostable products, they would still be more expensive than their plastic counterparts (See Figure 4-1). It is anticipated that by making them more affordable, consumers would be more willing to use these alternatives to plastic. As with all the options, an accompanying information campaign to raise awareness and promote this Policy Option would be important.

#### Bioplastics (cornstarch PLA)

Currently, bioplastic alternatives to plastic cups and lids (e.g. cornstarch PLA) are being promoted internationally, all with the proviso that composting them requires industrial scale facilities that employ aeration and high temperatures and can breakdown bioplastics within 180 days. No such facility exists at this time in Jamaica. Given that over 60 per cent of the waste currently collected by the NSWMA is compostable (e.g. plant cuttings, food waste, cardboard)<sup>40</sup>, a move by the NSWMA to establish an

<sup>&</sup>lt;sup>40</sup> NSWMA, "Waste Characterization Study 2015".

industrial composting facility would not only help to provide suitable disposal solution for compostable PLA products but also improve general solid waste management by reducing the amount of waste that ends up in Jamaica's waste disposal sites. Another alternative disposal solution for bioplastics could be for use as feedstock in a waste-to-energy plant.

The additional concerns regarding bioplastics such as cornstarch PLA should be noted. According to the California Organics Recycling Council: - inconsistencies in product labelling and a lack of accepted definitions for industry terms cause confusion for consumers upon purchasing and when discarding the products. Improperly sorted bioplastics can contaminate recycling streams, contaminate feedstock for composting operations, or end up buried in a landfill. Inconsistent rates of decomposition from product to product can impede commercial composting operations.<sup>41</sup>

#### Bamboo

In the short-run, Jamaica should explore the feasibility of using a mix of disposable cutlery made from propylene, moulded fibre, and imported bamboo. The cost of bamboo cutlery is 4.6 times the cost of plastic cutlery, which could encourage re-use. Current comparative costs posted by Amazon are:

	Disposable Ba	mboo cutlery	Disposable Plastic cutlery		
	US\$	J\$	US\$	J\$	
Cost of 50 fork, 25 spoon, 25 knife	22.99				
Cost of 360-piece cutlery set			19.31		
Cost per piece	0.23	32.20	0.05	7.00	

#### Table 3: Comparative Costs of Bamboo and Plastic Disposable Cutlery

Sources: https://www.amazon.com/100-Bamboo-Disposable-Cutlery-Set/dp/B07S2LJK41https://www.amazon.com/AmazonBasics-360-Piece-Clear-Plastic-Cutlery/dp/B010RLC7P2

In the long run, bamboo presents itself as an attractive option for producing disposable cutlery, given Jamaica's capability of producing at least some of the bamboo resources. Local production could be supplemented with imported bamboo materials, and technical assistance could transfer the requisite technologies and skills in bamboo craft and commercial production to Jamaican producers, especially young people. In addition, some finished product could be imported as well.

All solutions to the general waste problem, and to the waste from disposable cutlery in particular, ultimately require behavioural changes that incline consumers to minimize waste and the proper disposal of unavoidable waste. Public education on proper waste minimization and management should be an integral component of public policy toward disposable cutlery in the short run, as well as in the long run when some local production can be developed.

<sup>&</sup>lt;sup>41</sup> "Compostable Plastics 101: An Overview Of Compostable Plastics Sponsored By The California Organics Recycling Council"

# 5 ENFORCEMENT AND COMPLIANCE NEEDS FOR THE PREFERRED OPTIONS

Following from the previous section, this section presents the suggested enforcement and compliance needs for the preferred options.

## 5.1 Policy Option 1, 5 and 7 - Deposit Refund Scheme (DRS)

#### 5.1.1.1 A Voluntary DRS

There is no need for enforcement and compliance in a voluntary DRS. However, the scheme is regulated through a Memorandum of Understanding among the members.

## 5.1.1.2 A Legislated DRS

Container deposit legislation is designed to reduce litter and capture plastic bottles for recycling by adding a refundable fee to the price of drinks and other items. Consumers pay a deposit on plastic beverage containers on purchase and receive a refund for the return of those containers. The essential element of the legislation is making it a legal obligation for the manufacturer or bottler to accept the bottles and refund the deposit. Legislation may also require either recycling or the final disposal of unused or usable containers and also mandates what should be done with unclaimed deposits. The legislation could also include a target for the percentage of manufactured bottles to be collected and recycled. For example, in Israel their Beverage Containers up to 1.5 L and 55% of containers above 1.5L and recycle at least 90% of them.

Legislation can either be collective (responsibilities are transferred to an authorized organization with payment of a handling fee) or individual producer responsibility organizations (a producer can make their own plan and set up her individual system to collect packaging materials arising from their products). The former model is proposed for Jamaica given that a Voluntary DRS has already been envisioned using this model with the Recycling Partners of Jamaica having responsibility for administration and the operation.

Legislation should include requirements for labelling that identifies those bottles that are applicable for the deposit refund, clear rules on the refund for consumers and clear rules on exemptions. Differentiation between imported and locally manufactured drinks is also possible. Costs usually are incurred in the transport, maintenance, and administration. Legislation can also require a handling fee for the authorized organization.

Verifiable auditing and tracking systems are also important. Separate collection of plastic bottles is recommended to support deposit refund schemes and allowing options for pickup either at designated areas or in residences. Usually deposit refund schemes can also designate the transport of bottles to licensed recycling facilities.

Legislation is important to outline roles and responsibilities:

- Recognize the responsible entities for the DRS
- Licensing collection depots, storage areas and recycling facilities and ensuring transportation is regulated to recover bottles

- Ensuring collection and payment of refund
- A framework for enforcement and implementation of the requirements of the system

It is recommended that the DRS legislation be enacted as regulations pursuant to section 68 of the National Solid Waste Management Authority Act. The Act is the primary legislation for managing solid waste. The Act prohibits any person from managing solid waste disposal facilities, including collection, transfer and recycling, without a licence from the National Solid Waste Management Authority (NSWMA).<sup>42</sup> The NSWMA is authorised under section 68 of the Act to pass regulations in consultation with the relevant Minister for standards for solid waste management and solid waste disposal facilities and for the minimization and recycling of waste.



# Figure 5-1: Diagram showing how Deposit Refund Scheme works (Source: Container Recycling Institute, 2007)

The legislation should define which beverage containers are included in the DRS. A recommendation for the containers that should be included are:

• All sealed PET and HDPE plastic beverage bottles, whether imported or manufactured containing carbonated soft drinks, bottled water and all other non-alcoholic drinks (herein referred to as "beverages").

The minimum refund amount should be set in a schedule to the regulations to allow for easy amendment when needed. It is likely that the refund amount will need to be increased over time to ensure that it continues to be an incentive for the consumers to return empty beverage containers.

<sup>&</sup>lt;sup>42</sup> National Solid Waste Management Authority Act, s, 22 and 23.

A recent review of literature by the Nicholas Institute for Environmental Policy Solutions, Duke University analysing 20 years of legislative and policy instruments implemented worldwide to tackle single use plastics, found that DRS instruments have led to increased recycling rates in many countries and should be replicated according to a number of researchers.<sup>43</sup>

The study notes that in some cases, the effectiveness of a DRS can be hampered by relatively low refunds per beverage container. In the United States, the recycling rate attributed to ten subnational DRS instruments ranged from 51 to 92 percent where the deposit is US\$0.05 to US\$0.10 per plastic bottle. With the average retail cost of a 16oz of bottled water at US\$0.70 depending on the brand<sup>44</sup>, the deposit amounts to an estimated 7 – 14 percent. In Europe where seven national cash for return instruments where studied, the recycling rates ranged between 85 to 98 percent, with higher deposits of Euro 10 to 40 cents (CM Consulting and Reloop Platform 2018).

It is therefore recommended that the DRS deposit amount for Jamaica be within the range of at least 7 - 10 percent of the cost of the bottled water.

## 5.1.2 Responsible authority/ies to oversee enforcement/compliance of the proposed option/s

The National Solid Waste Management Authority (NSWMA) will have the primary role for the enforcement of the legislation given its general function to manage solid waste and ensure that waste is collected, stored, transported, recycled, reused and transported in an environmentally sound manner.<sup>45</sup> The enforcement mechanisms are described in more detail below. Other relevant entities responsible for the operation of the DRS are:

- 1. **Dealers:** any person who sells beverages in plastic bottles to consumers for off premises consumption
- 2. **Distributors:** any person or corporation that bottles beverages or sells beverage containers to a retailer

Either individually, or collectively through a designated authorized organisation dealers and distributors will have responsibility for the operation and handling of the collection of deposits and the return of refunds. The legislation can allow for the distributor to appoint authorised agents. Given the current structure of the voluntary DRS, Recycling Partners of Jamaica could be designated as an authorized agent on commencement of the regulations.

The obligations specified in the legislation are as follows:

<sup>&</sup>lt;sup>43</sup> Karasik, R.,\* T. Vegh,\* Z. Diana,\* J. Bering, J. Caldas, A. Pickle, D. Rittschof, and J. Virdin.2020. 20 Years of Government Responses to the Global Plastic Pollution Problem: The Plastics Policy Inventory. NI X 20-05. Durham, NC: Duke University.

<sup>&</sup>lt;sup>44</sup> See <u>https://www.bottledprices.com/water/dasani/</u>. According to the Beverage Marketing Corporation (BMC), the average wholesale price per gallon of domestic non-sparkling bottled water was US\$1.11 in 2016, <u>https://www.bottledwater.org/economics/real-cost-of-bottled-water</u>. In 2014, 1.5 litre of water cost US\$1.75 in 2014, https://www.nationmaster.com/country-info/stats/Cost-of-living/Prices-at-markets/Water/1.5-litre-bottle.

 $<sup>^{45}</sup>$  National Solid Waste Management Authority Act, s 4(1)(a)

- 1. Dealers and distributors must collect deposit at time of sale or distribution
- 2. Dealers must accept empty containers from consumers and to pay the refund value set out in legislation
- 3. Distributors or authorised agents must accept empty containers from dealers or consumers and to pay the refund value set out in legislation
- 4. Distributors must designate a sufficient number of dealers, agents across the island within easy reach of the public.
- 5. Distributors and dealers must ensure that beverage containers sold are duly labelled in accordance with standards set by the Bureau of Standards for the DRS.

Additionally, the Natural Resources Conservation Authority under the Natural Resources Conservation Act, 1991 would be responsible for enforcing the requirement for permits for solid waste treatment and disposal facilities.<sup>46</sup>

## 5.1.2.1 Enforcement mechanisms

Enforcement mechanisms ensure that the policy is implemented and provide consequences for noncompliance. Enforcement of this legislation will be based on the existing control and enforcement mechanisms in the NWSMA Act and the NRCA Act. This will include:

- Inspection and site visits: the right to appoint NSWMA inspectors to enter any place within reasonable hours without a warrant or inspect any records to investigate compliance with the regulations<sup>47</sup>
- Review of transit documentation.
- Licensing: The authorized organisation would be required to obtain a licence from the NSWMA for the collection, storage and transport of the plastic bottles. Similarly, any organisation handling the recycling of the plastic bottles, including the storage, baling, compacting, processing and transport, would be required to obtain a licence from the NSWMA. Additionally, solid waste treatment and disposal facilities require a permit from the Natural Resources Conservation Authority under the Natural Resources Conservation Act, 1991.<sup>48</sup>

## 5.1.3 Exemptions, if any.

The following exemptions could be applied:

• Beverage containers sold on aircrafts or ships which are intended for consumption outside of Jamaica.

## 5.1.4 Powers of regulator and authorized officers

If an enforcement officer authorised under the NSWMA Act or NRCA Act, discovers an offence under this proposed legislation, during an inspection or investigation, the officer would choose the appropriate enforcement action based on the following factors:

<sup>&</sup>lt;sup>46</sup>Natural Resources Conservation Authority Act, s. 9

<sup>&</sup>lt;sup>47</sup> National Solid Waste Management Authority Act, s 20, 21, 63

<sup>&</sup>lt;sup>48</sup>Natural Resources Conservation Authority Act, s. 9

- **Nature of the offence:** This includes consideration of the damage, the intent of the alleged offender, whether it is a repeat offence, and whether an attempt has been made to conceal information or obstruct the investigation being carried out by the NSWMA or NRCA.
- Effectiveness in achieving the desired result with the alleged offender: It would be desirable for compliance to be achieved within the shortest possible time and with no further repetition of the offence. Factors to be considered include the offender's history of compliance, willingness to cooperate with enforcement officers, and evidence of corrective actions; and
- **Consistency:** Enforcement officers will give consideration as to how similar situations have been handled before determining which measures are to be taken to enforce this legislation.

The following responses would be available to deal with alleged offences of this legislation:

- Enforcement notice with directions
- Fixed penalty notices;
- Suspension and revocation of licences to operate;
- Injunctions;
- Prosecutions;
- Power to seize and detain equipment or materials; and
- Court orders following convictions and civil suits by the NSWMA to recover costs, including forfeiture of equipment or materials.

Consideration should be given to the implementation of ticketable offences for breaches considered minor. This could operate in a manner similar to the regime under the Road Traffic Act.

#### 5.1.5 Offences and penalties for violations of the proposed legislation

The offences would include:

- a. Failure to obtain a licence for the collection, storage and transport of the plastic bottles.
- b. Failure to provide a refund
- c. Failure to adhere with the conditions of the licence (inclusive of environmental conditions)
- d. Failure to ensure there are sufficient locations for the return of beverage containers.
- e. Failure to ensure that beverage containers are labelled according to Bureau of Standards requirements for the DRS.
- f. Providing false or misleading information to an authorized officer or inspector of the NSWMA or otherwise obstructing him while he is carrying out his duties under the legislation.
- g. Failure to ensure that bottles are recycled or managed at an authorized or approved facility in an environmentally sound manner.

The maximum penalty under the NSWMA Act is a fine of up to one million (\$1,000,000) and any DRS regulations passed under this Act could not include a penalty higher than this amount.

## 5.2 Policy Option 3– Measures to support alternative and biodegradable materials

This policy option refers to the reduction of customs duties payable on alternatives to plastics, in particular, biodegradable materials (ready-made materials to make these products). These specific materials are biodegradable bagasse and cornstarch-based PLA containers, and cornstarch-based cutlery,

cups and lids, among others. Ongoing consultations should be conducted with manufacturers and importers to ensure that all feasible alternatives are considered for this Policy Option.

To give effect to this Policy Option, the House of Representatives can pass a resolution, to either revoke, reduce or alter import duties on the importation of the abovementioned biodegradable goods and raw materials imported into Jamaica.<sup>49</sup>

It is recommended that the customs duty for biodegradable bagasse food containers and cornstarchbased PLA containers, cups and lids be reduced to nil (0%).

## 5.2.1 Responsible authority/ies to oversee enforcement/compliance of the proposed option/s

The Jamaica Customs Agency, inclusive of the Commissioner of Customs and customs officers are responsible for the enforcing the Customs Act, in particular, ensuring the payment of the relevant duties on goods imported into Jamaica at all ports of entry. The Bureau of Standards and the National Compliance and Regulatory Authority would provide oversight and compliance by ensuring standards for verifying the composition and characteristics of alternatives are met.

## 5.2.2 Enforcement mechanisms

The primary enforcement mechanism is the imposition of fines and levies for breaches of the Customs Act. These are discussed in detail below.

## 5.2.3 Exemptions, if any.

Standards for the materials that would be entitled to benefit from the reduction in duties should be clearly identifiable. This could include, for example, a requirement that the products made must be made from at least 70% Bagasse or cornstarch.

ASTM International, a well-known standards body, has developed standards for biodegradable and compostable products that measure how much of a product is bio-based and the rate and extent of biodegradation in different environments (e.g. composting facility, anaerobic digestion facility, etc.).<sup>50</sup> According to ASTM International standards, compostable plastic is plastic that undergoes degradation by biological processes during composting to yield CO2, water, inorganic compounds, and biomass at a rate consistent with other known compostable materials and that leaves no visible, distinguishable, or toxic residue.<sup>51</sup>

## 5.2.4 Powers of regulator and authorized officers

Customs officers can board aircrafts or ships for the purpose of examining goods,<sup>52</sup> and enter any house or place with a warrant from a Parish Judge or Justice of the Peace. They also have the power to seize and forfeit goods<sup>53</sup> and to arrest any person attempting to import goods in breach of the Customs laws.<sup>54</sup>

<sup>&</sup>lt;sup>49</sup> The Customs Act, s. 5(1)

 <sup>&</sup>lt;sup>50</sup> ASTM D6400: Measures whether a plastic can be labeled as "compostable." ASTM D7081: Measures whether a plastic can be labeled as "marine degradable." ASTM D6868: Measures whether a product's "plastic coatings/linings" can be labeled as biodegradable or compostable.
 <sup>51</sup> ASTM Standard D6400, 2004, "Standard Specification for Compostable Plastics," ASTM International, West Conshohocken, PA, 2004, DOI:

<sup>10.1520/</sup>D6400-04, www.astm.org.

<sup>&</sup>lt;sup>52</sup> The Customs Act, s. 53

<sup>&</sup>lt;sup>53</sup> The Customs Act, s. 210, 213, 216

<sup>54</sup> The Customs Act, s. 60, 208

It is recommended that Jamaica Customs Agency, NCRA and NEPA establish a protocol, pertaining to all the enforcement activities involved, towards the prosecution of importers, who have contravened the Trade (Plastic Packaging Materials Prohibition) Order, 2018. Clear guidelines should be developed, indicating the steps to be taken and a determination of the Agency responsible, for initiating prosecutions.

According to The Customs Agency, there exists a major concern pertaining to the storage area of such seized goods. The Customs Detention areas are devoid of the requisite capacity, to take custody of large portion of goods that may be seized pursuant to the Act. This concern further extends to the fact that goods seized, will have to be held by the custodian of the goods, pending the outcome of Court proceedings. Against that background, it is imperative for a suitable storage area to be identified in the event that the Customs Detention areas.<sup>55</sup>.

Customs can seize goods and dispose of them as the Minister directs. They are required to serve a notice on the owner of the goods and if the owner objects in writing within one calendar month from the date of seizure then the procedure for forfeiture can begin. <sup>56</sup> In practice, the Customs Agency is hindered from disposing of seized goods, pending the outcome of the Court case. The Defendant could be successful and even if the Defendant is unsuccessful, where the Defendant intends to appeal the Lower Court's decision to the Appellate Court, Customs under those circumstances cannot initiate the disposal of seized goods procedure.

#### 5.2.5 Offences and penalties for violations of the legislation

The Customs Act provides for the imposition of penalties in varied forms. The main offences include:

- a. The penalty for concealment or diversion of duty relief is treble the import duties or treble the value plus forfeiture<sup>57</sup>
- b. The penalty for making a false declaration to Customs is a fixed amount or treble the value of the goods.<sup>58</sup>
- c. The penalty for evading Customs Laws regarding imported goods is forfeiture and a minimum of treble import duties and taxes and a maximum of treble value of goods plus forfeiture.<sup>59</sup>

The Jamaica Customs Agency adopted a new Offence Management Policy and Procedures in 2018 which acknowledged that "the unpredictable manner in which penalties are imposed under the Customs Act is not consistent with good governance and does not foster compliance". To address this, the Agency proposed to exercise the Commissioner's power under the Customs Act<sup>60</sup> to mitigate the penalties for specific offences by providing for a fixed penalty. In addition to these penalties or in lieu, there may be other sanctions such as issuing a warning for first offences, or suspension of authorization, approval or privilege granted. The specific circumstances are:

a. A reduced penalty equivalent to the duty payable will be imposed where a declaration made contains an error or omission

<sup>&</sup>lt;sup>55</sup> Pers. Comm. Kurt Johnson, Manager, The Customs Agency (June 25, 2020)

<sup>&</sup>lt;sup>56</sup> The Customs Act, s. 214-216

<sup>&</sup>lt;sup>57</sup> The Customs Act, s. 32, 33, 211

<sup>&</sup>lt;sup>58</sup> The Customs Act, s. 209

<sup>&</sup>lt;sup>59</sup> The Customs Act, s 210(1)

<sup>&</sup>lt;sup>60</sup> The Customs Act, s 219

- b. A mitigated penalty equivalent to one hundred percent (100%) of the applicable duties and taxes may be imposed for offences where the value of the goods or duties and taxes payable is less than one million dollars
- c. Offences regarding permits and licenses will result in the application of a fixed reduced penalty.

## 5.3 Policy Option 8 – Keep Current regulations (the Current Ban on Plastics in Jamaica)

Jamaica enacted, the Trade (Plastic Packaging Materials Prohibition) Order, 2018 and the Natural Resources Conservation Authority (Plastic Packaging Materials Prohibition) Order, 2018. to give effect to the ban on the importation, distribution, manufacture and commercial use of certain types of single use plastics beginning January 1<sup>st</sup> 2019<sup>61</sup>, specifically:

- (a) single use plastic bags made wholly or in part of polyethylene or polypropylene of dimensions 610mm X 610mm (24" x 24") and 0.03mm (1.2 mils) in thickness or less;
- (b) packaging made wholly or in part of expanded polystyrene foam (Styrofoam); and
- (c) drinking straws, made wholly or in part of polyethylene or polypropylene, manufactured for single use.

The ban is being implemented in phases and was extended to include expanded polystyrene foam used for food and beverage containers effective January 1<sup>st</sup>, 2020. As of January 1<sup>st</sup>, 2021, the ban will extend to single use drinking straws made wholly or in part of polyethylene or polypropylene used for juice boxes or drink pouches and plastics bags with dimensions of 610 mm x 610 mm (24" x 24") and 0.06 mm (2.5 mils) thickness.

The Consultant's Report on the Assessment of Impact and Effectiveness of the Ban (Deliverable 7) indicates that the ban has been fairly successful in reducing the use of plastic bags and the public is generally supportive of the ban. Consultations with private sector stakeholders involved in the manufacture and importation of beverages have however indicated the following primary concerns:

- 1. The size limitation on plastic bags as imposed by the ban could be overcome with the production of larger size bags.
- 2. Alternatives are not affordable.
- 3. An extension may be required for the introduction of the third phase of the ban (to be implemented January 2021) which is on drinking straws used for juice boxes and pouches due to the lack of feasible alternatives until 2023 when it is expected that Tetra Pak will begin production of same.
- 4. Other plastic alternative to polystyrene food containers are being used on the market by some restaurants and food establishments.

<sup>&</sup>lt;sup>61</sup> The Natural Resources Conservation Authority (Plastic Packaging Materials Prohibition) Order, 2018; Trade (Plastic Packaging Materials Prohibition) Order, 2018.

#### Propylene plastic food containers

A new arising trend is the increased visibility and usage of Polypropylene plastic food containers. This Policy Option can be reinforced by an extension of the ban to halt the importation, distribution and commercial sale of these items. The cost of the ban will consist of GOJ compliance costs, including legislative amendments and costs to manufacturers. Given that the regulatory framework for a ban on single use plastics already exists, the costs to amend legislation to extend the ban to Polypropylene plastic food containers would be minimal but would include public sensitization and outreach to importers and the general public. These items are imported and not locally made so economic costs (e.g. job losses) would be considerably less than it would be for a locally manufactured item. The benefits of the ban are the avoidance of waste disposal costs, avoidance of drain cleaning costs and a cleaner environment.

## 5.3.1 Responsible authority/ies to oversee enforcement/compliance of the proposed option/s

The Trade Board Limited in the Ministry of Industry, Commerce, Agriculture and Fisheries is a regulatory agency of Government, operating under the legal authority of the Trade Act. They are Jamaica's certifying authority for goods exported under various trade agreements. They are responsible for monitoring enforcement and compliance of the Trade (Plastic Packaging Materials Prohibition) Order, 2018. This Order focuses on the importation of the plastic material. The National Compliance and Regulatory Authority (NCRA) conducts checks at the different ports of entry to flag plastic items.

The National Environment and Planning Agency (NEPA) is responsible for monitoring and enforcing compliance with the Natural Resources Conservation Authority (Plastic Packaging Materials Prohibition) Order, 2018. They work with the Bureau of Standards Jamaica (BSJ) and the NCRA in seeking persons who are in breach of the Order:

- BSJ tests the samples (strength and chemical composition) collected by NEPA to confirm the type of material used
- NCRA, BSJ and NEPA sometimes will conduct checks together.

The Agency has adopted a a zero-tolerance approach to the prosecution of breaches under the Order. To date, NEPA has indicated that 370 compliance audit notices have been served under the Natural Resources Conservation Authority (Plastic Packaging Materials Prohibition- PPM) Order, 2018. These have been to individuals, companies and partnerships/sole traders.

## 5.3.2 Enforcement mechanisms

The primary enforcement mechanism is the prohibition of the importation or manufacture of the banned plastic items by making such actions an offence that carries penalties of fines and imprisonment. These are discussed in detail below in section 3.3.5.

## 5.3.3 Exemptions, if any.

Certain types of plastics are excluded from the ban, these are listed below:

(a) Single use plastics used to maintain public health and food safety, including packaging used by wholesalers and retailers to distribute raw meat, eggs, flour, sugar, rice or baked goods;

- (b) Single use plastics manufactured or used with the approval of the relevant Minister;
- (c) Single use plastic bags used to package personal effects, and contained in the luggage of a person travelling into or out of Jamaica;
- (d) Drinking straws manufactured for use by, or used by, persons with disabilities or imported or distributed by a recognized body representing persons with disabilities and as approved by the relevant Minister;
- (e) Single use plastics imported before the 1st January 2019; and
- (f) Single use plastics imported or distributed by the Ministry responsible for health in the medical field.

## 5.3.4 Powers of regulator and authorized officers

There are a range of enforcement actions under the Trade Act if someone is found in breach of the ban:

1. Authorised officers under the Trade Act and NRCA Act can enter and search any premises without a warrant.<sup>62</sup>

Customs officers can board aircrafts or ships for the purpose of examining goods,<sup>63</sup> enter any house or place with a warrant from a Parish Judge or Justice of the Peace. They also have the power to seize, forfeit and dispose of the banned goods<sup>64</sup> and to arrest any person attempting to import prohibited goods.<sup>65</sup>

## 5.3.5 Offences and penalties for violations of the legislation

The penalty for importing and distributing the banned plastic items is greater than for local manufacture and commercial use. The Trade Act, which regulates importation, has higher penalties than the Natural Resources Conservation Authority Act.

- 1. The penalties for attempting to import banned goods under the Trade (Plastic Packaging Materials Prohibition) Order, 2018 is a fine of up to J\$2 million or imprisonment for up to two (2) years.
- The penalties for manufacturing or using banned plastics items in commercial quantities under the Natural Resources Conservation Authority (Plastic Packaging Materials Prohibition) Order, 2018 is a fine of up to J\$50,000 or imprisonment for up to maximum of two (2) years.

It is recommended that the maximum fines under the Natural Resources Conservation Authority Act and Natural Resources Conservation Authority (Plastic Packaging Materials Prohibition) Order be increased to at least \$1 million.

<sup>&</sup>lt;sup>62</sup> The Trade Act, s. 8; the Natural Resources Conservation Authority Act, s. 20

<sup>&</sup>lt;sup>63</sup> The Customs Act, s. 53

<sup>&</sup>lt;sup>64</sup> The Customs Act, s. 210, 213, 216

<sup>65</sup> The Customs Act, s. 208

## **6 CONSULTATION**

Several stakeholders were consulted throughout the duration of the project in the form of focused interviews, electronic surveys and workshops.

## 6.1 Workshop 1

Consultations were in the form of individual interviews/ meetings and workshop sessions. The first workshop was held on February 6, 2020 and a follow up session was held on March 16, 2020 with the JMEA Plastic Committee. The first session in February was held in person, and the second session was held virtually via Zoom due to COVID-19. Appendix 3 presents the tools that were used to solicit feedback. It also presents the summary of the feedback received.

Stakeholders consulted throughout the project indicated their preferred policy options as:

- 1. Policy Option 5 and 6- Solid waste management legislation (sorting at source and tipping fees),
- 2. Policy Option 1- Deposit Refund Scheme
- 3. Policy Option 3- Measures to support use of alternative materials.

The majority had either a negative or neutral view regarding the No Change policy option. Additionally, most stakeholders consulted were in support of the use of the Environmental Levy to offset the costs of implementing the policy options, in particular, to the waste management system and were not in favour of additional taxes.

Stakeholders also indicated that consideration should be given to the viability of a Waste to Energy solution. Waste to Energy as a Policy Option was not reviewed as an option in this Consultancy given that the Government of Jamaica is in the preliminary stages of assessing which technology to use which will have different impacts. The Development Bank of Jamaica will be procuring the services of a Transaction Advisor and Siting Study Consultant to oversee the transition of solid waste management from public operation to a public private partnership and through this process a determination will be made of the Waste to Energy technology to be used. It is generally considered that Waste to Energy is of low priority in the waste hierarchy when compared with other methods for minimizing waste. Waste reduction through prevention and thereafter re-use and recycling of waste should be prioritised. Waste to Energy projects, although preferable to waste disposal without energy recovery, should be seen as complementary and used to deal with non-recyclable elements and should not compete with waste reduction, reuse and material recycling measures.

Additionally, a previous Knowledge/Attitudes/Perception/Behaviour survey (KAPB) conducted in 2017 among three hundred and ninety four (394) individuals indicated preference for policies that facilitate citizens sorting plastic waste for recycling, the payment for return of plastic bottles (deposit refund) and banning of some types of plastic as waste management options.<sup>66</sup>

<sup>&</sup>lt;sup>66</sup> Regulatory Impact Assessment: Plastic Packaging Material including Styrofoam in Jamaica, NEPA (2017)
# 6.2 Impact and Effectiveness of the Current Ban

To determine the impact and effectiveness of the current ban, electronic surveys using Google Forms were designed for three categories:

- 1. Household users/ end users
- 2. Manufacturers
- 3. Retailers

There were only 458 responses to the Consumers/ Household survey, 16 responses to the Manufacturers survey and 8 responses to the Retailers survey. As such focused interviews were also held with key stakeholders. The survey tools are found in Appendix 1.

The results of this assessment were discussed in Section 2.4

# 6.3 Workshop 2

This virtual workshop was held on June 16, 2020 and the Draft RIA was presented. The aim of this workshop was to seek feedback on the proposed policy options following the extensive stakeholder consultation and analyses undertaken throughout the project. There was a total of 47 participants representing government agencies and private sector (See Appendix 4). A summary of the comments and questions are also included in Appendix 4.

# 7 SUMMARY AND CONCLUSION

Over the past six decades, plastics has become the leading man-made material due to its affordability, versatility and durability. The extensive use of plastics in applications that are prone to littering such as single use and disposable items, combined with the fact that plastics do not biodegrade or take thousands of years to breakdown into harmful microplastics, are reasons why plastics are considered one of the top global threats to the environment. Jamaica has a long-standing problem of solid waste disposal and management.

As such a decision was made by the Government to implement a ban on certain types of plastics. Beginning January 1<sup>st</sup>, 2019, Jamaica introduced legislation to ban the importation, distribution, manufacture and commercial use of certain types of single use plastics. This ban has been implemented in three phases under the following legislation:

- 1. The Trade (Plastic Packaging Materials Prohibition) Order, 2018.
- 2. The Natural Resources Conservation Authority (Plastic Packaging Materials Prohibition) Order, 2018.

Since the implementation of the ban, the first two phases have generally been accepted by manufacturers, retailers and consumers. They have acknowledged the positive environmental impacts of the ban on these single use plastics. However, while it has been considered important for the environment, most have suggested that the real issue is inadequate solid waste management. Concerns have been raised as to how phase 3 of the ban, which is to be implemented in January 2021, may affect businesses and consumers. The alternatives are more expensive, and several manufacturers have indicated that they may not have a solution until 2023. As such, it has been suggested that the timing of this phase of the ban be reconsidered.

It is not fully understood what the impact of the ban has been on the waste stream due to the lack of recent waste characterization data. However, from observations and feedback from persons interviewed it appears that there may be a reduction of the banned plastics in the waste stream.

Following extensive stakeholder consultation and review of documents, the recommended primary Policy Objective is to prevent or reduce, plastic waste entering the environment (land, air and water). Four immediate strategies have been identified to achieve the primary objective:

- 1. To reduce the amount of single use plastic imported and manufactured in Jamaica.
- 2. To improve the waste collection and disposal system in Jamaica.
- 3. To minimise the amount of plastic entering the waste stream through adequate recovery and reuse.
- 4. To change public attitudes and behaviour through sensitization, education and appropriate incentives

The Cost Benefit Analysis of the 8 policy options identified that the options where the benefits outweighed the costs and had the greatest confidence were for the DRS (Policy Options 1 and 5) and for no regulations (Policy Option 7). In the former, the recommendation is to proceed, and in the latter, the recommendation

is not to adopt. The implications of the results so far are that the GOJ is on solid ground with respect to existing regulations, and should encourage the implementation of the proposed DRS, expanded to include HDPE bottles, as early as possible.

Each of the Policy Options was then scored in relation to their potential economic, environmental and social impacts, as well as their possible enforcement needs or requirements. The outcome of the assessment of the policy options resulted in three top option, two of which would have enforcement and compliance needs:

- 1. Policy Option 1,5 and 7- A Voluntary Deposit Refund Scheme (DRS) with recycling.
- 2. Policy Option 1 and 5- A Legislated Deposit Refund Scheme (DRS) with recycling. It is suggested that the effectiveness of the Voluntary DRS be reviewed after a 5-year period of operation to determine whether a legislated DRS should be implemented. For the latter, it is proposed that NSWMA regulations be enacted to provide the legal framework for the legislated DRS. Exemptions could be applied to beverage containers sold on aircrafts or ships which are intended for consumption outside of Jamaica.
- 3. Policy Option 3- Measures to support use of alternative biodegradable materials. Reduction of customs duties payable on the importation of alternatives to plastics, in particular biodegradable materials, through a resolution by the House of Representatives of Parliament.<sup>67</sup> These alternatives would include:
  - Bagasse food containers
  - Cutlery made of corn starch
  - o Cornstarch-based PLA containers
  - Biodegradable white paper drinking straws
  - Raw materials to be used for the local manufacture of alternatives to single use plastics, in particular as substitutes for packaging, beverage and food containers and drinking straws.

To give effect to Policy Option 3, the House of Representatives will be required to pass a resolution to revoke, reduce or alter import duties on these materials imported into Jamaica. The Jamaica Customs Agency, inclusive of the Commissioner of Customs and customs officers, the National Compliance Regulatory Authority and the Bureau of Standards would be responsible for ensuring compliance under the Customs Act.

Finally, despite the low score that was received for Policy Option 8 which is to keep current regulations, it was still included because the third phase of the ban has yet to be implemented. There have been requests for consideration to delay implementation of the third phase concerning drinking straws on juice boxes and straws until 2023 (based on estimated date for the entry into the market of an alternative). There have also been suggestions to extend the ban to halt the importation, distribution and commercial sale of Propylene plastic food containers.

<sup>&</sup>lt;sup>67</sup> The Customs Act, s. 5(1)

# 7.1 Recommendations for future work

Following the assessments conducted as part of this Consultancy, several recommendations have been suggested:

### NSWMA

- Further studies may be useful to sample sections along the eight major gullies in the KMA (Sandy Gully, Balmagie Gully, Jew Gully, Shoemaker Gully, Barnes Gully, Old Hope Road Gully, Mountain View Gully and Admiral Town Gully) so as to determine what percentage is plastic to have a better understanding of the amount and nature of the waste that is entering the marine environment.
- A recommendation is to carry out a waste characterization study to confirm if there have been actual reductions in the waste stream by the end of the 2021. This would provide enough time for all phases of the ban to be fully implemented and in effect.
- Waste collection and disposal is a significant issue that the country has been faced with for several decades. This needs to be improved especially as waste production increases and continues to threaten the natural and social environment.

### **Ministry of Finance**

• Given the contributions to the Consolidated Funds from the Environmental Levy, sufficient funds should be allocated to the support the proposed Policy Options. For the year 2017/2018, the Government of Jamaica collected J\$3,465,315,883 from the environmental levy.

### **Private Sector**

• Conduct additional research to determine what would be a suitable and attractive dollar value for the refund for the DRS Scheme.

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# 8 APPENDIX

**Appendix 1- Survey Forms** 

# Plastic Waste Minimization Project -Manufacturers of banned plastic products

Jamaica introduced a legislation to ban the importation, distribution, manufacture and commercial use of certain types of single use plastics beginning January 1, 2019, specifically:

(a) single use plastic bags made wholly or in part of polyethylene or polypropylene of dimensions 610mm X 610mm (24" x 24") and 0.03mm (1.2 mils) in thickness or less;
(b) packaging made wholly or in part of expanded polystyrene foam (commonly called styrofoam); and

(c) drinking straws, made wholly or in part of polyethylene or polypropylene, manufactured for single use.

The ban is being implemented in phases and was extended to include expanded polystyrene foam used for food and beverage containers effective January 1, 2020. As of January 1, 2021, the ban will extend to single use drinking straws made wholly or in part of polyethylene or polypropylene used for juice boxes or drink pouches. Additionally, plastic bags with thickness of 0.06 mm (2.5 mils) and dimensions of 610mm x 610mm (24" x 24") will also be banned.

This survey will focus on the bans which were implemented in January 2019 and 2020 and how they have affected you as a manufacturer.

Please take a few minutes to answer the following questions. \* Required

Plastic items currently banned.



1. 1. In which Parish is your business located? \*

Mark only one oval.

- Kingston and St. Andrew
- St. Thomas
- Portland
- 🔵 St. Mary
- St. Ann
- Trelawny
- 🔵 St. James
- Hanover
- Westmoreland
- 🔵 St. Elizabeth
- Clarendon
- Manchester
- 🔵 St. Catherine
- 2. 2. Please check the type of plastic products you manufactured in the last 5 years?

Check all that apply.

- Plastic Bags
- Plastic Bottles and other containers (plates, cups, utensils)
- Plastic Straws
- Styrofoam Containers
- All the above

3. 3. How would you classify your business (revenue and #of employees)?

Mark only one oval.

- $\bigcirc$  Micro,  $\leq$  J\$15 million,  $\leq$  5 employees
- Small, >  $15 \text{ million} \le J$  million, 6-20 employees
- Medium- > J\$75 million ≤J\$425 million, 21- 50 employees
- Large- >J\$425 million, > employees
- 4. 4. How has the ban affected your business?

Check all that apply.

Sales have declined

We now make alternative products

We have had to change our business model

The business has not been affected

How many workers were laid off

Other:

5. 5a. Do you support the ban?

Mark only one oval.

$\subset$	Yes
$\subset$	No
$\subset$	Unsure

6. 5b. Why?

7. 6. Select multiple answers if you wish. Do you think that:

Check all that apply.

The ban will reduce the amount of litter and have a positive impact on the environment
The ban is the wrong approach to reduce litter and doesn't make any difference
Address the shortcomings with general waste management system first
Instead of a ban, there should be additional tax on plastic bags and foam products
Instead of a ban, there should be a bigger fine for littering
It is an effective measure and good initiative
There should have been more time to adjust
Other:

### 8. 7. Would you want to see any of the following changes to the current ban? (Yes/ No)

Mark only one oval per row.

	Yes	No
Widen the ban to cover more sizes of plastic bags?	$\bigcirc$	$\bigcirc$
Make all plastic bags biodegradable	$\bigcirc$	$\bigcirc$
Put an additional national levy/tax on the cost of plastic bags and foam products and use the money to reduce litter around the country	$\bigcirc$	$\bigcirc$
The ban should be reversed	$\bigcirc$	$\bigcirc$
More time for manufacturers to adjust	$\bigcirc$	$\bigcirc$

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Google Forms

# Plastic Waste Minimization Project -Consumers of Banned Plastic Products

Jamaica introduced a legislation to ban the importation, distribution, manufacture and commercial use of certain types of single use plastics beginning January 1, 2019, specifically:

(a) single use plastic bags made wholly or in part of polyethylene or polypropylene of dimensions 610mm X 610mm (24" x 24") and 0.03mm (1.2 mils) in thickness or less;
(b) packaging made wholly or in part of expanded polystyrene foam (commonly called styrofoam); and

(c) drinking straws, made wholly or in part of polyethylene or polypropylene, manufactured for single use.

The ban is being implemented in phases and was extended to include expanded polystyrene foam used for food and beverage containers effective January 1, 2020. As of January 1, 2021, the ban will extend to single use drinking straws made wholly or in part of polyethylene or polypropylene used for juice boxes or drink pouches. Additionally, plastic bags with thickness of 0.06 mm (2.5 mils) and dimensions of 610mm x 610mm (24" x 24") will also be banned.

This survey will focus on the bans which were implemented in January 2019 and 2020 and how they have affected you as a consumer. Basic demographic data will also be collected but this data will not be shared.

Please take a few minutes to answer the following questions. \* Required

Plastic items currently banned.



1. 1. Before the ban was implemented, how often did you use a plastic bags (commonly called scandal bags) of the sizes which are now banned as described above? \*

Mark only one oval.

$\bigcirc$	Never
$\bigcirc$	Sometimes
$\bigcirc$	Most times
$\bigcirc$	Always

2. 2. How often do you currently use plastic bags (commonly called scandal bags) that are greater than 610mm X 610mm (24" x 24")? \*

Mark only one oval.

Never			
Sometin	nes		
◯ Most tin	nes		
Always			
Other:			

3. 3. Before the ban was implemented, how often did you use plastic drinking straws? \*

Mark only one oval.

Never

Sometimes

Most times

🔵 Always

4. 4. Before the ban was implemented, how often did you use expanded polystyrene foam (commonly called Styrofoam) as described above?

Mark only one oval.

- Never
  Sometimes
  Most times
  Always
- 5. 5. How has the ban on plastic bags (commonly called scandal bags) affected you? \*

Check all that apply.
As a result of the plastic bag ban, I now use re-usable shopping bags more frequently
I was already mostly using my own re-usable shopping bags before the plastic bag ban
Even with the plastic bag ban, I mostly don't use re-usable bags and I buy paper bags as
necessary
As a result of the plastic bag ban, I now take my groceries in my hand or I ask for boxes from the store
I use plastic bags of sizes which have not been restricted under the ban instead
I can still get a scandal bag when I need it
Other:

6. 6. How has the ban on plastic straws affected you? \*

Check all that apply.

- I do not use straws anymore
- I use paper straws provided
- It has had no effect on me
- I think it is inconvenient
- I think it is a good thing

U	t	n	е	r	Г

7. 7. How has the ban on expanded polystyrene foam (commonly called Styrofoam) affected you? \*

Check all that apply.

I do not use foam products anymore
I use alternative packaging provided
Has had no effect on me
I think it is inconvenient
I think it is a good thing

Other:

8. 8a. Do you support the partial ban on scandal bags of dimensions 610mm X 610mm (24" x 24")?

Mark only one oval.

$\bigcirc$	Yes
$\bigcirc$	No
$\bigcirc$	Unsure

9. 8b. Please provide an explanation for your response above. \*

# 10. 9. Would you want to see any of the following changes to the current ban?

Mark only one oval per row.

	Yes	No
Widen the ban to cover more sizes of plastic bags?	$\bigcirc$	$\bigcirc$
Make all plastic bags biodegradable	$\bigcirc$	$\bigcirc$
Have additional national levy/tax on plastic bags and containers and use the money to reduce litter around the country	$\bigcirc$	$\bigcirc$
Provide incentives for alternative forms of packaging	$\bigcirc$	$\bigcirc$
The ban should be cancelled	$\bigcirc$	$\bigcirc$

Demographics

11. 7. What Parish and Community do you live in? \*

Mark only one oval.

- Kingston and St. Andrew
- 🔵 St. Thomas
- Portland
- 🔵 St. Mary
- 📄 St. Ann
- Trelawny
- 🔵 St. James
- Westmoreland
- 🔵 St. Elizabeth
- Manchester
- Clarendon
- St. Catherine
- 12. Name of Community
- 13. 8. What is your gender?

Mark only one oval.



🔵 Male

14. 9. Age Range \*

Mark only one oval.

$\bigcirc$	Under 25
$\bigcirc$	) 25-30
$\bigcirc$	) 31-50
$\bigcirc$	) 51-70
$\square$	71 and over

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# Plastic Waste Minimization Project -Retailers

Jamaica introduced a legislation to ban the importation, distribution, manufacture and commercial use of certain types of single use plastics beginning January 1, 2019, specifically:

(a) single use plastic bags made wholly or in part of polyethylene or polypropylene of dimensions 610mm X 610mm (24" x 24") and 0.03mm (1.2 mils) in thickness or less;
(b) packaging made wholly or in part of expanded polystyrene foam (commonly called

styrofoam); and

(c) drinking straws, made wholly or in part of polyethylene or polypropylene, manufactured for single use.

The ban is being implemented in phases and was extended to include expanded polystyrene foam used for food and beverage containers effective January 1, 2020. As of January 1, 2021, the ban will extend to single use drinking straws made wholly or in part of polyethylene or polypropylene used for juice boxes or drink pouches. Additionally, plastic bags with thickness of 0.06 mm (2.5 mils) and dimensions of 610mm x 610mm (24" x 24") will also be banned.

This survey will focus on the bans which were implemented in January 2019 and 2020 and how they have affected you as a retailer.

Please take a few minutes to answer the following questions. \* Required

Plastic items currently banned.



1. 1. Which Parish is your business located? \*

Mark only one oval.

- Kingston and St. Andrew
- St. Catherine
- Clarendon
- Manchester
- St. Elizabeth
- Westmoreland
- 📃 St. James
- Trelawny
- St. Ann
- 🔵 St. Mary
- Portland
- 🔵 St. Thomas

### 2. 2. What type of business do you operate?

Mark only one oval.

Supermarket
Wholesale
Store
Restaurant
Other:

3. 3. How would you classify your business (revenue and #of employees)?

Mark only one oval.

Micro, ≤ J\$15 million, ≤ 5 employees

- \_\_\_\_ Small, > \$15 million ≤ J\$75 million, 6-20 employees
- \_\_\_\_ Medium- > J\$75 million ≤J\$425 million, 21- 50 employees
- Large- >J\$425 million, >50 employees
- 4. 4. In terms of quantity, which one of the following products were purchased the most prior to the ban?

Mark only one oval.

Single-use plastic carrier/shopping bags with dimensions not exceeding 24x24 inches and 1.2 mils in thickness;

Single-use plastic carrier/shopping bags with dimensions greater than 24x24 inches and 1.2 mils in thickness;

Expanded polystyrene foam, commonly called styrofoam, used as food and beverage containers;

Plastic drinking straws.

5. 5. Prior to the implementation of the ban, how often did you purchase the restricted plastic bags, straws and polystyrene foam products for use in your business (packaging, retail, etc)?

Mark only one oval per row.

	Once per month	Multiple times per month	Once per year	Other
Plastic bags	$\bigcirc$	$\bigcirc$	$\bigcirc$	$\bigcirc$
Plastic straws	$\bigcirc$	$\bigcirc$	$\bigcirc$	$\bigcirc$
Polystyrene foam	$\bigcirc$	$\bigcirc$	$\bigcirc$	$\bigcirc$

7.	6. How has the ban affected you?	

Mark only one oval.

No effect

Sales have declined

Customers are still offering resistance

Customers have accepted the ban

I now supply alternatives to plastic-based products (e.g. paper, plant etc.)

Demand for alternatives to plastic-based products are higher, thereby increasing sales

Other: \_\_\_\_\_

8. 7. Do you support the ban?

Mark only one oval.

O Yes

O No

Unsure

# 9. Why?

-	
-	
-	
10.	8. Select multiple answers if you wish. Do you think that:
	Check all that apply.
	The ban will reduce the amount of litter and have a positive impact on the environment
	The ban is the wrong approach to reduce litter and doesn't make any difference
	Instead of a ban, there should be additional tax on plastic bags
	Instead of a ban, there should be a bigger fine for littering
	It is an effective measure and good initiative
	There should have been more time to adjust
	Other:

# 11. 9. Would you want to see any of the following changes to the current ban?

Mark only one oval per row.

	Yes	No
Widen the ban to cover more sizes of plastic bags	$\bigcirc$	$\bigcirc$
Make all plastic bags biodegradable	$\bigcirc$	$\bigcirc$
Put an additional national levy/tax on plastic bags and the money used to reduce litter around the country	$\bigcirc$	$\bigcirc$
The ban should be reversed	$\bigcirc$	$\bigcirc$
More time is needed for manufacturers to adjust	$\bigcirc$	$\bigcirc$
Remove tax from alternative packaging to make them more affordable	$\bigcirc$	$\bigcirc$

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Appendix 2 – Invitation Card, List of Stakeholders, Materials for Stakeholder Consultations, Summary feedback and Photos (Workshop 1)



#### PLASTIC WASTE MINIMIZATION PROJECT: ENHANCING THE LEGISLATIVE FRAMEWORK IN JAMAICA TO SUPPORT THE DEVELOPMENT AND IMPLEMENTATION OF A NATIONAL SUSTAINABLE CONSUMPTION AND PRODUCTION PROGRAMME TO REDUCE MARINE LITTER FROM PLASTICS

#### Stakeholder Validation Workshop February 6, 2020 Venue: Ministry of Economic Growth and Job Creation, Blue Mahoe Room

#### **Background and Introduction**

The Plastic Waste Minimization Project is a 28-month environmental management intervention which is being implemented by the National Environment and Planning Agency (NEPA). The initiative is being funded in part by the Government of Jamaica and the Japanese Government through the UN Environment International Environmental Technology Centre (IETC) Japan.

The overall objective of the project is to enhance the capacity of Jamaica to carry out integrated waste management activities and strengthen the policy and legislative framework of Jamaica to reduce and manage plastic marine litter from land-based activities in an integrated and environmentally sound manner.

Across Jamaica, specifically the Metropolitan Area, the problem of solid waste disposal and management has been longstanding, particularly for plastic and polystyrene foam garbage. Jamaica has had a history of being one of the highest per capita users of plastic bags in the world with plastic bag usage at approximately 500 bags per person in 2015, as compared to more developed countries where plastic bag usage of 170-200 bags per person are common. To this end, the government of Jamaica took a policy position to impose a ban on specific categories of plastic packaging materials which meant placing restrictions on the importation, manufacture, distribution and use of specific categories of plastic packaging materials coupled with a public education programme to ensure understanding and compliance. This ban took effect on January 1, 2019.

The primary objective of this consultancy is to enhance the capacity of Jamaica to carry out integrated waste management activities and strengthen the policy and legislative framework of Jamaica to reduce and manage plastic marine litter from land-based activities in an integrated and environmentally sound manner. The overall objective of the Regulatory Impact Assessment is to provide recommendations by taking into account the following:

- 1. Viability for a deposit/refund scheme
- 2. Banning of certain categories of plastics/packaging material/Polystyrene
- 3. Measures to support use of alternative biodegradable material including a preferred tax regime
- 4. Tax on certain classes of plastic packaging
- 5. Recycling and/or resource reuse
- 6. Sorting at source
- 7. No regulations (voluntary/self-regulatory agreements)
- 8. Keeping current regulations (no change)
- 9. Alternative regulations
- 10. Public education and information

#### The aims of the workshop are:

- 1. Present an overview of the Project
- 2. Present the preliminary findings of the Policy Options and Cost Benefit Analysis.
- 3. Seek feedback on Policy Options and Cost Benefit Analysis.
- 4. Obtain information on the assessment of compliance with the ban to date and its continuation.

The workshop agenda is presented below.

1



#### Workshop agenda

Timing	Activity	Who
08:30 - 09:00am	Registration	All
09:00 – 09.05am	Welcome and introductory remarks	NEPA – Ms. Kashta Graham, Project Manager, Plastic Waste Minimization Project
9.05- 9.30am	Presentation of the overview of the project	Dr. Theresa Rodriguez- Moodie
9.30-10.00am	Present the Policy Context and Preliminary findings of the Policy Options and Enforcement and Compliance	Mrs. Danielle Andrade-Goffe
10.00- 11.30am	Discussion	All
11.30-12.00pm	Present the preliminary findings of the Cost Benefit Analysis	Dr. Michael Witter
12.00- 12.30pm	Discussion	All
12.30-1.00pm	Wrap up	Dr. Theresa Rodriguez- Moodie

#### PLASTIC WASTE MINIMIZATION PROJECT: ENHANCING THE LEGISLATIVE FRAMEWORK IN JAMAICA TO SUPPORT THE DEVELOPMENT AND IMPLEMENTATION OF A NATIONAL SUSTAINABLE CONSUMPTION AND PRODUCTION PROGRAMME TO REDUCE MARINE LITTER FROM PLASTICS

#### Stakeholder Validation Workshop February 6, 2020 Venue: Ministry of Economic Growth and Job Creation, Blue Mahoe Room

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Plastic Waste Minimization Project:

# Enhancing the Legislative Framework in Jamaica to Support the Development and Implementation of a National Sustainable Consumption and Production Programme to Reduce Marine Litter from Plastics Generated from Land-Based Activities Regulatory Impact Assessment

# Stakeholder Consultation February 6, 2020

### Introduction

This Regulatory Impact Assessment will seek to address one of Jamaica's most prevalent environmental problems: pollution from single-use plastics, and support effective implementation measures. The RIA outlines options some of which can be adopted as hybrid approaches together or taken as singular measures.

### Discussion

Do you agree with the proposed policy objectives?	
General and ultimate policy objective of the policy option/s is <u>to prevent and reduce</u> , <u>plastic entering the environment (land, air and sea)</u>	
<ul> <li>Immediate objectives directly linked to policy option/s:</li> <li>a. Reduce the amount of single use plastic imported and manufactured in Jamaica.</li> <li>b. Improve the waste management system in Jamaica (collection and disposal)</li> <li>c. Ensure adequate waste prevention methods (recovery and reuse)</li> </ul>	
Are there other policy options or policy sub- options for meeting the policy objectives? See Table 1 below.	

	Consider impact on					
Examples of	stakeholders					
advantages and	(consumers,					
disadvantages of the	retailers, importers,					
different policy	distributors,					
options is listed	manufacturers)					
below in Table 2.						
Can you provide						
other examples?	Consider costs for					
	implementation and					
	enforcement					
	emorement					
	Consider appropriate					
	and effective					
	enforcement					
	mechanisms					
	Other?					
Consider the effective	ness in meeting objectiv	es (prevention or reduction potential). Rate the preferred options on				
a scale using Table 2 k	nelow					
Highly nosi	itive (+++)					
Moderatel	(++)					
	y positive (++)					
	• Signity positive (+)					
<ul> <li>Slightly heg</li> </ul>	gauve (-)					
• Moderatel	y negative ()					
<ul> <li>Highly negative</li> </ul>	ative ()					

OBJECTIVES	Policy Option: "No Policy Change"	POLICY OPTION: EXTENDED BAN (UTENSILS, BOTTLES, LIDS, PLASTIC BEVERAGE AND FOOD	POLICY OPTION: TAXES/ ENVIRONMENTAL LEVY	POLICY OPTION: WASTE MANAGEMENT: SORTING AT SOURCE, RECYCLING, TIPPING FEES	POLICY OPTION: DEPOSIT REFUND SCHEME (VOLUNTARY)	POLICY OPTION DEPOSIT REFUND SCHEME (LEGISLATED)	POLICY OPTION INCENTIVES FOR ALTERNATIVE MATERIALS
To reduce the amount of single use plastic imported and manufactured in Jamaica.	X	X	X				X
To improve the waste management system in Jamaica (collection and disposal)			X	X	X	X	x
To ensure adequate waste prevention methods (recovery, resuse)	X	X		X	X	x	x

Table 1 . Policy Options and Objectives

Policy Optic	on	Advantages	Disadvantages	Rating
No policy change/ Current	Ban on manufacture, importation	No associated costs to introduce new legislation or	The ban does not extend to certain single use plastics such as plastic cutlery.	
regulation	and production of plastic	for enforcement in the short term.	The ban does not prevent the importation, distribution and sale of food containers made from plastic such as Polypropylene.	
	The Environmental Levy		The ban does not include plastic bottles which is a major issue for Jamaica.	
			A public awareness campaign would be needed if the ban were extended to include other single use plastic items. This would be to ensure that importers, manufacturers and smaller retailers are able to dispose of their existing stock by the end of the mandatory phase-out period.	
			Environmental levy is no longer used to directly support recyclying initiatives.	
Direct levy/ plastics	' tax on certain	An additional tax on single use plastic items will generate more funds that can be used to support recycling or waste management initiatives. The increased costs to the consumer could result in reduced demand for single use plastics and make alternative biodegradable or reusable items more attractive.	Legislation is required to give legal effect to the imposition of the tax which will attract costs for ensuring compliance. Given the imposition of the environmental levy and the move towards a Voluntary Deposit Refund Scheme supported by plastic bottlers, this option is unlikely to receive support from affected importers and manufacturers.	

# Table 2: Policy Options

Policy Option	Advantages	Disadvantages	Rating
Solid Waste Management- Sorting at Source, Recycling, Tipping Fees	The introduction of legislation to regulate tipping fees can assist the NSWMA with enforcing this requirement. Tipping fees can offset the cost of maintaining and eventually closing the waste disposal sites when they have reached their end of life.	There are costs associated with introducing and enforcing legislation requiring tipping fees and sorting at source. This will require a mechanism to ensure collection of separated waste and to monitor compliance.	
	Legislation to support recycling, such as those that require mandatory residential and commercial sorting of waste, is likely to result in a higher percentage of plastic bottles removed from the waste stream and environment. Recycling will also support other policy options e.g. Deposit Refund Scheme		
Deposit Refund Scheme	Generally, private sector has greater	The scheme is voluntary and at the time of production of this report it did not include some	

Policy Option	Advantages	Disadvantages	Rating
	financial and	major producers of plastic bottles. This is	
	technical	significant since refunds will only be made on	
	capacities than	bottles produced by bottlers who are a part of	
	the public sector	the scheme.	
	and by them		
	undertaking the	Since this is a voluntary scheme then the	
	cost for	contributors are not legally bound to comply	
	implementation	with the DRF and decide to end their	
	this will relieve	participation.	
	the government		
	from the costs for	Enacting legislation for the deposit scheme will	
	ensuring	ensure that all bottlers have a legal duty to	
	compliance and	participate. This approach brings implications	
	enforcement.	for costs to the government to monitor	
		compliance with the legislation.	
Alternative materials	These alternative	In Jamaica, only certain products made from	
	materials provide	paper are duty free. Bagasse food containers	
	consumers with	attract a 15% duty, corn starch cutlery attracts	
	other options	20% duty, cornstarch-based PLA containers	
	than having to	attract 20% duty and biodegradable white	
	resort to using	paper drinking straws attract 20% duty. These	
	plastics. The	alternative products are already more costly to	
	more options for	produce than their plastic counterparts and the	
	alternatives, the	imposition of duties with no consideration of an	
	less plastic waste	exemption from taxes means that the higher	
	will enter the	sale costs can make these products less	
	environment.	attractive to the average consumer.	

# WORKSHOP SUMMARY DISCUSSION POINTS

The following presents key points/ questions that were raised in the workshop. The discussions have been grouped according to the Policy Session Dialogue and the Cost/ Benefit Analysis.

### Post Policy Session Discussion

Flexpak:

- Highlighted that across several other industries there are other plastic packaging which are being used are contributing similar effects to these of the plastic bags.
- These are not biodegradable plastic but thought that if we could adjust the policy to include the use and manufacturing of biodegradable plastic bags then that would be beneficial to manufacturers.
- Currently, the banned thickness forces the manufacturing of thicker plastic bags which are even harder to break down.
- For those importing thicker bags, these are heavier and increases the cost to import. Biodegradable bags are lighter and would be cheaper to import.
- What percentage reduction is the country expecting to obtain from putting in place these policies?

NSWMA:

• Mentioned the ongoing NSWMA Plastic Bottle collection pilot programme to determine the feasibility of recycling in homes.

PSOJ:

- Commented that in addition to policies put in place, locals should be encouraged to conduct research and find innovative ways to reuse plastic waste to minimize the amount that end up as garbage and in waterways.
- A cultural change is required to allow policy recommendations to be effective.
- A phasing out approach of plastic use prior to a permanent ban is needed to further ensure effective cultural change. The way it was done for the current ban provided more of a culture shock.
- Much needed infrastructure for the proper collection, disposal and overall solid waste management is needed for the entire island.
- The lack of data on the potential impact of the incorporation of alternative material can impact the country later on.
- Will the ban grow to include ALL plastic products over time? Is that even possible?
- Monitoring and enforcing is an issue across Jamaica and more funds would need to be allocated for this if people do not accept the culture change.

Vendors and Higglers Association:

• Education of the impact of improper disposal of plastic waste is needed for persons at all levels.

### SALISES:

- Indicated that targets must be set and questioned the country's goals for solid waste management, specifically plastic waste. What they plan to do with this waste?
- Is there a baseline to compare before and after for measured improvement?

### WISYNCO:

- If the country is considering recycling, what do they plan to do with the recycled plastic they have collected?
- There have been several disadvantages to the policy like the loss of jobs (their own experience) and that the impact of alternative product must be assessed, for fear that we may be trying to get rid of them for various reasons in the future.

### **Recycling Partners:**

• The country may not require alternative use of recycled plastic if they implement a waste to energy facility. This facility may use up all the waste that would have been used for recycling, etc.

### JHTA:

- Have accepted the use of alternative materials to plastics as they see the benefit to the environment. Only issue is the higher cost of these alternatives, but they chosen to absorb these costs.
- For administrative staff, meetings have become more sustainable (e.g. taking reusable water bottles instead of handing out individual plastic bottles; and foregoing the printing of meeting agenda).
- Across hotels, they have also decreased the use of bottles for soaps, shampoos, conditioners, lotions etc., instead, they have put in place dispensers.
- A study has been conducted to determine compliance across a number of hotels.

### Post Cost-Benefit Session Discussion

Flexpak:

- The cost of not having an adequate waste management program have led to the pollution issues observed within the Kingston Harbour and the lack of education of the wider public have led to the widespread solid waste dumping in gullies across Jamaica.
- There tends to be a focus of policy makers on where there is an added benefit of making money which results in a wider problem and a lack of interest in environmentally friendly initiatives that may not make a lot of revenue. However, money gains should not be the factor to influence policy makers, a cleaner environment is just as valuable.
- Without the impact of policy makers, any initiative put in place will be short lived and without legislation any recommendations or programs put in place are just suggestions to the Jamaican people that may or may not be carried out. Under law, fines and checks can be done to ensure sustainability of programs until they become second nature.

### PSOJ:

- Commented on the policies surrounding import substitution. Polystyrene and polypropylene based products (including chairs, broom sticks, etc.) are being imported each day and are often being overlooked but have the potential to cause similar damage as they take a long time to breakdown as well. The representative from the PSOJ, suggested we find economic benefits in considering ways to thermo-treated (melted and dyed), that are then remade into new products in Jamaica. Private sector may be interested in doing something like that.
- Collaboration between the University and industry personnel may be useful to discuss innovation and making it feasible.
- Initiatives like these which involve reusing plastic waste of all kinds as the raw materials for the
  output of many other products (housing frames, new chairs etc) can span cottage and large-scale
  manufacturing industries. They also have the opportunity to engage jobless persons in the
  collection of bottles and other plastics for a particular fee per pound. The domino effect of this
  can help to combat the plastic pollution issue without readily focusing on it or investing too much
  in plastic waste management.

### UNEP:

- Commented on the findings of a study carried out to determine the value of plastics. One of the main findings of the study was that marine pollution is one of the largest impacting overhead costs to the tourism industry in Jamaica.
- The impact of a photo of the Kingston Harbour going viral across the world could be very devastating on the Port Royal product that the country is trying to sell to cruise ship tourists. What is the cost of the economic impact of something that significant?

### **Recycling Partners:**

• Commented on the NSWMA Recycling pilot project and the possibility of expanding it to make it feasible. However, the cost for garbage collection and lack of technical infrastructure at the moment creates an issue. Garbage collection is a very expensive venture.
# Photographs





## Contact Info for Members of the Plastic Sub group in the JMEA

## March 16, 2020

Consultation was held via ZOOM due to COVID-19 restrictions.

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## PLASTIC WASTE MINIMIZATION PROJECT: ENHANCING THE LEGISLATIVE FRAMEWORK IN JAMAICA TO SUPPORT THE DEVELOPMENT AND IMPLEMENTATION OF A NATIONAL SUSTAINABLE CONSUMPTION AND PRODUCTION PROGRAMME TO REDUCE MARINE LITTER FROM PLASTICS

#### Framework for organizing the JMEA's vision of minimizing plastic waste

- 1. Please indicate your perspective
  - $\Box$  Retailer
  - □ Manufacturer
  - □ Importer

Other (please specify)\_\_\_\_\_

- What type of products do you import or manufacture?
   □ Plastic bottles
  - □ Plastic Packaging
  - □ Plastic straws
  - □ Plastic utensils (polystyrene)
  - Other (please specify)
- What type of plastic are those products made of?
   □ Polyethylene
  - Polypropylene
  - □ Polystyrene

Other (please specify)

4. How do the importers and manufacturers of plastic raw materials and plastic packaging see the transition to an industry that uses materials that are biodegradable, recyclable or reusable?

5. What is the revenue and employment risk to the importers and manufacturers if a future ban on the materials below used for packaging and making single-use plastic products (e.g. cups, lids, utensils) were implemented:

Material	Total value of	Total	Number of	Estimated time	Estimated
	production based on	employment,	companies	to phase out	investment needs
	the material in 2018	number of	utilizing each	this material,	to phase out this
	or nearest year, J\$	persons	material	years	material, US\$ mns
	bn				
Polyethylene					
Polypropylene					
Polystyrene					

6. Which of the measures would be easier to manage for the manufacturers – a ban or the imposition of a tax on imported plastic raw materials and plastic products?

- 7. What biodegradable or recyclable alternative materials are feasible alternatives to the plastics in the table above over the next 10 years?
- 8. How will the environmental impact of these materials compare with plastic?

9. For the biodegradable or recyclable material that seems to be the most feasible option to replace the plastics that are being used, what kind of investment programme the manufacturers would have to make this transition?

- 10. Apart from the policy certainty for 10 years what other kinds of incentives would encourage the transition?
- 11. What other policies should the government pursue to complement and support policies to manage the transition to biodegradable and/or recyclable materials to replace plastic?

- 12. Do you support any of the following policy options? Please explain
  - a. No policy change (current ban on plastics)  $\Box$  Yes  $\Box$  No

- b. Tax on certain plastics  $\Box$  Yes  $\Box$  No
- c. Introduction of solid waste management legislation:
- i. Sorting at source/recycling legislation  $\Box$  Yes  $\Box$  No
- ii. Tipping fees legislation  $\Box$  Yes  $\Box$  No

Final Reaulator	v Impac	t Assessment	- Reaulatory	/ Impact	Assessment	Research	Services
			/				

d. Deposit refund scheme (voluntary) 

Yes 
No

e. Deposit refund scheme (legislated)

g. Waste to energy plant  $\Box$  Yes  $\Box$  No

13. Please provide your views on the impact of the following possible policy options on:

\_

a. The environment

- b. Your business
- c. Consumers

Policy Option	Environmental impact	Impact on business	Impacts on consumers
No policy change/ Current regulation			
Ban on manufacture, importation and production of certain plastics			
Direct levy/ tax on certain plastics			
Solid Waste Management legislation: - Sorting at Source / Recycling - Tipping Fees			
Deposit Refund Scheme			
Incentives for alternative materials (e.g. preferred tax regime)			

Policy Option	Environmental impact	Impact on business	Impacts on consumers		
Waste to Energy Plant					

#### Summary of Meeting Notes

March 16, 2020

- Waste to Energy- will have an impact on the overall waste stream if the program was implemented. What is the master plan for Waste? If not let us figure out how to come up with a plan. The regulations around the ban appear good, but people just change from plastic to paper or from paper to a longer lasting rubber or plastic bag. But our waste management has not improved in the meantime.
- 360 degree recycling should be considered and whether it can it be subsidized.
- Private businesses appreciate policy clarity for an extended period of time so that decisions can be made. And investments can be made with certainty.
- Recycling PET is a better option than glass and aluminium.
- Use of the Environmental Levy- widen the deposit refund scheme, but government should take the lead on this. Alternatively, a rebate system should be considered to have a more sustainable action around recycling. The government should be lobbied to identify how much or what portion of the levy can be filtered back into the deposit refund scheme. Recyling of paper can also be considered for how funding can be used through the environmental levy to assist with the process.
- Third phase of the ban to be implemented next year
  - There are concerns as to how this will affect persons. The alternatives are very expensive. Manufacturers may not have a solution until 2023.
  - Caprisun have indicate that their technology will not be ready until 2023 or 2024.
  - This part of the ban needs to be reconsidered. It is not plausible to implement without having significant effects.
- Create a framework document to get the manufacturers to respond to- how it can work over the next few years. Ask the members of JMEA develop their vision as to how it can addressed. 10 year transition to more biodegradable products which could be one objective, if not recyclable so that it has a functional make them recyclable. The benefit should be that it does not go in the waste stream.

Appendix 3 – Invitation Card, List of Stakeholders, Materials for Stakeholder Consultations, Summary feedback and Photos (Workshop 2)



#### PLASTIC WASTE MINIMIZATION PROJECT: ENHANCING THE LEGISLATIVE FRAMEWORK IN JAMAICA TO SUPPORT THE DEVELOPMENT AND IMPLEMENTATION OF A NATIONAL SUSTAINABLE CONSUMPTION AND PRODUCTION PROGRAMME TO REDUCE MARINE LITTER FROM PLASTICS

#### Stakeholder Validation Workshop to Present the Findings of The Regulatory Impact Assessment on Plastics, including Polystyrene June 16, 2020

Venue: Zoom Virtual Meeting Room

#### **Background and Introduction**

The Plastic Waste Minimization Project is a 28-month environmental management intervention which is being implemented by the National Environment and Planning Agency (NEPA). The initiative is being funded in part by the Government of Jamaica and the Japanese Government through the UN Environment International Environmental Technology Centre (IETC) Japan. The overall objective of the project is to enhance the capacity of Jamaica to carry out integrated waste management activities and strengthen the policy and legislative framework of Jamaica to reduce and manage plastic marine litter from land-based activities in an integrated and environmentally sound manner.

Across Jamaica, specifically the Kingston Metropolitan Area and other urban centres, the problem of solid waste disposal and management has been longstanding, particularly for plastic and polystyrene foam garbage. Jamaica has had a history of being one of the highest per capita users of plastic bags in the world with plastic bag usage at approximately 500 bags per person in 2015, as compared to more developed countries where plastic bag usage of 170-200 bags per person is common. To this end, the Government of Jamaica took a policy decision to impose a ban on specific categories of plastic packaging materials which meant placing restrictions on the importation, manufacture, distribution and use of specific categories of plastic packaging materials coupled with a public education programme to ensure understanding and compliance. This ban took effect on January 1, 2019.

Certain types of plastics are excluded from the ban including plastic packaging for certain foods, the medical field and straws for persons with disabilities. Recognising that the ban does not cover all types of plastics and more comprehensive measures are required to adequately manage and regulate plastic pollution, the Government of Jamaica continues to explore additional feasible policy options.

The specific objective of this Regulatory Impact Assessment on Plastics, including Polystyrene is to provide policy recommendations by taking into account the following options:

- 1. Viability for a deposit/refund scheme
- 2. Banning of certain categories of plastics/packaging material/Polystyrene
- 3. Measures to support use of alternative biodegradable material including a preferred tax regime
- 4. Tax on certain classes of plastic packaging
- 5. Recycling and/or resource reuse
- 6. Sorting at source
- 7. No regulations (voluntary/self-regulatory agreements)
- 8. Keeping current regulations (no change)
- 9. Alternative regulations
- 10. Public education and information

#### The aims of the workshop are:

- 1. Present an overview of the Project
- 2. Present the findings of the Draft Regulatory Impact Assessment (RIA).
- 3. Seek feedback on the Draft RIA including the proposed preferred options.

The workshop agenda is presented below.







#### Workshop Agenda

Timing	Activity	Who
09:00 – 09.05am	Welcome and introductory remarks	NEPA – Ms. Kashta Graham, Project Manager, Plastic Waste
		Minimization Project
9.05 – 9.35 am	Brief Introduction of the project, Presentation of the	Dr. Theresa Rodriguez- Moodie
	findings of the Hot Spot Assessment and the findings of the Impact and Effectiveness of the Current Ban	
9.35 – 10.15 am	Present the Policy Context and the findings of the Cost	Mrs. Danielle Andrade-Goffe and
	Benefit Analysis and the proposed preferred Policy Options	Dr. Michael Witter
10:15 – 10.30 am	Present the Proposed Enforcement and Compliance Mechanisms for the Proposed Options	Mrs. Danielle Andrade-Goffe
10:30am–11:45am	Panel Discussion and Q&A	Moderated by Mrs. Eleanor Jones
11:45am – 12:00	Wrap up	Dr. Theresa Rodriguez- Moodie
pm		

#### Session Dynamics

- Entry to ZOOM will be closed 30 minutes after the session starts.
- As a courtesy to the group, please keep your microphone muted and camera off until it is your turn to speak.
- If you would like to speak, please click on the hand icon (Raise Hand) in the bottom menu on your screen. We will prompt you to open your microphone in the same order we receive the requests. You can also type your questions in the chat box.
- When speaking, identify yourself by sharing your full name and the name of your organization.
- Please keep your remarks short to give all participants the chance to speak.
- The Draft RIA is available on our website.

## PLASTIC WASTE MINIMIZATION PROJECT: ENHANCING THE LEGISLATIVE FRAMEWORK IN JAMAICA TO SUPPORT THE DEVELOPMENT AND IMPLEMENTATION OF A NATIONAL SUSTAINABLE CONSUMPTION AND PRODUCTION PROGRAMME TO REDUCE MARINE LITTER FROM PLASTICS

#### Virtual Stakeholder Validation Workshop 2:

Presenting the findings of the Draft Regulatory Impact Assessment on Plastics including Polystyrene June 16<sup>th</sup> 2020

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## Comments and Questions Raised at the Workshop

As best as possible, the comments below have been incorporated into this Final RIA.

<ul> <li>Suzane Stanley – JET</li> <li>Re: extending the ban and alternatives not being available - was that across the board for all proposed plastic items? I would imagine some plastic items (like utensils) are more easily replaced than others. <ol> <li>I also have a question about the enforcement of the existing plastic ban. Theresa mentioned that fines had been issued to mostly restaurants under the NRCA Act Order - which attracts a max J\$50K fine. But there's also an order under the trade act which includes a fine up to J\$2m. Under which circumstances would allow for the Trade Act to be used to enforce the ban?</li> <li>I'm a bit confused about this - isn't the DRS supposed to be coming on stream in January 2021? <a href="http://radiojamaicanewsonline.com/local/plastic-bottles-deposit-refund-scheme-delayed-unti-2021">http://radiojamaicanewsonline.com/local/plastic-bottles-deposit-refund-scheme-delayed-unti-2021</a>. Why is it still being discussed as an option?</li> <li>Doesn't Trade Act also speak to distribution? Not just importation?</li> <li>Doesn't Prade Act also proposed that they assume responsility for getting legislation for the DRS passed?</li> <li>Question from a distributor of biodegradable alternatives (on WhatsApp with me but not at the meeting): - since the styrofoam ban has taken hold there has been a flood of single-use plastic boxes on the market (type PP) - what is being proposed that figs rowing source of plastic pollution in Jamatica?</li> <li>So the reason offenders haven't been fined J\$2m for breaching the plastic ban is because NEPA, Customs and JBS can't agree which agency is to take the matter to court?!</li> <li>Waant this considered when the order was being written?</li> </ol> </li> <li>Diana McCaulay – JET</li> <li>Important to note that this tax did not result in the use of plastic bottle ban were - we did hear that this was difficult given Covid-19 but I would like to know whose opinions were gathered.</li> <li>What is meant by 'voluntary' DRS scheme? That not all bottlers/di</li></ul>	Comm	ents
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<ul> <li>There was little discussion of the serious problems facing recycling programmes all over the world, or that plastic is a fossil fuel product and its impact on climate change</li> <li>We had the experience of the environmental levy, which was imposed in the mid to late 1990s, which did not reduce the use of plastic or the amount of plastic being improperly disposed of</li> <li>I would want to know how that figure of 20% plastic recovered was calculated</li> <li>Waste to energy has been discussed for a very long time - maybe over 15 years, not sure - if it is still at a preliminary stage, I can;t see why this is still being discussed</li> <li>For Mikey Whitter - I wondered why he did not use the valuations done for Kingston Harbour or the Montego Bay</li> </ul>	_	I have the following comments or questions: I assume this is all prepartory to hearing that the DRS is going to be
<ul> <li>There was little discussion of the serious problems facing recycling programmes all over the world, or that plastic is a fossil fuel product and its impact on climate change</li> <li>We had the experience of the environmental levy, which was imposed in the mid to late 1990s, which did not reduce the use of plastic or the amount of plastic being improperly disposed of</li> <li>I would want to know how that figure of 20% plastic recovered was calculated</li> <li>Waste to energy has been discussed for a very long time - maybe over 15 years, not sure - if it is still at a preliminary stage, I can;t see why this is still being discussed</li> <li>For Mikey Whitter - I wondered why he did not use the valuations done for Kingston Harbour or the Montego Bay</li> </ul>		delayed yet again I can only express implacable opposition to this
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stage, I can;t see why this is still being discussed For Mikey Whitter - I wondered why he did not use the valuations done for Kingston Harbour or the Montego Bay		Waste to energy has been discussed for a very long time - maybe over 15 years not sure - if it is still at a preliminary
For Mikey Whitter - I wondered why he did not use the valuations done for Kingston Harbour or the Montego Bay		stage. I can't see why this is still being discussed
f of Mindey Winder of Wondered will be did not use the Valuations done for Mingston Harbour of the Mondego Bay		For Mikey Whitter - I wondered why he did not use the valuations done for Kingston Harbour or the Montego Bay
Marine Park, instead of a Cockpit Country valuation		Marine Park, instead of a Cockpit Country valuation
- For Mikey Whitter - I wondered why the costs of flooding caused by poor disposal of plastic could not be used	-	For Mikey Whitter - I wondered why the costs of flooding caused by poor disposal of plastic could not be used
- That's it from me.	-	That's it from me.
- It's not clear what is meant by voluntary scheme - I am understanding that what they mean is that it is not legislated	-	It's not clear what is meant by voluntary scheme - I am understanding that what they mean is that it is not legislated
by the state.		by the state.
- We've been talking about the NSWMA as regulator vs operator pretty much since the inception of the NSWMA	-	We've been talking about the NSWMA as regulator vs operator pretty much since the inception of the NSWMA

Comm	ents
-	USUAL story on participation. Wholly inadequate. Frankie it doesn't seem like most questions are being answered
-	'Moving towards' doing a waste characterization study???
-	I am really very concerned about what the Customs rep said, about it not being clear as to who is to lead prosecution
	using the Trade Act
_	Is that true?
	So hare we are Big fine put in place re-importation of cartain types of plastic Dromises about action Demains
-	so here we are. Big line put in place re importation of certain types of plastic. Fromises about action. Remains
	inclear now units is to happen, so it has not happened. The NKCA Act lines have LONG been known to be
	inadequate and provide no form of disincentive. It's really hard not to despair, nonestry
-	No Simon - has not worked anywhere. Too hard to establish whether things are biodegradable.
Rohan	Brown – Jamaica Recycles
-	A legislated DRS should not be lead directly or regulated by NSWMA. They have not proven to be an efficient and
	effective organization. A separately constituted entity should be established with a clear DRS regulatory mandate
_	Recommendations should be made to the Covt. for the creation of a framework whereby an annual allocation is
-	made from the Environmental Laure to rebate companies for the repurposing and requeling of plastics and other
	reavalable meteriale. This would fuel private initiative to better teakle the environmental abellanges in a more
	sustainable and aconomically predictable manner
	Sustainable and economically predictable manner.
-	ESL will you be recommending bans based on single use and biodegradable status and not necessarily specific
	items. Styrofoam food containers have been replaced by plastic ones
-	Will there be a clearer framework to pass this law for plastics and biodegradable regulations? Is banning items based
	on banning single use item or more related to ability to biodegrade.
-	Incentive for recyclers? If none, it will be dependent on value to levies will act as a fuel to incentivize persons.
Shandi	lavne Davis – Jamaica Customs Agency
-	The fine for manufacturing and is disproportionate to the fine for importation. What is the justification?
	I have the following comments or questions: Lessume this is all prepartory to begging that the DBS is going to be
-	deleved vet each Lean only express impleasely encoding to the this
	Mr. Cruischenkle comment is particent in that the referenced consideration is connectly used in contemplating teriff
-	Mr. Cruicsnank's comment is pertinent in that, the referenced consideration is approach used in contemplating tariff
	rates.
Franco	is Chalifour - WISYNCO
-	How would these new regulatory activities to be conducted by NSWMA be funded? i assume they already do not
	have enough funding to do what they are currently expected to do
_	The Policy of the Government is not to encourage funds to be earmarked. All funds are placed in the consolidated
	Fund from which allocations are made to the various MDA's
	Such a regulatory initiative will need a long term commitment, as anforcement will become a part of the behavior
-	modification avposted to influence an outcome of greater recycling rates. Einensial commitment i meen
	Concerned about funding:
-	Concerned about funding,
Aayon	Cruickshank – Ministry of Finance
-	For DanielleIn looking at the legislation, have you considered that Jamaica is a part of CARICOM and as such is
	governed by the Revised Treaty of Chaguaramas? This means Jamaica has to adhere to the CFT Structure provided
	by CARICOM So before reducing rates, we have to ensure that the our rates are within the structure provided by
	CARICOM
_	for Danielle. I have an issue with the Impact Table so illustrated. Dr. Witter outlined that the "sorting at source" is
-	costly with a very high cost/henefit ratio. However, in your Impact Table, a score of zero was given for Economic
	costry, with a very high cost benefit ratio. However, in your impact rable, a score of zero was given for Economic

#### Comments

impact and sorting at resource. I think the score should be -10 instead of zero. Why is it a negative score was not given?

- Government has an incentive regime in place for inputs and packaging material. Your team may need to explore the Productive Input Relief (PIR) regime.

#### Simon Roberts

- Must be biodegradable; must be concerned with wholistic factors of products.

Madge Ramsay

- Banning items based on specific dimension does not provide a solution

#### Anthony McKenzie – NEPA (Director – Environmental Management and Conservation)

1. Deposit Refund Scheme

Why a Voluntary Deposit Refund Scheme (DRS) with recycling as against a legislated DRS?

As proposed a more detailed analysis should have been done that would indicate \$ values to be placed on the bottles that will encourage and incentivise persons to collect and deposit these bottles.

2. *Measures to support alternative and biodegradable materials* 

The Report indicates that alternative products are unable to compete with their counterpart plastic products on the market due to their pricing. In considering this option, proposals should be made on the (reduced) level(s) of import duties that should be applicable to make the alternatives viable options.

#### Kurt Johnson - Jamaica Customs Agency (Manager, Container Freight Station)

The concerns/suggestions pertaining to the Draft document are as follows:

- 1. It is recommended that a meeting be convened among Jamaica Customs Agency, NCRA and NEPA, to establish a protocol, pertaining to all the enforcement activities involved, towards the prosecution of Importers, who have contravened the Trade (Plastic Packaging Materials Prohibition ) Order, 2018 (hereinafter referred to as the Act). Clear guidelines should be developed, indicating the steps to be taken and a determination of the Agency responsible, for initiating prosecutions.
- 2. There exists a major concern pertaining to the storage area of such seized goods, as the Customs Detention areas are devoid of the requisite capacity, to take custody of large portion of goods that may be seized pursuant to the Act. This concern further extends to the fact that goods seized, will have to be held by the custodian of the goods, pending the outcome of Court proceedings. Against that background it is imperative for a suitable storage area to be identified, in the event that the Customs Detention areas, are on the verge of being overwhelmed with such goods.
- 3. There is an addendum to the Draft document with relation to disposal procedures. There exists a concern has the document seems bereft of the fact that Court proceedings would have to be initiated and completed, before any of the seized goods could be disposed of.
- 4. Policy option 3 of the revised Draft, indicates that pursuant to Section 5 of the Customs Act, the House of Representatives would be required to pass a resolution to revoke, reduce or alter import duties, on specified biodegradable materials and products. It must be noted that Section 5 of the Customs Act, is restricted and is subject to the inherent provisions of the Common External Tariff Structure of CARICOM.
- 5. Finally, the original Draft indicates that Customs has at its disposal administrative penalties, pursuant to the Customs Act which can be used to impose penalties, on violators of the Act. However, Section 6 of the Act, expressly states that violators should be brought before a Parish Judge, to have their matters fully adjudicated upon. This provision under the Act renders the inherent penalty provisions of the Customs Act inapplicable.

#### Maria Fernandez – UNEP (Resource Efficiency - Waste Management Consultant)

Commonto
Comments
1. Glossary
Under Circular Economy:
- "recycling of resources" – Not only recycling. Suggestion: CE is an economic model in which products and materials are designed in such a way that they can be reused, remanufactured, recycled or recovered and thus maintained in the economy, along with the resources of which they are made, and the generation of waste, especially hazardous waste, is avoided/designed out and minimized, and greenhouse gas emissions are prevented or reduced, contributing significantly to sustainable consumption and production and reducing the impacts of climate change. (LAC Regional Coalition on Circular Economy - UNEP)
region instead, e.g Colombia has launched in 2018 theirs, and Ecuador has launched (today) its first phase of the White Book on Circular Economy
Under Marine Litter:
<ul> <li>Suggestion: Add definitions on marine litter land and sea-based sources. "Sea-based origin relates to litter that is directly (accidently or purposely) released into the sea by maritime activities e.g. shipping, fishing, offshore installations or dumping of refuse at sea." "Land-based origin relates to activities which cause littering directly on the coast, such as beach tourism, but can also refer to litter generated in more distant areas, such as towns and industrial sites, and blown or washed into the sea". Marine Litter Thematic Report (https://ec.europa.eu/environment/marine/good-environmental-status/descriptor-10/pdf/MSFD_identifying_sources_of_marine_litter.pdf)</li> </ul>
2. The Policy Context
Table 2-1 - Cartagena Convention: Should information of the LBS Protocol be included? Even though Jamaica is not party, its
a relevant multilateral agreement.
Morjorn Wallock – NEPA (Director, Legal & Enforcement Division)
1. Glossary
The Trade (Plastic Packaging Materials Prohibition) Order 2018 and the Natural Resources Conservation Authority (Plastic Packaging Materials Prohibition) Order 2018 also provides a definition for single use plastics:
"Single use plastic" means
Single use plastic linearis
<ul> <li>d. Single use plastic bags;</li> <li>b. Backaging made whelly or in part of expanded polystyrone forms or</li> </ul>
D. Packaging indue wholly of in part of expanded polystyrene roalin, of C. Drinking straws, made wholly or in part of polystyrene roalin, or
2 A cronyms and abbraviations
Add the Natural Resources Conservation Authority
2 Executive Summary
$\Delta$ ny legislative framework regarding the voluntary denosit refund scheme (DRS) must include the NRCA being the sole
statutory body with responsibility for the environment.
4. 2.4.1.3- Enforcement and Compliance with the ban
Amend NEPA and the Natural Resources Conservation Authority are responsible for enforcing and monitoring the Natural Resources Conservation Authority (Plastic Packaging Material Prohibition) Order 2018 (NEPA is agent to NRCA).
5. Section 5
Enforcement and compliance needs for the preferred options - it should be noted that further to the Natural Resources
Conservation (Permit and License) (Amendment) Regulations, an environmental permit is required for construction and
operation of recycling plant and facility, construction and operation of facilities for manufacturing of containers and packaging
materials including cans, boxes, cartons and plastics, the construction and operation of facilities for transportation, storage,

handling and conversion of energy from waste.

#### Comments

6. Section 5.1.1.1 – Enforcement mechanisms

Consideration should be given to the implementation of ticketable offences for breaches considered minor. This could operate in a manner similar to the regime under the Road Traffic Act.

7. Also, there are likely environmental and planning implications from the proposed activities, it is therefore recommended that any legislative framework give due authorization to officers of the NRCA/NEPA/Town and Country Planning Authority.

The limitations highlighted by the consultant has clearly impacted the quality of the document. More research and information is required to better inform the next steps.

#### EMMA LEWIS

I support the Voluntary Deposit Refund Scheme (DRS). Additionally:

Five years seems a long trial period. Would suggest a review after three years.

A major benefit would be that Government enforcement would not be required.

Public education and awareness raising MUST accompany any and all options adopted. It is absolutely critical and must be ongoing, steadily reinforcing messages. Not one or two quick "campaigns" but sustained through community education, neighborhood associations, etc. This should include the use of WhatsApp groups and social media stories eg on Instagram, Twitter chats etc.

Would suggest exploring locally available biodegradable alternatives. They do not have to be all imported. Alternatives could be sourced, manufactured (perhaps eventually exported regionally). This would encourage innovation, creativity, entrepreneurship and local jobs. Local materials eg invasive bamboo species could be used for packaging materials etc. Run a competition for the best designs – sponsored by UNEP, Branson Centre etc. Include youth (schools, university students) and entrepreneurs. But this must be scaled up to make it cost-effective and attractive to the consumer – both design and cost. There are many bright ideas out there. Definitely a reduction in taxes on raw materials (bagasse, paper, bamboo) would be desirable.

Plastic cutlery and cups must be a part of the picture.

P 25 2.4.1.1. Impact of Ban

I do not agree with delaying the third phase of the ban but if absolutely necessary (and considering COVID concerns, etc) it could be delayed until 2022 at latest.

Re: diagram on p 28, "Improve waste collection and disposal" is a critical element.

#### **POLICY OPTIONS:**

I prefer POLICY OPTION 1 and 5 – Deposit/refund scheme and Resource Re-use.

*Also* POLICY OPTION 2 – Banning of single use plastic and packaging material, including polystyrene, plastic cutlery must be included.

POLICY OPTION 3 – Alternative biodegradable material, including preferred tax regime. This would benefit manufacturers, entrepreneurs, consumers and I consider this a sustainable long term solution. However, considerable initial investment would be required (obtain financial/technical support from UNEP, IDB or other funding source to start up).

#### Comments

POLICY OPTION 6 (sorting at source) – This would encourage income generation and innovation at the local level but might be a good alternative benefiting householders and encouraging a public sorting, recycling mindset as well as the "circular economy" philosophy. Again would require initial investment but with effective neighborhood networks could be very effective. There are many global/regional models to follow. The simpler the better.

KEY STAKEHOLDERS: Must be engaged at all points...

- Vendors
- Operators of small restaurants and cook shops
- Operators of small retail outlets in shopping plazas (rural towns and cities)
- Fishermen (abandoned fishing gear is also a threat to marine environment, also poor state of many fishing beaches)
- Residents in gated communities and housing schemes (through neighborhood associations)
- Youth Police Youth Clubs, local football teams

#### **CONCERNS:**

I am rather concerned about the lack of data (eg on microplastics, a major concern)

Surprised that NO waste characterization study has been done since the ban was instituted. One cannot depend on the results of JET's Cleanup Day, for reasons stated.

Surprised that Jamaica is not a party to the London Convention (p.21)

Has the environmental levy proved effective to date? Where can we find this information? I am not keen on taxes, levies etc. As far as possible, avoid the need for Government enforcement and regulation. This is why I prefer the DRS which would be operated by private sector and would hopefully encourage entrepreneurship.

## Appendix 4- Assumptions used in the Cost/ Benefit Analysis

## Keep Current Regulations (Policy Option 8)

The table below details the costs projected over a 10-year period.

	Benefits in J \$mn (2019- 2028)									
Description	Year 1 (2019)	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
Avoided waste disposal	25.9	26.8	27.7	28.6	29.6	30.6	31.7	32.7	33.8	35.0
Avoided drain cleaning	9.8	10.1	10.5	10.8	11.2	11.6	12.0	12.4	12.8	13.2
Availability of substitute bags from retailers	1050.0	1085.7	1122.6	1160.8	2100.0	2171.4	2245.2	2321.6	2400.5	2482.1
Availability of re-usable bags	1306.9	1351.3	1397.2	1444.7	1493.9	1544.7	1597.2	1651.5	1707.6	1765.7
Availability of substitutes for foam packaging	0.0	3000.0	2500.0	2000.0	1500.0	1500	1551.0	1603.7	1658.3	1714.6
Clean environment	394.4	407.8	421.7	436.0	450.8	466.2	482.0	498.4	515.3	532.9
TOTAL Benefits (J\$ mn)	2786.56	5881. 3	5479.3	5080. 6	5585. 1	5723. 9	5918. 6	6119. 8	6327. 9	6543. 0

## Table 8-1: Benefits of Keeping Current Regulations, 2019-2028

## Ban certain plastics (Policy Option 2)

The table below summarizes the broad categories of costs and benefits that would characterize a ban on polystyrene products.

## Table 8-2: Costs and Benefits of a ban on polystyrene from year 3

Description	Year 1 (2019)	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
Description	Costs in J\$ mn									
GOJ- Compliance (Public education & Enforcement)			35.5	36.7	38.0	35.3	36.5	37.8	39.0	40.4

Manufacturers & Importers		850.0	750.0	700.0	0.0	0.0	0.0	0.0	0.0
TOTAL Costs, J\$ mn		885.5	786.7	738.0	35.3	36.5	37.8	39.0	40.4
Benefits, J\$ mn									
Manufacturers & Importers substitutes		770.0	1649.2	2616.0	2497.1	2582.0	2669.8	2629.1	2718.5
Avoided waste disposal		23.8	24.6	25.4	26.3	27.2	28.1	29.1	30.1
Avoided drain cleaning		46.3	47.9	49.5	51.2	52.9	54.7	56.6	58.5
Clean environment		170.0	175.8	181.8	187.9	194.3	200.9	207.8	214.8
TOTAL Benefits, J\$ mn		1010.1	1897.5	2872.7	2762.6	2856.5	2953.6	2922.6	3021.9

## No Regulations (Policy Option 7)

This option would begin with the abolition of current regulations. The table below summarizes the broad categories of costs and benefits that would characterize a situation with no regulations.

## Table 8-3: Costs and Benefits of No Regulations, 2021-2028

Description	Year 1 (2019)	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
Costs, J\$ mn										
GOJ										
Enforcement	-	_	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
GOJ- Public	_	_								
education			37.4	38.7	40.0	41.3	42.8	44.2	45.7	47.3
Waste	-	-								
disposal			27.7	28.6	29.6	30.6	31.7	32.7	33.8	35.0
Drain cleaning	-	-	10.5	10.8	11.2	11.6	12.0	12.4	12.8	13.2
Polluted										
environment	-	-	394.4	407.8	421.7	436.0	450.8	466.2	482.0	498.4
Retailers -										
plastic bags	-	-								
purchases			1122.6	1160.8	1200.2	1241.1	1283.3	1326.9	1372.0	1418.6
Retailers -										
Substitute for	-	-								
toam			2500.0	2000.0	4500.0	4554.0	4602 7	4650.2	1744.6	4772.0
раскаділд			2500.0	2000.0	1500.0	1551.0	1603.7	1658.3	1/14.6	1772.9
consumers -	-	-	1207.2	1 4 4 4 7	1402.0	1544 7	1507.2	1051 5	1707.0	1765 7
re-usable bags			1397.2	1444./	1493.9	1544./	1597.2	1651.5	1/0/.6	1/65./

Description	Year 1 (2019)	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
TOTAL Costs (J\$ mn)	-	-	5489.8	5091.5	4696.6	4856.3	5021.4	5192.1	5368.6	5551.2
Benefits, J\$ mn										
GOJ Enforcement	-	-	35.0	36.2	37.4	38.7	40.0	41.4	42.8	44.2
Manufacturers and Distributors - Plastic bags	-	-	2100.0	2171.4	2245.2	2321.6	2400.5	2482.1	2566.5	2653.8
Manufacturers and Distributors - foam packaging	-	-	1500.0	1551.0	1603.7	1658.3	1714.6	1772.9	1833.2	1895.5
TOTAL Benefits (J\$ mn)	-	-	3635.0	3758.6	3886.4	4018.5	4155.1	4296.4	4442.5	4593.5

# Measures to support use of alternative biodegradable material including a preferred tax regime (Policy Option 3)

The table below sets out the estimated costs and benefits of measures to support the substitution of alternative biodegradable material for current plastics.

Description	Year 1 (2019)	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
Costs, J\$ mn										
GOJ costs of implementing new taxes			0.17	0.18	0.19	0.19	0.20	0.21	0.21	0.22
Incentives to investors in alternative materials			365.0	377.4	390.2	403.5	417.2	0.0	0.0	0.0
Investment			730.0	754.8	780.5	807.0	834.5	862.8	892.2	922.5
Consumers increases prices due to taxes			499.5	516.5	534.0	552.2	571.0	590.4	610.5	631.2
Waste disposal			20.5	21.2	21.9	22.7	23.4	24.2	25.1	25.9

 Table 8-4: Costs and Benefits of Measures to Support Alternative Biodegradable Material

Description	Year 1 (2019)	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
Cleaning										
drains			7.8	8.1	8.3	8.6	8.9	9.2	9.5	9.9
Impact on the										
Environment			35.7	36.9	38.2	39.5	40.8	42.2	43.6	45.1
TOTAL Costs, J\$ mn			1658.7	1715.1	1773.4	1833.7	1896.0	1529.1	1581.1	1634.8
Benefits, J\$ mn										
Manufacturers incentives			365.0	377.4	390.2	403.5	417.2	0.0	0.0	0.0
Income from Alternatives			0.0	0.0	122.8	237.5	356.3	475.1	597.3	712.6
Government			499.5	516.5	534.0	552.2	571.0	590.4	610.5	631.2
Impact on the Environment of reduced										
plastic waste			2.9	3.0	5.0	7.1	9.3	11.6	13.9	16.3
TOTAL B <b>enefits, J\$</b> mn	0	0.0	867.4	896.9	1052.1	1200.4	1353.8	1077.1	1221.7	1360.2

## Tax on certain classes of plastic packaging (Policy Option 4)

The costs and benefits projected for ten years are detailed in the table below.

## Table 8-5: Costs and Benefits of Tax on Single-Use Plastics, 2021-2028

Description	Year 1 (2019)	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
Costs, J\$ mn										
GOJ Design and implementation of taxes			0.25	0	0	0	0	0	0	0
GOJ- Revenue Collection costs			0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25
Consumer tax burden			700.6	724.4	749.1	774.5	800.9	828.1	856.2	885.3
TOTAL Costs, J\$ mn			701.1	724.7	749.3	774.8	801.1	828.3	856.5	885.6
Benefits, J\$ mn										
GOJ Revenue collection			700.6	724.4	749.1	774.5	800.9	828.1	856.2	885.3

Description	Year 1 (2019)	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
Avoidance of waste collection costs			2.2	2.3	2.3	2.4	2.5	2.6	2.7	2.8
Avoidance of drain cleaning costs			0.8	0.9	0.9	0.9	0.9	1.0	1.0	1.0
Cleaner environment			11.1	11.4	11.8	12.2	12.7	13.1	13.5	14.0
TOTAL Benefits J\$ mn			714.7	739.0	764.1	790.1	816.9	844.7	873.4	903.1

### Deposit-Refund Scheme (DRS) for PET and HDPE bottles (Policy Options 1 and 5)

The table below presents the basic investment and operating costs for transport and for depots where collected bottles will be sorted, stored, baled and prepared for export.

## Table 8-6: Investment and Operating Costs of Transport and Depots for recycling including administration for DRS and recycling

Description	Year 1 (2019)	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
No of trucks proposed	3	9	15	18	19	20	21	22	23	24
No of trucks in the reduced <sup>68</sup> fleet	3	4	5	7	8	9	11	12	14	16
No of depots	6	9	12	15	16	17	18	19	20	21
Operating costs (including administration, excluding transport)J\$ mn,	186	239	291	348	390	436	486	541	601	667
Transportation costs, J\$ mn	13	40	66	79	84	88	93	97	101	106
Transportation cost/truck, J\$ mn	4.3	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4
Transport cost for reduced truck fleet, J\$ mn	13.0	18.3	23.3	28.8	34.8	40.8	47.6	54.3	61.2	69.2
Capital costs, J\$ mn	60	113	97	66	46	46	49	33	22	22
Capital costs with reduced truck fleet, J\$ mn	35	35	40	15	15	20	15	20	20	20
Operating+Capital costs with reduced truck fleet, J\$ mn	221	274	331	363	405	456	501	561	621	687

<sup>&</sup>lt;sup>68</sup> The reduced fleet is estimated on the basis that the number of bottles per truck in year 1 remains constant through the 10 years.

Truck costs to maintain current bottle/truck ratio, J\$ mn	5	5	10	5	5	10	5	10	10	0
Truck depreciation cost @ 10%	1.5	2	2.5	3.5	4	4.5	5.5	6	7	8
Operating costs/bottle, J\$	1.9	1.8	1.7	1.6	1.5	1.4	1.4	1.4	1.3	1.3
Capital costs for reduced truck fleet per bottle, \$	0.62	0.84	0.56	0.31	0.18	0.15	0.14	0.08	0.05	0.04
Bottles/truck, mn	32.5	14.9	11.5	11.8	13.5	15.1	16.6	18.2	19.7	21.2
Bottles/truck reduced fleet, mn	32.5	32.5	32.5	32.5	32.5	32.5	32.5	32.5	32.5	32.5
Bottles/ depot	16.3	14.9	14.4	14.2	16.0	17.7	19.4	21.1	22.6	24.2
Operating + capital costs for reduced fleet, J\$ mn	221	274	331	363	405	456	501	561	621	687
Operating +Capital+Transport costs, J mn	234	314	397	442	489	544	594	658	722	793

The table below summarizes the estimated benefits of the DRS.

Description	Year 1 (2019)	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
Unclaimed deposits, J\$ mn	553	520	488	455	423	780	716	650	586	520
Avoided waste disposal costs, J\$ mn	51	53	55	56	58	60	62	65	67	69
Avoided costs of drain cleaning, J\$ mn	129	133	138	143	147	152	158	163	169	174
Revenue from sale of bottles to recycling, J\$ mn	30	34	39	45	52	60	69	79	91	105
Aesthetic value, J\$ mn	214	221	229	237	245	253	262	271	280	289
Total Benefits, J\$ mn	875	856	839	823	809	1185	1142	1098	1059	1020

Table 8-7	Anticipated	benefits	from the	DRS	plus recycling
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## Resource re-use (Policy Option 5)

An actual cost benefit analysis could not be done for this policy option due inadequate data.

Sorting at source (Policy Option 6)

Description	Year 1 (2019)	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
Costs, J\$ mn										
Consumer garbage bin cost			4735.0	0	0	5234.6	0	0	5786.9	0
TOTAL Costs <i>,</i> J\$ mn			4735.0	0	0	5234.6	0	0	5786.9	0
Benefits, J\$ mn										
DRS additional revenue			15.6	15.0	14.9	22.5	23.0	23.7	33.1	35.0
Avoidance of drain cleaning costs			1.1	1.1	1.2	1.8	1.9	2.0	2.7	2.8
Cleaner environment			3.2	3.3	3.4	5.2	5.4	5.6	7.7	8.0
TOTAL B <b>enefits, J\$</b> mn			19.9	19.4	19.4	29.6	30.3	31.3	43.5	45.8

#### Table 8-8: Costs and Benefits of Sorting at Source

The only cost represented is the cost of a garbage receptacle/bin borne by each of the 947,000 households. For completeness, the avoided landfill costs by recycling the plastic bottles is a benefit, and the storage of the collected bottles is a cost. The assumption is that these offset each other.

## Appendix 6- Scoring Criteria

Impact	Scoring Criteria						
	C/B score						
Economic (results of the	5, if 0.5 <c b<1<="" td=""></c>						
cost/ benefit analysis)	10, if C/B<0.5 0, if C/B>1						
	Na – not assessed						
	Impact of <b>plastic on Marine Ecosystem:</b>						
	0, if no change in plastic waste						
	-5, if some increase of plastic waste						
	-10, if very large increase of plastic waste						
	5, if some decrease of plastic waste						
	10, if very large decrease of plastic waste						
	Reduction in plastic waste that ends up in waste stream:						
Environmontal	0, if no reduction						
Environmental	5, if there is some reduction						
	10, if there is significant reduction						
	Generate alternative waste that ends up in waste stream:						
	10, if large positive impact						
	5, if small to moderate positive impact						
	0, if no alternate waste						
	-5, if possible increase in alternative waste						
	-10 if significant alternative waste						
	Net loss or net gain of employment or personal income:						
	0, if no net loss or no net gain						
	-5, if possible net loss						
	-10, if definite net loss						
Social	5 if possible net gain						
300101	10 if definite net gain						
	Impact on some vulnerable group(s)						
	0, if no particular impact						
	-5, if negative impact on any vulnerable group						
	5, if positive impact on any vulnerable group						
	Requirements for enforcement						
	(-monitoring; staffing /resources for enforcement, New legislation)						
Enforcement needs/	5, if no enforcement required						
requirements	0, if existing enforcement controls are suitable						
	-5, if some enforcement required						
	-10 if extensive enforcement required						