

# Local Market Readiness Analysis for Selected Sustainable Products in Saint Lucia



*Transforming tourism value chains in developing countries and Small Island Developing States (SIDS) to accelerate more resource efficient, low carbon development*

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## ACRONYMS AND ABBREVIATIONS

ABA	Australasian Bioplastics Association
ASHRAE	American Society of Heating, Refrigerating and Air Conditioning Engineers
ASTM	American Society for Testing and Materials
BPA	Bisphenol A
BTU	British thermal units
CARICOM	Caribbean Community
CBD	Convention on Biological Diversity
CFL	Compact Fluorescent Light
COTED	Council for Trade and Economic Development
CREEBC	Regional Energy Efficiency Building Code
CROSQ	CARICOM Regional Organisation for Standards
CSME	CARICOM Single Market Economy
DTU	Technical University of Denmark
EE	Energy Efficiency
EN	European Standards
EU	European Union
FSC	Forest Stewardship Council
GHG	Greenhouse gases
GWP	Global warming potential
IKI	International Climate Initiative
ISO	International Standards Organization
LED	Light Emitting Diodes
LBSMP	Land-Based Sources of Marine Pollution
MEA	Multi-lateral environmental agreements
MICE	Meetings, incentives, conferences, and exhibits
MRA	Market Readiness Assessment
NOP	National Organic Program
ODP	Ozone depletion potential
OECS	Organisation Eastern Caribbean States
PVC	Polyvinyl chloride
SLBS	Saint Lucia Bureau of Standards
SIDS	Small Island Developing States
SLSWMA	Saint Lucia Solid Waste Management Authority
SLHTA	Saint Lucia Hospitality & Tourism Association
SME	Small, Medium Enterprises
SPP	Sustainable Procurement Policy
STAG	Stakeholder Advisory Group
SUP	Single Use Plastics
TF	Travel Foundation
TTVC	Transforming Tourism value Chain
WRAP	Waste and Resources Action Programme

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## CHAPTER ONE: INTRODUCTION

### 1.1 Background

The *Transforming Tourism Value Chains* (TTVC) project in Saint Lucia is led by UN Environment and implemented by Travel Foundation in collaboration with the Waste and Resources Action Programme (WRAP), the Technical University of Denmark (DTU), and national partners. Funded by the International Climate Initiative (IKI) of the German Federal Ministry for the Environment, Nature Conservation, Building and Nuclear Safety, the project aims to reduce greenhouse gases (GHG) emissions, improve resource efficiency and drive sustainable production and consumption patterns along the value chains of tourism sector businesses with high resource consumption.

Transforming the sector to low carbon, resource efficient operations, requires an increase in sustainable consumption and production practices by businesses and tourists achieved through coherent in-country actions. In Saint Lucia, tourism plays an outstanding role for the national economy with a direct contribution to the national GDP of 15% and an indirect contribution of 41.8%<sup>1</sup>.

The tourism and hospitality sector provide a significant source of foreign exchange and foreign direct investment in Saint Lucia. Sustainable tourism practices can make an important contribution towards conserving natural and cultural heritage resources, generating and distributing wealth equitably, empowering the disadvantaged, generating jobs and supporting infrastructure development. The sector is often under pressure to respond to guests' requirements, room setting, excursions, etc. Consequently, this may result in purchasing decisions with major environmental, economic and social impacts. Increasingly, however, these same guests are also expecting businesses not just to provide quality and value for money, but a large selection of choices, at the same time, to ensure environmental and social sustainability<sup>2</sup>.

Achieving greater sustainability in the hospitality sector relies on businesses being aware of their role in the global and local value chains. Leveraging their purchasing power by buying more sustainable goods and services can help drive markets towards sustainability, reduce the negative impacts of an organization and produce positive benefits for the environment and society. By incorporating sustainability requirements into their procurement processes, the private sector conveys a strong market signal and helps scale the market for sustainable products and services.

### 1.2 Objectives of the study and expected outcomes

The main objectives of this market readiness analysis (MRA) are to:

1. understand the supply and demand of the prioritized products and the readiness of the local market to introduce more sustainable options when those are not available in the local market;
2. assess the challenges and opportunities for suppliers of these products to sustainably meet market demands;

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<sup>1</sup> World Travel and Tourism Council, (2018), *Travel & Tourism Economic impact in Saint Lucia, 2018*.  
<https://www.wttc.org/economic-impact/>

<sup>2</sup> Source: UN Environment, 2015: *Responsible Food Purchasing – four steps towards sustainability for the hospitality sector*, available at: <http://www.scpclearinghouse.org/resource/responsible-food-purchasing-four-steps-towards-sustainability-hospitality-sector>

3. assess the challenges and opportunities for the tourism and hospitality sector to include sustainability criteria in their procurement practices;
4. define sustainability criteria for each sub-category of product and identification of existing means of verification and sustainability standards.

### 1.3 Methodology

The market readiness analysis involved the collection of both primary and secondary data, this includes:

- *Desk research.* A review and analysis of secondary sources of data from multiple sources Saint Lucia Bureau of Standards, UN Environment and available national reports on relevant topics (i.e. CHENACT report<sup>3</sup>).
- *Interviews and exchanges of information with key actors* such as voluntary hotels, main local suppliers/distributors and importers, the Saint Lucia Bureau of Standards as the accreditation and verification body, the Department of Sustainable Development, the Solid Waste Management Authority, Customs & Excise Department, the SLHTA and colleagues from other UN projects that collaborate with the TTVC project such as the *C-COOL initiative* and the *Phasing-out single use plastics*.
- *Other Primary Data Sources.* Information gathered during the assessment phase of the project and contained in different reports or collected through workshops, training needs assessment and sustainable procurement surveys.

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<sup>3</sup> Tetra Tech, *Caribbean Hotel Energy Efficiency Action Programme* (2012)  
<http://www.caribbeanhotelandtourism.com/downloads/CHENACT-Final-Report.pdf>



## CHAPTER TWO: PRELIMINARY COMPENDIUM OF SUSTAINABILITY CRITERIA AND MEANS OF VERIFICATION FOR THE IDENTIFIED PRIORITISED PRODUCTS AND SERVICES

### 2.1. List of prioritised products

The initial selection of 8 sustainable products and services categories was developed by UN Environment. The list was produced taking into account the environmental impacts of such products and services, the information provided in the country report<sup>4</sup>, particularly the hotspots analysis, and some international procurement guidelines such as the EU Green Procurement criteria. Each list contained 8 pre-selected products and services: Air conditioners and cooling equipment, lighting, fresh produce (fruits and vegetables), beef, dairy, beverages, fish and seafood products, single use plastics (e.g. toiletry, cutlery, cups, straws).

The Travel Foundation carried out an initial analysis of the list of products and services categories taking into account the hotspot analysis, the knowledge of the local consultants and the outcomes of the workshop celebrated in each country. Then, each product service category was analysed against four different criteria:

1. The demand of the product/service within the hotel sector in the country, including the potential interest of hotel in changing their procurement criteria for such products.
2. Local supply capacity.
3. Local supply from SMEs.
4. Environmental impacts.

Finally, Travel Foundation consulted different stakeholder in the country, including members of the Stakeholder Advisory Groups (STAGs). The two products categories selected that are the subject of this market readiness analysis in Saint Lucia are:

- ✓ Air conditioning equipment
- ✓ Alternatives to single use plastic items

### 2.2. Identification of sub-categories of products for the prioritised product

In this section, specific sub-categories of the two prioritised sustainable products groups are identified.

#### 2.2.1. Air Conditioning

Air conditioning in Caribbean hotels is estimated to account for 48% of electricity bills<sup>5</sup>.

Commercial air conditioning applications started due to the need to cool industrial processes. The first electrical air conditioning was invented by Willis Haviland Carrier in the year 1902. The discovery of Freon in 1928 by Thomas Midgley, Jr., a safer refrigerant to humans compared to the toxic and flammable gases such as ammonia, propane and methyl chloride, sparked the invention of air conditioning systems for residential, industrial and commercial applications.

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<sup>4</sup> UN Environment and WRAP (2019), Overview and hotspots analysis of the tourism value chain in Saint Lucia [https://www.oneplanetnetwork.org/sites/default/files/iki\\_country\\_report\\_saint\\_lucia\\_final.pdf](https://www.oneplanetnetwork.org/sites/default/files/iki_country_report_saint_lucia_final.pdf)

<sup>5</sup> United4efficiency, (2018), Caribbean Cooling Initiative (C-Cool) Concept Paper.

In 1933, the Carrier Air Conditioning Company of America developed an air conditioner using a belt-driven condensing unit and associated blower, mechanical controls, and evaporator coil, and this device became the model in the growing U.S. marketplace for air-cooling systems.

Today's air conditioners, while operating on the same fundamental science, incorporate advancements in vapor compression, diagnostics and controls, electronic sensors, materials, refrigerants, energy efficiency and more. The air conditioning market offer a wide variety of equipment and options.

Due to the high number of applications for refrigeration and air conditioning systems and the different operating conditions of those, there are many different types of refrigerants in the market. In order to evaluate a refrigerant, the following properties and characteristics need to be considered:

- Zero Ozone Depleting Potential (ODP)
- Energy Efficiency Ratio (EER) and the Seasonal Energy Efficiency Ratio (SEER).
- Energy efficiency, have high Coefficient of Performance (COP), i.e. low indirect Global Warming Impact
- Low Global Warming Potential (GWP), i.e. low Direct Global Warming Impact
- Chemically stable at all temperatures and environments, including contaminated systems
- Compatible with all materials (metals, elastomers (plastic/rubber materials), oil, including suitable miscibility/solubility with oil)
- Toxicity
- Flammability
- Low cost
- Commercially available

An important characteristic to take into account when selecting refrigerants is their Global Warming Potential (GWP) which is a measure of how much heat a greenhouse gas traps in the atmosphere up to a specific time horizon, relative to carbon dioxide. For example, R410A has a GWP of 2,088 meaning that if one kilogram is released into the atmosphere it would have 2,088 times the harmful effect of one kilogram of carbon.

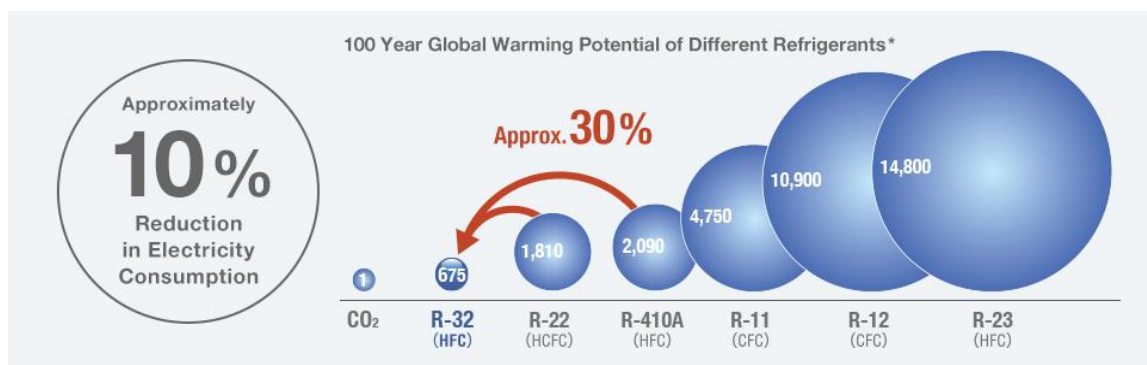


Figure 1: GWP of Different Refrigerants IPCC Fourth assessment report<sup>6</sup>

<sup>6</sup> Daikin (2019). Values for 100 year global warming potential (GWP) from IPCC Fourth Assessment Report. Comparative 100 year GWP: HFC410A, 2,090; HFC32, 675. Available at: [https://www.daikin.com/corporate/why\\_daikin/benefits/r-32/](https://www.daikin.com/corporate/why_daikin/benefits/r-32/)

The most common refrigerants used for air conditioning over the years include:

- **Chlorofluorocarbons (CFCs)**, including R12 that was the most widely used refrigerant, but due to its high potential to cause the depletion of the ozone layer has being replaced by other refrigerants. Production of new stocks ceased in 1994.
- **Hydrochlorofluorocarbons (HCFCs)**, including R22. Slightly less damaging to the ozone than R12, but also depletes the Earth's protective ozone layer and contribute to climate change. This is why R22 is being phased-out under the Montreal Protocol and banned in many countries such as Europe and US in all forms.
- **Hydrofluorocarbons (HFCs)**, including R410A and R134. With no chlorine in the mix, these refrigerants are safer for the environment and were used to replace R22. Air conditioners that run on R410A are more efficient, offer better air quality, increase comfort and improve reliability. Nevertheless, these are being targeted due to their high GWPs. A new refrigerant generation R-32 is currently receiving the most interest because R-32 efficiently conveys heat, it can reduce electricity consumption up to approximately 10% compared to that of air conditioners using refrigerant R-22. Furthermore, compared to the refrigerants widely used today such as R-22 and R-410A, R-32 has a global warming potential (GWP) that is one-third lower and is remarkable for its low environmental impact.
- **Hydrocarbons** are called natural refrigerants because they occur in the earth's material cycle, e.g. as a by-product of natural gas production, or in oil refineries. They can be very energy efficient systems and have a GWP practically 0. Propane (R290) has been discussed since the late 1980s as a replacement for CFCs and especially R22 (HCFC). Except its high flammability R290 has very similar properties as R22. It has a long history in refrigeration and is thus an interesting candidate. However, its flammability has limited its use. While isobutane (R600a) was introduced in household appliances in some parts of the world from the start of CFC phase out. R290 was introduced later and replaced R134a, R22 or R404A in a wide spectre of appliances<sup>7</sup>.

The table below summarises the identified relevant sub-categories for air conditioning systems subject of this study.

Prioritised products	Sub-Categories <sup>8</sup>
<b>Air conditioning systems</b>	Regular split AC units (speed of the compressor is fixed)
	DC Inverter split system (speed of the motor of the inverter compressor is variable) with outdoor unit connected to different types of indoor units.
	DC Inverter wall mounted split air conditioning units
	VRF (Variable Refrigerant Flow) air conditioning systems (multi-split)
	Chillers
	Hybrid air conditioning system, for e.g. using both chiller & VRF

<sup>7</sup> <https://www.danfoss.com/en-gb/about-danfoss/our-businesses/cooling/refrigerants-and-energy-efficiency/refrigerants-for-lowering-the-gwp/hydrocarbons/>

<sup>8</sup> UNEP (2010). *Alternatives to HCFCs in the refrigeration and air conditioning sector*. Available at:

<http://www.unep.fr/ozonaction/information/mmcfiles/7436-e-hcfc-alternatives.pdf>

UN Environment, Global Environment Facility & United for Efficiency (U4E) (2017). *Accelerating the global adoption of energy-efficient and climate-friendly air conditioners*. Available at: <https://united4efficiency.org/wp-content/uploads/2017/06/U4E-ACGuide-201705-Final.pdf>

	Zero Ozone and low Global Warming Potential (GWP) refrigerants
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Table 1: Sub-Categories of Air Conditioning Equipment

### 2.2.2. Alternative to non eco-friendly single use plastics

Plastic are made from synthetisation of polymers, which are made of crude oil, through complex chemical reactions. Polymers do not biodegrade they just break down into smaller pieces which means that every single piece of plastic ever made still exist, apart from a very small fraction that has been incinerated. Most of this waste is now polluting our planet, our land, our oceans, our water, and our air.

Plastic is difficult to recycle, and according to the type of plastic the difficulty increases. Despite the fact that technology exists worldwide to recycle most types of plastic, lack of infrastructure and high cost prevents the majority of plastics from being recycled, including the most widespread type of plastic, PET.

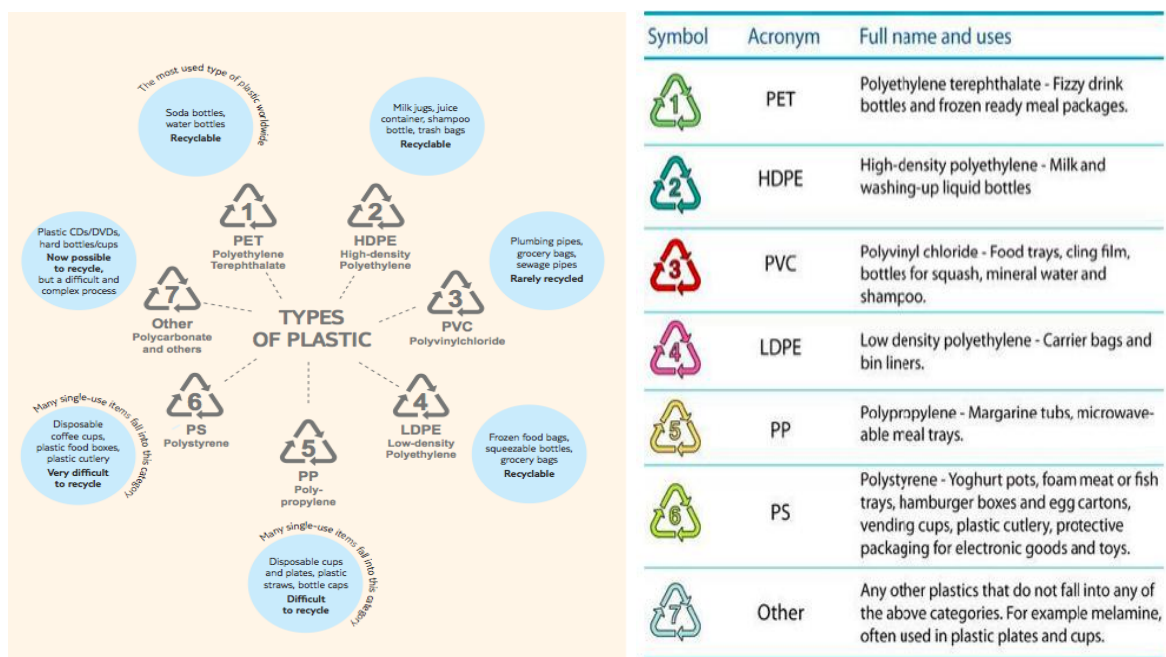


Figure 2: Type of Plastic and their Ability to be Recycled<sup>9</sup>

In Saint Lucia plastic waste accounts for an estimated 22% of national waste<sup>10</sup>.

A recent waste characterization study carried out with eight voluntary hotels by JUA KALI LTD. in collaboration with the Saint Lucia Solid Waste Management Authority under the UN Environment project 'Phasing-out single use plastics' found that plastics represents 11% of the total waste in hotels (chart 1). A total of thirty-two types of single-use items were identified during the waste

<sup>9</sup> TUI 2019, Plastic reduction guidelines for hotels  
[https://www.tuigroup.com/damfiles/default/downloads/plastic\\_reduction\\_guide.pdf-2f4f4f0e2278382fcd50d9a530985b84.pdf](https://www.tuigroup.com/damfiles/default/downloads/plastic_reduction_guide.pdf-2f4f4f0e2278382fcd50d9a530985b84.pdf)

<sup>10</sup> Saint Lucia Solid Waste Management Authority, (2017) Saint Lucia Waste Management Strategy

audit of which food packaging, plastics bags and water bottles represent the main plastic waste streams (chart 2).

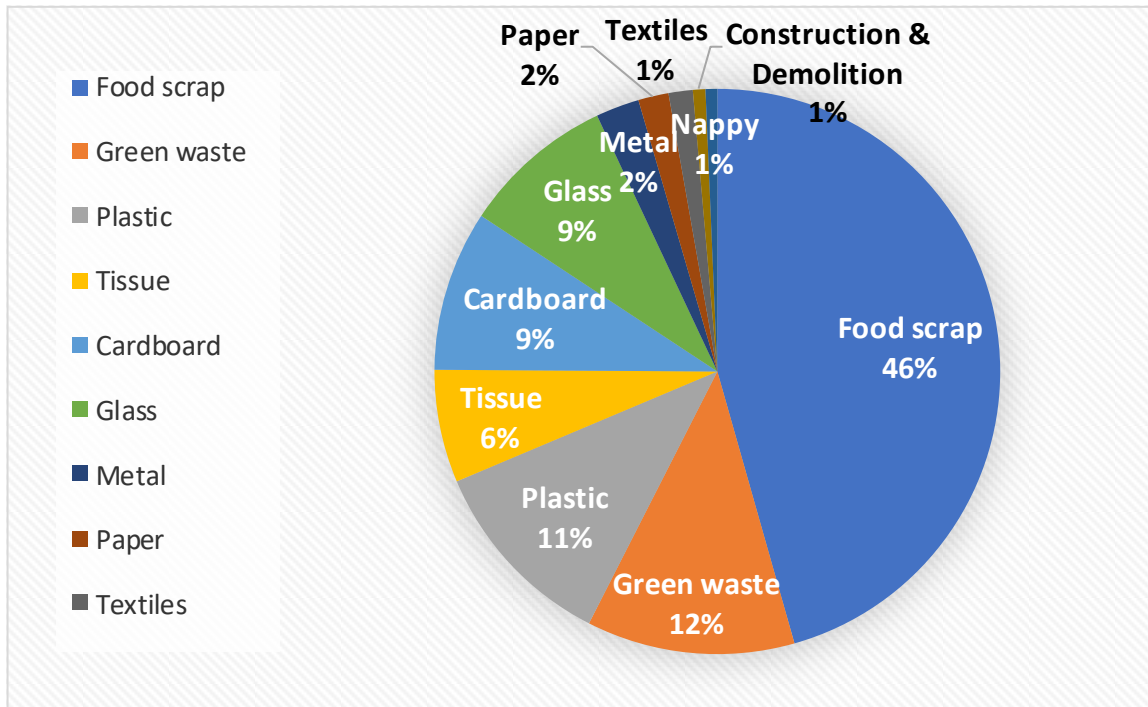


Chart 1. SLSWMA and JUA KALI LTD. waste characterization study with 8 participating hotels

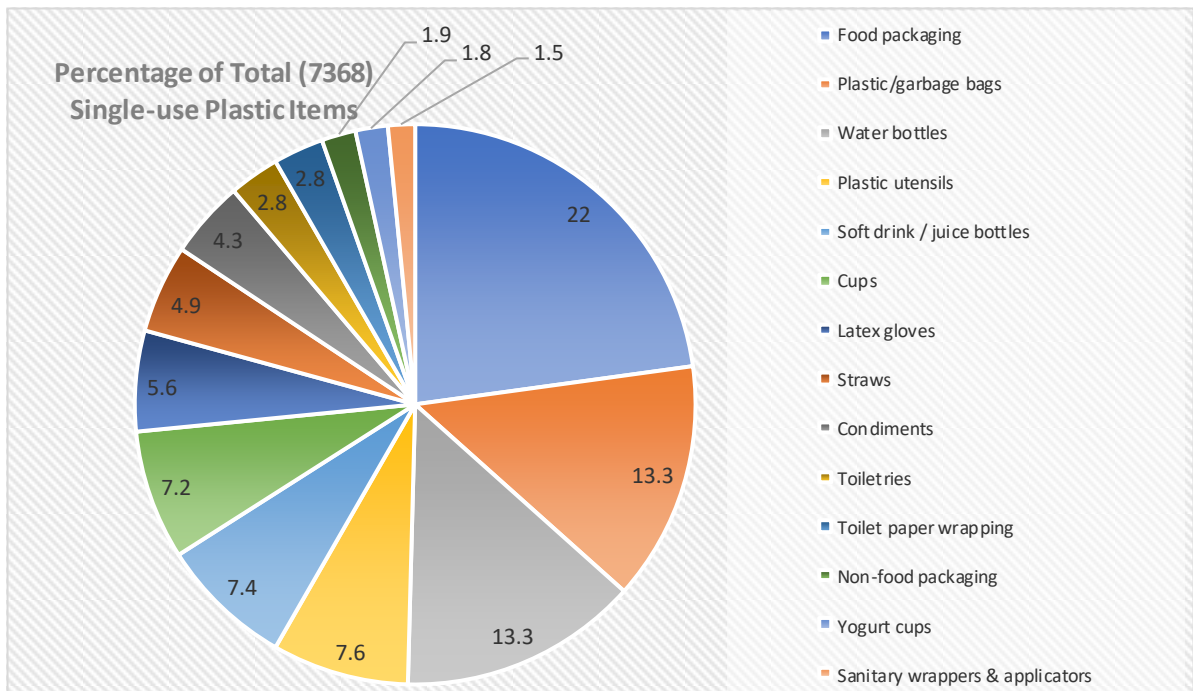


Chart 2. SLSWMA and JUA KALI LTD. plastic waste characterization study with 8 participating hotels

Recycling rate in Saint Lucia is very low. Only Approximately 16% of waste is recycled, mainly metals and oil. Private recycling related enterprises and/or individuals operate in Saint Lucia. An assessment of these recyclers was carried out by the Solid Waste Management Authority in 2013

in which 21 recyclers were identified. These recyclers collect plastic, paper, cardboard, glass, metal, e-waste, used oil, tyres, wooden pallets and used lead acid batteries<sup>11</sup>.

Nevertheless, Saint Lucia is looking at improving waste management and furthermore is joining the global fight against single-use plastic items. In 2019 the Government imposed a ban on the importation of Styrofoam through the *Styrofoam and Plastics Food Service Containers (Prohibition) Act. No. 22 (2019)*. The Act bans all Styrofoam food service containers as well as other selected plastic cups, plates and containers. Any Styrofoam and selected plastic food service containers arriving in Saint Lucia since the 31<sup>st</sup> of July of 2019 are not released by the Department of Customs and Excise. Thereafter, a ban on the importation of these products will become effective on August 1, 2020. Additionally, the government is preparing a *Management of Beverage Containers Bill*, which intends to stimulate the return of plastic and other beverage containers through a refunding scheme, expected to be enacted in 2020.

Following this trend, the Saint Lucian market is also moving towards more sustainable options and some alternatives to problematic single use plastics items can be found locally. Although the local production of alternatives is still in a very early stage and most of these items are imported from international and/or regional markets. An analysis of this is provided in chapters 3.

The table below summarises the identified sub-categories for alternatives to problematic single-use plastic items relevant in this study.

Prioritised product	Sub-Categories
Alternatives to non eco-friendly single-use plastic items	<b>BPA-free plastics</b> are plastic that do not contain bisphenol A. Exposure to BPA is a concern because of possible health effects
	<b>Biodegradable plastics</b> are plastics that can be decomposed by the action of living organisms, usually microbes, into water, carbon dioxide, and biomass. However this can only be achieved under the correct industrial circumstances and by specialist waste disposal or recycling company. Biodegradable plastics cannot be disposed of via normal recycling channels and can only be composted if they meet an appropriate composting standard. It is important to note that some but not all bioplastics are biodegradable/compostable.
	<b>Bio-based plastics</b> are plastics partly or fully made from all-natural plant materials such as corn starch, sugar cane, palm leaves. Some bioplastics are industrially compostable.
	<b>Compostable plastics</b> that can be broken down in industrial composting facilities and meet recognised compostable standard (e.g. EN13432). For many standards, independent certification bodies offer product assessment and certification services often identified by a logo such as 'OK Compost' across the EU.
	<b>Recyclable plastics.</b> Nearly all types of plastics can be recycled. However, the extent to which they are recycled depends upon technical, economic and logistic factors.
	<b>Recycled plastics</b> are items that are made from plastics that have already been recycled.
	<b>PLA (Polylactic Acid)</b> is a bio-plastic that is biodegradable however, PLA is too

<sup>11</sup> Saint Lucia Solid Waste Management Authority, (2017) Saint Lucia Waste Management Strategy

	<p>fragile and is not compatible with many packaging manufacturing processes. Therefore it should be strengthened with additives. PLA should be composted in a composting station under the right circumstances and should not end up in landfills.</p>
	<p><b>Alternative products</b> such as single-use paper or bamboo, edible straws, refillable dispensers for shower gel/shampoo/hair conditioner, shampoo bars, glass bottles, buying in bulk and using reusable bottles for hotel cleaning materials, using reusable delivery crates</p>

Table 2: Sub-Categories of alternatives to non eco-friendly single-use plastic items

It is very important to highlight that many of these alternatives need specific processes and conditions in order to be composted or degraded, and unfortunately those are not easily available in Saint Lucia. Furthermore, it is also important to highlight that some of the alternative options could have negative consequences on the environment that need to be taken into account, for example shifting to paper alternatives and/or bamboo could increase the problem of deforestation if the demand of this products increase considerably and production is not managed sustainably. Therefore, elimination when possible should be always the priority option.

### 2.3. Review of the sustainability criteria of these products sub-categories, inclusive of their environmental, social and economic characteristics

In this section, the identified sustainability criteria of each of the prioritised product are outlined. This sustainability criteria have been identified through a qualitative assessment of different sources of information such as existing internationally recognised ecolabels and voluntary sustainability standards using a *Life Cycle Thinking Approach*. The identified sustainability criteria are based on the analysis of sustainability impacts, environmental, economic and social, of the prioritised products by:

1. identifying the environmental, economic and social issues generated by the products in focus throughout its life cycle;
2. assessing the positive environmental, economic and social impacts that could be obtained through the purchase of more sustainable options;
3. finding out if the products/services in focus have appropriate schemes, standards or labels in place enabling the verification of sustainability criteria.

#### 2.3.1. Air conditioners

The following table provides a summary of the identified environmental, economic and social criteria for the purchasing of air conditioning equipment.

Environmental sustainability criteria	Economic sustainability criteria	Social sustainability criteria
<ul style="list-style-type: none"> <li>• EU Energy Efficiency Ratio (EER/SEER) -Classes (A to G) classification</li> <li>• Global Warming Potential (GWP) of the refrigerant</li> <li>• Ozone Depletion Potential (ODP) of the refrigerant</li> <li>• Noise Pollution</li> <li>• High carbon footprint linked to the imports of the AC equipment</li> <li>• Use of other natural resources, for</li> </ul>	<ul style="list-style-type: none"> <li>• Affordability/ Cost</li> <li>• Cost of electricity consumption</li> <li>• Estimated useful life</li> <li>• Maintenance costs</li> <li>• Cost of end-of life waste disposal</li> </ul>	<ul style="list-style-type: none"> <li>• Occupational safety &amp; health of workers (for e.g. some refrigerants such a R-32 is mildly inflammable)</li> <li>• Training for air conditioning technicians</li> <li>• Fair wages</li> <li>• Good labour practices and working conditions (hygiene/working hours/min wages)</li> </ul>

<ul style="list-style-type: none"> <li>e.g. chillers require higher water consumption</li> <li>• End-of-life waste disposal, refrigerant recovery and recycling of parts</li> <li>• Recyclability of parts: Refrigerant recovery and local recycling of metal and plastic parts</li> </ul>		<ul style="list-style-type: none"> <li>• General health and safety of residents e.g. fire due to poorly maintained AC, refrigerant leakage etc.</li> </ul>
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Table 3: Sustainability Criteria for Air Conditioning Systems

### 2.3.2. Alternatives to single use plastics

The following table provides a summary of the identified environmental, economic and social criteria for the purchasing of alternatives to non-eco-friendly single use plastics.

Environmental sustainability criteria	Economic sustainability	Social sustainability criteria
<ul style="list-style-type: none"> <li>• Raw material source – Sustainable sourcing of materials and feedstock, fair trade</li> <li>• Use of renewable energy in the production/manufacturing</li> <li>• Carbon Footprint: Imports of products have higher carbon footprint</li> <li>• Pollution: no bisphenol A (BPA) release in landfills, reduced ocean pollution</li> <li>• Recyclability: recycling and composting</li> <li>• Biodegradable</li> <li>• Compostable</li> <li>• Fair trade and sustainable practices of manufacturer of alternatives (e.g. bamboo plantations)</li> <li>• Bulk Purchase and reduced packaging</li> </ul> <p>Waste disposal: Decreased waste to landfills</p>	<ul style="list-style-type: none"> <li>• Affordability / cost</li> <li>• Estimated useful life</li> <li>• Cost of end-of life waste disposal: less pressure on municipal waste collections and landfill</li> <li>• Impact on the marine ecosystem and ocean pollution</li> </ul>	<ul style="list-style-type: none"> <li>• Fit-for-purpose</li> <li>• Job creation</li> <li>• Fair labour practices and fair trade</li> <li>• Health and safety: less harmful to human health</li> <li>• Less effect on the world’s fish supply and increased livelihood of fishermen</li> </ul>

Table 4: Sustainability Criteria for Alternatives to Single-Use Plastics

### 2.4. Identification of available means of verification for the sustainability criteria

Products properties and attributes are complex and subsequently their potential environmental impacts. Environmental standards and ecolabels aim to define and communicate to distributors, suppliers and buyers those impacts in a clear manner in order to equip them with the necessary information to enable them to make the right choice according to their needs.

This section presents the available means of verification identified for Saint Lucia for the prioritised products and sub-categories. These includes nationally and internationally recognised ecolabels, voluntary sustainability standards, basic information required by law, laboratory tests, and product declarations, which can serve to verify the sustainability attributes of the prioritised products.



### 2.4.1. Labels and standards for air conditioning

CARICOM Regional Organisation for Standards and Quality (CROSQ) is pursuing regional standards on eco-labelling for electrical cooling appliances and lighting devices and fixtures. Table 5 below outlines the Energy Efficient Labelling Standards developed to date by the **Saint Lucia Bureau of Standards (SLBS)** as of today.

Standard Identification	Description
SLNS 93: 2015	Specifications for Energy Efficient Labelling of Air Conditioners (domestic and for similar purposes – window, room, split units);

*Table 5: Energy Efficient Labelling Standards for Electrical Appliances*

This national standard specifies the method of classification of energy efficiency for air condition units used for domestic and similar purposes. The standard also specifies the test methods to be utilised and the features of the energy efficiency label. This National Standard is applicable to all air conditioner types (window, room or split units), with a capacity up to 10 kW (34,121.420 BTU/h).

The standards used by the Saint Lucia Bureau of Standards to verify sustainability criteria for air conditioning in the absence of national standards correspond with the European and international standards.

The **EU Energy Label** is an energy consumption labelling scheme established by EU Directive 92/75/EC initially introduced in 1994. With a comparative scale from Class A (green, most efficient) to G (red, least efficient), the concept has been a key driver in helping consumers choose products which are more energy efficient while reducing greenhouse gas emissions. Similarly, it encourages manufacturers to drive innovation by developing more energy efficient technologies.

As appliances have become increasingly energy efficient, they are therefore ranked within the A+, A++ and A+++ grades. Given the confusion created to consumers, the decision has been taken to phase out these rankings over the next few years. The new grading system will revert back to the A to G rankings (without the A+, A++ and A+++). Yet, this scale will run alongside the current grades for some time until completely phased out and the new labels will be visible as from 1st of March 2021.

**International Standards Organisation (ISO)** standards and certification for air conditioning **ISO 5151:2017** has been adopted by most countries as a reference test standard for measuring air conditioners’ cooling capacity and efficiency. However, not all economies are aligned with ISO 5151:2017, and some differences remain between test methods. Saint Lucia is a full member of the International Standards Organisation (ISO) and can therefore adopt the ISO standards on its own.

The **Energy Efficiency Ratio (EER)** and the **Seasonal Energy Efficiency Ratio (SEER)** are commonly used to rate the energy efficiency of air conditioners.

- The EER is the ratio of the cooling capacity and the power consumed when measured at full load (i.e. measures efficiency at a single point—the maximum cooling capacity or the design point).

- The SEER is designed to rate part-load performance (i.e. efficiency is measured considering variations in the outdoor air temperature and the effect of the cooling load). Alternatively known as the cooling seasonal performance factor (CSPF), the SEER represents the expected overall performance of an air conditioner for a typical year’s weather in a given location.

Countries adopt an EER or an SEER metric based depending on the local context (climate, market share of inverter air conditioners, verification testing requirements, among others).<sup>12</sup>

The **Coefficient of Performance (COP)** is a measure of the amount of power input to a system compared to the amount of power output by that system. The COP is therefore a measurement of efficiency; the higher the number, the more efficient the air conditioning system is.

In Saint Lucia there are incentives of 0% duties on energy efficient equipment based on the Energy Efficiency Ratio EER and the Coefficient of Performance COP (4 and above).

Table 6 summarizes the available means to verify the sustainability criteria for air conditioning equipment presented in section 2.3.1.

Sustainable product	Criteria type	Criteria	Ecolabel/ certification
Air conditioners	Environmental sustainability criteria	Energy efficiency	<p>National standard:</p> <ul style="list-style-type: none"> <li>• SLNS 93: 2015 Specifications for Energy Efficient Labelling of Air Conditioners (domestic and for similar purposes – window, room, split units);</li> </ul> <p>EU Energy efficiency labelling:</p> <ul style="list-style-type: none"> <li>• EU energy label Average annual energy consumption:</li> <li>• EU No 206/2012: Coefficient of Performance (COP); Seasonal Energy Efficiency Ratio (EER/ SEER)</li> </ul> <p>International Standards Organisation (ISO) standards and certification for air conditioning:</p> <ul style="list-style-type: none"> <li>• ISO 5151:2017 (determine capacity and efficiency ratings of air-cooled air conditioners and air-to-air heat pumps)</li> <li>• ISO/TC 86 (standards for refrigeration and air conditioning)</li> <li>• ISO 5149:2014 (Refrigerating systems and heat pumps)</li> <li>• ISO 13253:2017 (Ducted air-conditioners and air-to-air heat pumps)</li> <li>• ISO 15042:17 (Multiple split-system air conditioners and air-to-air heat pumps)</li> <li>• ISO 16358:1:2013: Air-cooled air conditioners and air-to-air heat pumps</li> <li>• ISO 14001:2015 (Environmental</li> </ul>

<sup>12</sup>UN Environment Programme, GEF & U4E (2017) “Accelerating the global” (See Chapter 2, footnote 3)

Sustainable product	Criteria type	Criteria	Ecolabel/ certification
			management system that a company can use to enhance its environmental performance)
		Noise level	<ul style="list-style-type: none"> <li>• EU Energy Label: Sound pressure <math>\leq 32</math> dB (A) (refrigerators); Sound power <math>\leq 42</math> dB (A) (refrigerators);</li> <li>• EU No 206/2012; Sound power in dB (A) level for rated capacity is within requirements (indoor and outdoor)</li> </ul>
		Refrigerant	International Standards in Refrigeration and Air-Conditioning (UNEP) <ul style="list-style-type: none"> <li>• Zero Ozone Depleting Potential (ODP)</li> <li>• Low Global Warming Potential (GWP)</li> <li>• Level of flammability and toxicity of refrigerant</li> </ul>
	Economic sustainability criteria	Affordability/ Cost	EU Energy efficiency labelling
		Estimated useful life	
	Social sustainability criteria	Health and safety of workers	ISO 26000 guidance standard on social responsibility Fairtrade  Occupational Health and Safety Act. 1995
		Training	
		General working conditions (hygiene/working hours)	
		Job creation	
		Fair labour practices	

Table 6: Overview of Certification Schemes to Enable Verification for the Sustainability Criteria of Air Conditioning Equipment

#### 2.4.2. Labels and standards for alternatives to single use plastics

Sub-categories for alternatives to single-use plastics include a wide variety of items made from many different materials and with different characteristics. Industry standards have been developed to help evaluate those characteristic and properties establishing minimum requirements in order to be classified as recyclable, compostable, biodegradable, etc.

As of yet there are no national standards developed in Saint Lucia for these types of products. This section provides an overview of the international standard and guidelines adopted by the Saint Lucia Bureau of Standards (SLSB) to evaluate the sustainability criteria corresponding to single-use plastics that can be used in Saint Lucia to help consumers understand the product they are buying.

**ASTM International Standards (ASTM)** is an international standards organisation that develops and publishes voluntary consensus technical standards for a wide range of materials, products, systems and services. Biodegradable plastics under specific composting conditions or compostable plastics can be certified under ASTM D6400-12. The latter is used for labelling of plastics designed to be aerobically composted in municipal or industrial facilities.

**European bioplastic standards.** If bioplastics have proven their compostability according to international standards, they can be treated in industrial composting plants. Plastic products can provide proof of their compostability by successfully meeting the harmonised European standard,

EN 13432 or EN 14995. These two standards define the technical specification for the compostability of bioplastics products:

- **EN 13432:2000** Packaging: ‘Requirements for Packaging Recoverable through Composting and Biodegradation—Test Scheme and Evaluation Criteria for the Final Acceptance of Packaging’. The standard EN 13432:2000 covers the requirements for packaging recoverable through composting and biodegradation and test scheme and evaluation criteria for the final acceptance of packaging. Its scope is specifically composability and anaerobic digestibility of packaging. In addition, **EU No 10/2011** standard pertains to regulations on plastic materials and articles intended to come into contact with foods.
- **EN 14995:2006** Plastics: Evaluation of compostability. Test scheme and specifications. It broadens the scope of plastics when used in non-packaging applications. The EN 13432 applies when plastics are used for packaging.

The **International Standards Organization (ISO)** has also developed **ISO 17088**, ‘Specification for Compostable Plastics’ which is the equivalent of the European and US standards. Additionally, the SLBS is in the process of adopting **ISO/TS 22002-4** which specifies requirements for establishing, implementing and maintaining prerequisite programmes (PRPs) to assist in controlling food safety hazards in the manufacture of food packaging.

The **Forest Stewardship Council (FSC)** is a label that provides a credible link between responsible production and consumption of forest products enabling consumers and businesses to make informed purchasing decisions that benefit people and the environment. This standard can be used as reference for wooden/bamboo/paper articles to be used as substitutes to single-use plastics such as paper or bamboo straws, biodegradable food trays and take-away cartons among others.

Table 7 summarises the available means to verify the sustainability criteria for alternatives to single use plastic products presented in section 2.3.2.

Sustainable product	Ecolabel/ standard/ certification
Alternatives to single use plastics	<ul style="list-style-type: none"> <li>· <b>ASTM D 6400</b> labelling of plastics designed to be aerobically composted in Municipal or Industrial Facilities.</li> <li>· <b>ISO 17088</b> specifications for compostable plastics</li> <li>· <b>ISO/TS 22002-4</b> Specifications for controlling food safety hazards in the manufacture of food packaging</li> <li>· <b>EN 13432/14995</b> Packaging waste directive and standards for compostability</li> <li>· <b>EU No 10/2011</b> on plastic materials and articles intended to come into contact with food</li> <li>· <b>Forest Stewardship Council (FSC)</b> certification responsible approach to purchasing wood or fibre based products.</li> </ul>

Table 7: Overview of Certification Schemes to Enable Verification for the Sustainability Criteria of Alternatives to Single Use Plastics

## CHAPTER THREE: ANALYSIS OF SUPPLY

This section aims to assess the capabilities of the local market to supply the products in focus and analyse the potential threats and/or opportunities for the local economy. This has been done by:

- mapping the main suppliers and products within these two categories supplying to the hotel sector;
- identifying supply constraints of the selected products to the hotel sector;
- identifying the main barriers and opportunities for suppliers from the introduction of more sustainable options in the local market.

### 3.1 Supply Analysis of Air Conditioning Equipment

#### 3.1.1. Identification of the level of availability and the market share of air conditioning equipment.

There is no local production of air conditioning units in Saint Lucia, therefore these products are imported mostly from China, Japan and Malaysia.

According to information provided by the Department of Customs, air conditioning equipment currently imported in Saint Lucia varies widely. This includes split units, split wall units, window units, inverter units, central air conditioning units, portable air conditioners, and some of those are second-hand equipment.

This information was contrasted with the information provided by the suppliers interviewed. Of the subcategories of air conditioning equipment identified in section 2.2.1, the following are available in Saint Lucia.

Prioritised products	Sub-Categories available in Saint Lucia
Air conditioning systems	Central air conditioning
	Regular (fixed speed) split air conditioners
	DC Inverter split air conditioners
	DC Inverter wall mounted split air conditioners
	VRF (Variable Refrigerant Flow) air conditioning systems (multi-split)
	Chillers
	Solar hybrid air conditioning system (uses solar energy for heat exchange therefore less power is needed).

Table 8: Main Air Conditioning equipment subcategories in Saint Lucia

The most widely purchased air conditioning system by most sectors is the *wall mounted split unit*. Both fixed speed (simply turn on and off to modulate cooling) and inverter type (capable of more smoothly and efficiently varying cooling output to adjust to thermal demand) units are being sold and used with a growing movement towards inverter technology, especially in the tourism/hotel sector as well as in the business community. Significant growth in inverter-type units has been recorded over the last 5 years confirming a growing trend towards more

efficient cooling technologies. However, there remains some concerns about the responsibility of providers regarding promised savings, and after-quality sales service in Saint Lucia<sup>13</sup>.

### 3.1.2. Description of the market players involved

The market of AC in Saint Lucia is comprised by at least ten local suppliers. The brands and type of AC units supplied by those are listed in table 9.

Company	Main Brands	Type of AC units
SGD Engineering Inc 4525185	DAIKIN Peake	Inverter Split
MUFF Refrigeration & Air Conditioning 4522874	LENNOX DAIKIN Carrier	Inverter Split Regular Split air conditioners
Power Cooling & Construction Services 4505405 7161455	LENNOX	Inverter Split Regular Split air conditioners Multi Split Central Air Conditioning
R.A.C. Masters 4580773	OTEC OMEGA	VRF Inverters Solar Hybrid Conditioners Inverter Split Regular Split air conditioners Multi Split
Paul’s Refrigeration Services 3843186	Various types; mainly installations, services & repairs;	-
Allied 4525456	Delta TGM	Inverter Split Regular Split
M & C Home Depot 4588300	DAIKIN	Inverter Split Regular Split
Courts Saint Lucia	Master Tech LG Whirlpool Samsung	Inverter Split Regular Split
Johnsons Hardware Ltd.	Daiichi	Inverter split
Massy Stores	Frigidaire Westinghouse	Inverter split

Table 9: Main Importers and Suppliers of Air Conditioning, Brands and Types

Many of these products are imported directly from suppliers in China and do not have energy labelling on the units. Furthermore, some units have been found to be three-times cheaper to purchase than when importing comparable units from US suppliers. Some independent technicians argue that the brands are not just cheaper, their quality is actually inferior and will not sustain the “test of time”. Most China-direct suppliers require bulk buying and the local buyer is generally recognised as the brand representative within Saint Lucia’s market<sup>14</sup>.

<sup>13</sup> Saint Lucia Sustainable Development Department, Draft National Colling Strategy

<sup>14</sup> Saint Lucia Sustainable Development Department, Draft National Colling Strategy

According to the suppliers interviewed and discussions with technical operatives, most common used refrigerants in AC equipment sold in Saint Lucia are R410A and R134. Some have the new refrigerant R32. Older equipment still uses refrigerant R22, these are equipment of brands such as Aukia, Innovair, Atlantis and older Panasonic models.

Hydrocarbons are starting to penetrate into the market in the Caribbean region, specifically in Grenada for smaller capacity AC units and perhaps other Caribbean countries amidst rapid growth in the world, particularly India and China which export to the Caribbean region. Although, there are still issues in terms of safety classification and workforce capacity building.

One of the main local suppliers was interviewed for this report. It is the main supplier of the Daikin brand, the second most popular AC brand from Japan and one of highest energy efficiency label in the global market. The supplier only distributes the inverter split AC units of this brand and states that there is a growing demand for these units and product availability is guaranteed. Its products are sold in equal proportion to hotels, Government and private consumers.

This supplier doesn't have a sustainable purchasing policy in place, however the company indicated that it is committed to environmental protection as part of their corporate social responsibility policy and efforts are being made to make the transition to more sustainable operations and products and to keep updated with new technologies. The key considerations to select AC units for their catalogue are:

- Cost to customers
- Energy efficiency
- Potential environmental impact
- Future maintenance cost to customers
- Availability of supply
- Profitability
- Corporate Social Responsibility

Technicians are trained to provide after sales support to customers. Normally, official product distributor ensures its technical team is well trained to provide after sales support to consumers. Technical training is typically provided either by the seller, in this case Daikin, or authorized training prescribed by Daikin.

It is likely that sustainable purchasing policies and/or environmental management systems are not widely adopted by local suppliers in Saint Lucia, although corporate social responsibility policies are more common and there is an increasing adoption of environmental policies.

### **3.1.3. Identification of the main obstacles limiting the supply of more sustainable AC units**

The main obstacles identified limiting the supply of more sustainable AC units in Saint Lucia are:

- **Higher prices** of more efficient options. Most customers prioritise economic criteria rather than environmental criteria, and therefore end-up choosing the more economic options in the short-term. According to suppliers, it is challenging to convince customers to opt for

more efficient and sustainable options if the price difference is high even if in the long-term they will result more economic.

- **Absence of regulations** on minimum energy efficiency criteria. Currently, there is no regulation in Saint Lucia that establish minimum energy requirement for equipment imported in the island, therefore importers and buyers can acquire and introduce equipment not certified, inefficient and even second hand for lower prices.
- **Lack of knowledge** of installing and servicing new equipment with more efficient technology by hotel maintenance staff. Furthermore, new efficient technologies are believed to lead to higher cost in maintenance. This influence hotels to buy equipment that they are familiar with and can be serviced internally.
- **Lack of knowledge and awareness.** Whilst there is interest in Saint Lucia to retrofit and improve efficiency of cooling equipment, technology moves fast and there is a need to maintain the hotel sector and its suppliers up to date in what are the most efficient available options at the moment taking into account crucial criteria such as Zero Ozone Depleting Potential (ODP), Energy Efficiency Ratio (EER), etc. before making any investment.
- According to the **Montreal Protocol Act**, licenses are required to purchase certain refrigerants and annual quotas are in place based on Saint Lucia's phase-out schedule. This may therefore affect also the supply and demand of units.

Other barriers identified in the CHENACT<sup>15</sup> report include:

- Hoteliers are unlikely to borrow commercially for energy efficiency and renewable energy investments, preferring investments that increase revenue potential, including marketing.
- Hoteliers are uncertain about the stated energy savings and payback potential of new investments. Many energy efficiency technologies have been introduced in the Caribbean over the past decade, however, poor quality products have left hoteliers sceptical of the performance and product lifetime claims of manufacturers and distributors. This has resulted in hoteliers discounting the reported savings potential and payback period.
- With the exception of larger hotels with experienced engineering staff, hoteliers believe they don't have the in-house technical expertise to operate new, sophisticated energy efficient and renewable energy technologies. Among those that have implemented new technologies, failure to put in place preventative maintenance has resulted in reduced equipment life and system performance.

#### **3.1.4. Analysis of the potential threats and opportunities for the local production which could arise from the introduction of these procurement criteria in the procurement of goods/services of local hospitality stakeholders and the compliance with an ecolabel scheme.**

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<sup>15</sup> Tetra Tech, *Caribbean Hotel Energy Efficiency Action Programme* (2012)  
<http://www.caribbeanhotelandtourism.com/downloads/CHENACT-Final-Report.pdf>



The market in Saint Lucia comprises a range of different brands with varying efficiency options where usually the cheaper units are the less efficient. Efficient and certified AC equipment are available in Saint Lucia, the issue is the availability of inefficient and non-certified equipment for lower prices due to the lack of regulations.

Whilst efficient and certified AC units are more economic options in the long/medium-term, due to the recovery of the investment with the savings in energy cost, consumers tend to focus on short term price savings resulting in reduced demand for more energy efficient AC's.

Saint Lucia is currently developing a cooling strategy that aims to introduce regulation in the market. Introducing regulation and legislation that establish minimum criteria and provide incentives would rapidly drive the market towards more sustainable products. At the same time, awareness and education on the benefits of investing in more efficient options is crucial to increase the demand of efficient products.

Local suppliers and distributors will need to update their catalogues phasing out equipment that do not meet minimum criteria to meet the market demand and upcoming regulations. This could be an opportunity for them to compete with international suppliers by providing locally what hotels demand and need to import from other markets.

The introduction of new technologies will require suppliers to ensure technicians are trained adequately and can provide quality and safe service, improving knowledge and skill of local installers and technicians.

With regards to the storage of flammable refrigerants such as R-32 and hydrocarbons (e.g. propane) controls and trained personnel for safe handling of these refrigerants in the maintenance and operation sector are needed. An appropriate occupational health & safety regulatory framework as well as skilled technicians for handling of the refrigerants, are therefore required.

In Saint Lucia, training to technicians on the safe handling of flammable refrigerants is being delivered under the UNIDO regional demonstration project on flammable refrigerants. There is a need to increase these efforts and train more technicians. A certification programme also needs to be explored (i.e. certify technicians for the installation and maintenance of flammable technologies).

### **3.2. Supply Analysis of Alternatives to Problematic Single Use Plastic Items.**

#### **3.2.1 Identification of the level of availability and the market share of the products in focus in the country.**

Alternatives to single-use plastics for the hospitality industry have steadily increased over the past few years.

In Saint Lucia there is no domestic production of biodegradable, compostable or recyclable single use plastics items. The majority of these products are usually imported from the US and China such as compostable and biodegradable containers from sugarcane and bamboo. Some companies also import from Caribbean countries such as Dominica, Barbados and Trinidad. Nevertheless, some substitutes such as bamboo straws, stirrers, cups and coconut utensils are produced locally in small quantities.

Of the sub-categories mentioned in section 2.2.2., the majority can be found in Saint Lucia as imported by local suppliers. Exception are recyclable and recycled items as they will be registered at Customs as plastic items and some of them have been banned such as plastic cups.

Prioritised products	Sub-Categories <sup>16</sup>
Alternatives to Problematic Single Use plastics	<b>Biodegradable Plastic:</b> Plastics that break down in a defined period of time. However, this can only be done successfully under the correct industrial circumstances and by a specialise waste disposal or recycling company.
	<b>Bio-based Plastics:</b> type of biodegradable plastic made from all-natural plant materials e.g. corn, bamboo.
	<b>PLA (Polylactic Acid)</b> is a bio-plastic that is biodegradable however, PLA is too fragile and is not compatible with many packaging manufacturing processes. Therefore, it should be strengthen with additives. PLA should be composted in a composting station under the right circumstances and should not end up in landfills.
	<b>Compostable plastics:</b> Plastics which can be broken down in industrial composting facilities that meet a recognised compostable standard.
	<b>Alternative products</b> (i.e. bamboo straws, refillable dispensers for shower gel/shampoo/hair conditioner, shampoo bars, glass bottles).

Table 11: Categories of Alternatives to Problematic Single Use plastics Consumed in Saint Lucia

### 3.2.2. Description of the market players involved in the market segments considered

There are at least six major suppliers that provide alternatives products to replace problematic single use plastic items in Saint Lucia. Table 12 below list these suppliers identified and the main products they provide:

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<sup>16</sup> The TUI Group Sustainability Team (2019). *Plastic Reduction Guidelines for Hotels* available at [https://www.tuigroup.com/damfiles/default/downloads/plastic\\_reduction\\_guide.pdf-2f4f4f0e2278382fcd50d9a530985b84.pdf](https://www.tuigroup.com/damfiles/default/downloads/plastic_reduction_guide.pdf-2f4f4f0e2278382fcd50d9a530985b84.pdf)

Company	Main Products
<b>Atwell Dagleish</b>	Bio based plastics, recyclable plastics, recycled plastics, biodegradable cups and cutlery, sustainable paper (fibre) food packaging, bamboo products
<b>Blue Waters Distribution</b>	Bio based plastics, recyclable plastics, recycled plastics, biodegradable cups and cutlery, sustainable paper (fibre) food packaging, bamboo products
<b>PCD Distribution</b>	Biodegradable cups and cutlery, bamboo products, recycled plastics, recyclable plastics, sustainable paper food packaging
<b>S &amp; S Distribution</b>	Biodegradable cups and cutlery, bamboo products, recyclable plastics
<b>Ramco Plastics Ltd.</b>	Compostable plates and bowls, PLA cold cups and lids, compostable hot cups and lids, compostable trays, cup holders, cutlery, paper and PLA straws, bamboo, stirrers, bio containers
<b>Ecowares</b>	Plant based products: food containers, cups, soup containers, cutlery and straws.

*Table 12: Main suppliers and alternatives to SUP in Saint Lucia.*

In addition, other retailers import these types of products for sale within their respective establishments such as Massy Stores. The range of products available from Massy Stores include:

- Recyclable Plastics;
- biodegradable cups and cutlery;
- bamboo products;
- sustainable paper (fibre) food packaging.

One of the main suppliers of alternatives to single use plastics was interviewed for this study. They provide a wide range of products. With the exception of small quantities sold to other retailers, most of the products are sold to hotels. These products are listed below:

- Bio based plastics;
- recyclable plastics and recycled plastics;
- biodegradable cups and cutlery;
- sustainable paper (fibre) food packaging;
- bamboo products.

The supplier confirmed that the prices of these products are generally higher in comparison to the problematic disposable plastics still available in the market. They try to remain up to date with new products in the market. Key considerations to import products for their catalogue are:

- **Cost to Customers.** Potential final selling price to its ultimate consumer as this is the main criteria hotels will prioritize.
- **Profitability.** Ensure that products can be sold at a profit.

- **Potential Environmental Impact.** Products that are more environmentally friendly are prioritised in an effort to support emerging environmental concerns and adapt to market demands.
- **Availability of supply.** Being able to guarantee a continuous supply to hotels is key to maintain a sustainable business.
- **Corporate Social Responsibility.** As part of their corporate image the supplier makes efforts to ensure its products are supportive of sustainable environmental preservation.

### 3.2.3. Identification of the main obstacles limiting the supply of alternatives to single use plastics items.

The main obstacle identified for the supply of alternatives to single use plastics items are outlined below.

- **Higher Prices.** The price difference between problematic single use plastic item compared to an alternative one tends to be more than twice. For instance, a Styrofoam food container could cost approximately 0.40 cents per unit while a compostable one would be around 0.90 cents.
- **Limited local production.** The main obstacle for the supply of alternatives to problematic SUP's is the limited local production of more sustainable and greener alternatives. Products are readily available on the international market however the cost of importation is high. In addition to this cost, suppliers have to absorb higher cost of storage as some of these alternative products are more susceptible to spoilage due to extreme heat in storage areas. Therefore, they import low quantities to avoid losses.
- **Inconsistent materials.** Some products manufactured from plant-based materials such as cane, corn and bamboo are not only more costly but could be adversely impacted by shortages and consequently consistency of supply. In the case of cane and corn by-products, they require vast plantations to be grown. These plantations are also prone to natural disasters such as flooding which often occur in Caribbean islands which can have a negative impact in product availability.
- **Lack of awareness and knowledge.** Great progress has been achieved in Saint Lucia on raising awareness with regards to the negative impacts of single use plastic, mainly thanks to measures on plastic bags and the government recent ban on Styrofoam. Nevertheless, awareness and knowledge are still needed particularly on the reduction of consumption wherever possible and the use alternative options and adequate disposal.
- **Lack of adequate recycling infrastructure and processes.** Another key factor is the lack of adequate recycling infrastructure and processes. The main reason suppliers and buyers would invest in importing and buying alternatives is to reduce the impact on the environment. Many of the substitutes to problematic single use plastic required industrial processed and/or certain condition in order to be recycled, biodegraded, composted, etc. In Saint Lucia there is lack of recycling practices and recycling infrastructure, therefore these items end-up in landfills which discourage stakeholders in investing in those.

#### **3.2.4. Analysis of the potential threats and opportunities for the local production which could arise from the introduction of these procurement criteria in the procurement of goods/services of local hospitality stakeholders and the compliance with an ecolabel scheme.**

There is no domestic production of biodegradable, compostable or recyclable single use plastics items although some substitutes such as bamboo straws, stirrers, cups and coconut utensils are produced locally in small quantities. Therefore, the introduction of alternative products do not present a threat for the local market but an opportunity.

Local suppliers can and are already adapting their catalogues to the increasing demand of alternatives to single use plastics products. Nevertheless, there is still a considerable lack of knowledge on the impact of those alternatives. There is a high risk that some 'eco-friendly' alternatives such as those labelled as compostable and biodegradable end up in landfill or polluting land and oceans due to the lack of needed recycling infrastructure and/or conditions for their adequate disposal.

Both suppliers and hotels need to be well informed of the life cycle of these alternatives products to ensure they make the right choices in the context of Saint Lucia. To this end, awareness campaign and training are fundamental. Additionally, these training and awareness would support them to be prepared for the enacted and upcoming legislation to stop plastic pollution.

On the other hand, increasing the demand of these products brings opportunities for innovation and entrepreneurship in the local and regional market for both, production of alternatives products and recycling of them (i.e. biodegradable, compostable, etc.). Information and incentives to encourage entrepreneurship will need to be in place in order to push this innovation.

The government of Saint Lucia is currently involved in the Plastic Recycling Project 'RePLAST OECS' which was launched in Saint Lucia in August 2019. The two-year pilot project, implemented by UNITE Caribbean, will be carried out in Saint Lucia and will focus on testing approaches and systems for setting up a plastic waste collection and recycling scheme through export from Saint Lucia to Martinique.

A plastic circular economy approach tailored for Saint Lucia and the OECS region, where plastic is never a waste but a renewable source that needs to be disposed adequately to be rescued, would be the most efficient approach to combat plastic pollution and other waste issues in the region.

## CHAPTER FOUR: ANALYSIS OF DEMAND

This section seeks to trace the evolution and current demand of the two prioritized products in focus by the hospitality sector. It also tries to identify the main obstacles and opportunities for the purchase of more sustainable products by hotels and any changes in their procurement processes towards more sustainable operations.

### 4.1 Evolution of the National Demand for the Products in Focus

Tourism has been the fastest growing sector in Saint Lucia over the last two decades, replacing agriculture as the primary economic mainstay. Overall visitor arrivals have increased by almost 30% in the last decade and indicators suggest that this will continue to be the case within the next 10 years with a forecasted growth of 3% annually<sup>17</sup>.

	Total Visitor Arrivals	Cruise Passengers	Stay-Over Arrivals	Yacht Arrivals
2020	1,644,465	1,025,935	503,960	114,570
2019	1,286,254	802,615	412,327	71,312
2018	1,218,682	760,306	394,780	63,596
2017	1,105,541	669,217	386,127	50,197
2016	998,536	587,421	347,872	63,243
2015	1,088,133	677,394	344,908	65,831
2014	1,026,806	641,452	338,158	47,196
2013	952,390	594,118	318,626	39,646
2012	920,868	571,894	306,801	42,173
2011	975,847	630,304	312,404	33,139
2010	1,008,032	670,043	305,937	32,052

Table 13. Total number of visitor arrivals by type of visitor, 2010 to 2020

The hotels sector in Saint Lucia is comprised by 36 large and medium hotels, 10 small hotels and 112 villas and cottages with a total number of 5078 rooms and an average of 66% occupancy rate. Large and medium hotels represent around 80% of the room stock in the island. Hotel offer is mainly comprised by high-end and luxury hotels and boutique hotels.

Figures and statistics pertaining to the demand of the products in focus in Saint Lucia hospitality sector are relatively scarce. Therefore, in an attempt to understand the demand of the products

<sup>17</sup> Ministry of Tourism, 2018

in focus five voluntary hotels were interviewed, being those three large hotels and two medium hotels.

Hotels in Saint Lucia understand the need to adopt environmental practices in their operations to protect the natural resources of the island in which their tourism product depends. Nevertheless only 17% of hotels in the island, hold sustainable certifications such as Travelife, Green Globe and Earth Check.

Of the hotels interviewed for this study, three of them are either Green Globe or Earth Check certified. As part of this certification they need to adopt sustainable procurement policies. The other two hotels interviewed are not certified, nevertheless both affirmed that efforts are being made to embed sustainability into their operation, particularly into adopting sustainable procurement policies to procure environmentally friendly products as it understood this would also help them to also reduce operational cost, for instance by reducing the energy bill through more efficient installations.

#### 4.1.1. Air Conditioning

##### 4.1.1.1 Presentation of the evolution of the national demand for AC equipment

The tourism sector is the major single electricity end-user in Saint Lucia, where hotels account for the largest percentage of air-conditioners in Saint Lucia, particularly large hotels<sup>18</sup>.

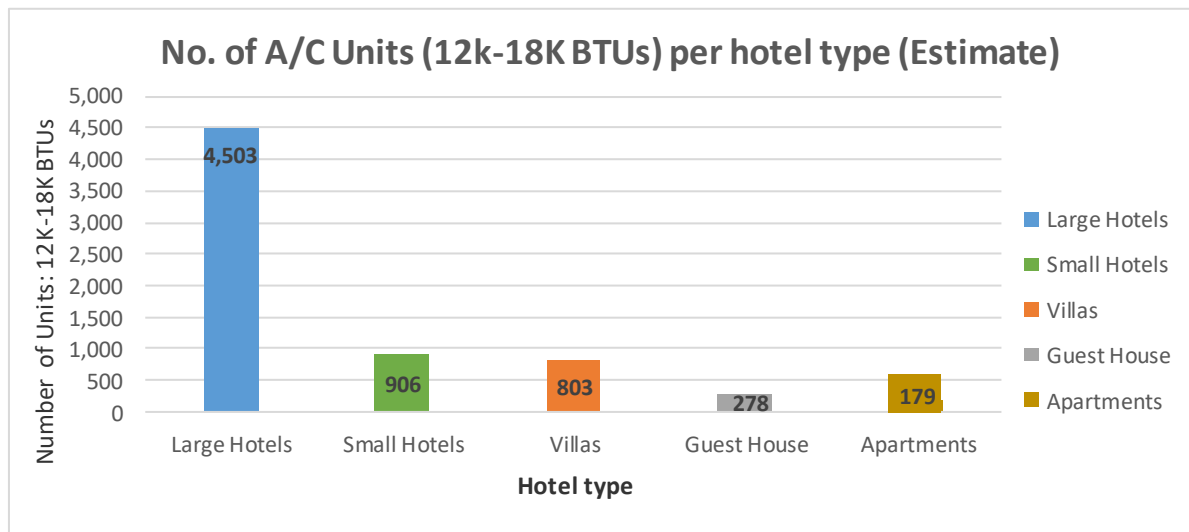


Chart 3. Number of AC units per hotel type, Draft National Cooling Strategy<sup>19</sup>

The gradual increase in tourist arrivals and tourist nights has an impact on AC usage and therefore influences the demand for ACs. Air conditioning in Caribbean hotels is estimated to account for 48% of electricity bills<sup>20</sup>, this implies that investment in energy efficient air

<sup>18</sup> Saint Lucia Department of Sustainable Development, Draft National Cooling Strategy.

<sup>19</sup> Saint Lucia Department of Sustainable Development, Draft National Cooling Strategy.

<sup>20</sup> United4efficiency, (2018), Caribbean Cooling Initiative (C-Cool) Concept Paper.

conditioners can considerably reduce the electricity bill and the market is very likely to gradually move towards these options.

Saint Lucia is currently suffering the consequences of climate change. Minimum temperatures have increased since 1960's at a rate of about 0.16 °C per decade (maximum temperature increase rates of about 0.20 °C per decade). The warming trend is expected to continue. The island is projected to be warmer compared to the 1970-1999 average temperature by up to about 1.8 °C by the 2050s and 3 °C by the 2080s. The frequency of very hot days/nights will increase significantly and that of very cool days/nights decrease.<sup>21</sup>

Relevant regulations and legislation are currently in the pipeline of the government. A draft bill on energy efficiency by the Ministry of Infrastructure, Ports, Energy and Labour and a National Cooling Strategy being developed under the C-COOL initiative by the Department of Sustainable Development of the Ministry of Education, Innovation, Gender Relations and Sustainable Development<sup>22</sup> are expected to establish voluntary or mandatory minimum requirements for energy equipment from 2020.

Taken into account all these facts and assumptions, it seems reasonable to assume that the demand for more efficient air conditioning equipment will only continue to increase in the coming years. This assumption is also in line with the findings of the interviews carried out with the hotels.

One of the hotels interviewed operates within a UNESCO protected area, to maintain the natural landscape and ensure environmental sustainability, no AC units are utilized on the facility. The architectural design is such that hotel rooms are not fully enclosed, rooms have only three walls allowing natural ventilation supported by fans to assist with air circulation. This resort embraces an eco-friendly philosophy.

This architectural design of three-wall open rooms is the case of three hotels in the island, representing around 3% of large and medium hotels room stock. Although the other two have some air conditioning equipment for beach front apartments.

The type of AC equipment used in the other 4 hotels are:

- **Inverter Split AC** – the hotels range from 50% to 100% usage of this option. Whilst the initial cost of this type of AC is higher than the regular high wall units partially utilized, it is deemed to be more energy efficient and environmentally friendly. Consequently, there is a gradual shift towards full conversion of all AC units to this option. The main advantage of using inverter AC experienced by hotels is the potential to reduce power consumption and by extension reduce emission of CO<sub>2</sub> thereby minimising environmental impact.
- **Regular Split** continued to be utilised as hotels transition to full utilisation of inverter split AC's.
- **Evaporative Coolers** is utilised on a small scale by one hotel.
- **Central AC's** is used by one hotel in its conference room facility.

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<sup>21</sup> United Nations Conference on Trade and Development(2018), Climate Change Impacts on Coastal Transport Infrastructure in the Caribbean: Enhancing the Adaptive Capacity of Small Island Developing States (SIDS). Saint Lucia: A case study.

<sup>22</sup> United4efficiency, (2018), Caribbean Cooling Initiative (C-Cool) Concept Paper.



- **Chillers** are used to store bulk purchases, mainly food.

Generally, there is a **growing demand for inverter split AC's** as it is understood to be a more efficient option. This finding is in line with the information provided by the suppliers.

The main considerations for hotels interviewed when purchasing AC equipment include:

- **Energy efficiency** – this is the most important factor as units with high energy efficiency consume less energy and results in reduced operational cost over time.
- **Maintenance Cost** – hotels also prioritise sourcing units that require less maintenance to minimise disruptions as well as maintenance costs.
- **Initial Cost** – the initial costs of sourcing AC units is compared with the energy savings to evaluate initial investment.
- **Environmental Impact** – typically units with high EE have fewer negative impacts on the environment and are deemed best suited hotel sustainability policies and operations.
- **Availability of supply** – for hotels it is important that products are readily and consistently available hence hotels typically prefer to procure from suppliers that can guarantee these criteria.
- **Brand reputation.** Brand of equipment is also a criteria used by hotels to ensure the quality and reliability of the equipment purchased.

Once the initial investment to acquire AC units is made, with effective maintenance, the expected life span ranges from 7 to 9 years. Nevertheless, most hotels are located next to the sea and hence the extreme salinity adversely impacts the life span of these products resulting in regular replacements which are costly.

In general, prices of efficient AC's are higher in comparison to existing regular AC's. For instance, the cost of 900 BTU regular AC unit might cost ECD\$1250 whilst an inverter split might cost ECD\$1700, which means around 26% more expensive.

The interviewed hotels source their AC units locally through agents and distributors that import the equipment from international markets. Some hotels explained that hotels in Saint Lucia had long established relationships with major suppliers and maintain an effective supplier/customer relationship, where hotels indicate their needs in a timely manner and suppliers provide information on new technology and products influencing their demand.

Whilst hotels interviewed understand the importance of energy efficiency and are moving towards more efficient technology to reduce operational cost, they indicated that is difficult to quantify the cost savings due to the regular fuel price adjustments done monthly by the Government, which ultimately impacts energy costs.

#### **4.1.1.2 Identification of the main obstacles and opportunities for the purchase of more sustainable AC equipment by hospitality sector stakeholders.**

The main barriers identified for the purchase of efficient and certified AC equipment by hotels are:

- **The higher initial cost.** Efficient and certified AC equipment usually requires a higher initial investment therefore often buyers prioritise economic criteria over energy efficiency criteria.

This is particularly a barrier for medium and small hotels that struggle to afford this initial investment.

- **The engineering gap.** Lack of knowledge of new technologies to be installed and/or serviced can be also a barrier to opt for new efficient technologies by hotels and therefore are believed to lead to higher cost in maintenance. This influence hotels to buy cheaper options that they know better and can be serviced internally.
- **Bulk purchasing.** Some hotels make bulk purchases which are cheaper and can be imported under the duty-free concessions therefore those won't need to procure equipment for a long period.
- **Maintenance costs.** Inverter AC's are more susceptible to damages due to power surges. Additionally, parts for more efficient equipment are usually more expensive and not readily available which adversely impacts operations.
- **Lack of knowledge and awareness.** Whilst there is interest in Saint Lucia to retrofit and improve efficiency of cooling equipment, technology moves fast and there is a need to maintain the hotel sector and its suppliers up to date in what are the most efficient available options taking into account crucial criteria (such as ODP, EER, COP, BWP, etc explained in section 2.2.1) before making any investment.

Sensitisation and awareness campaigns by both local authorities and HVAC suppliers focusing on the financial saving and lower operational costs would enable a smooth transition towards greener alternatives in the hospitality sector.

That could be used as an opportunity to embed more sustainable criteria regarding AC solutions into tourism, sustainability and/or green building certifications such as EarthCheck, Green Globe, TravelLife, Green Building Council, LEED and BREEAM, among others which would also pave the way to a faster adoption. Similarly, the inclusion of Building Management Systems, with energy efficiency minimum requirements, during the construction phase of hotel buildings should be pursued to enable the shift to greener and smarter air conditioning systems.

#### 4.1.2 Alternatives to problematic single use plastics

##### 4.1.2.1 Presentation of the evolution of the national demand for alternatives to problematic single use plastics

To picture the demand of alternative to problematic single use plastic products within the hospitality industry, information was obtained through:

- interviews with the 5 participating hotels;
- information on hotels demand, barriers and opportunities gathered during a workshop from 18 participants including representatives from 10 hotel groups;
- information from a hotel waste characterization study carried out by JUA KALI LTD. in collaboration with the Saint Lucia Solid Waste Management Authority under the UN Environment project *Phasing single use plastics*.

As hotels become more environmentally conscious in line with growing environmentally conscious customers, there is a gradual increase on the demand for alternative to problematic single use plastics.

Of the five hotels interviewed, all expressed a keen interest in sustainability and environmental protection, and all are at various stages of adopting policies to reduce consumption of problematic single use plastics ranging from elimination of some products to gradual shift towards more environmentally friendly options. Nevertheless, most of the hotels interviewed do not utilise significant quantities of alternatives to SUP's and store these types of products at minimal levels required by their operations/policies. Larger quantities are only stored at specific times and circumstances i.e. during the hurricane season as a buffer should there be any disruptions of supply.

Some of them, use alternatives to SUP's regularly such as bamboo skewers and straws. These products are purchased monthly and sourced locally through major suppliers/distributors which import the majority of products from international markets (mainly US and China). In most cases hotels indicated that when internal stocks has been low, the products were readily replenished through these local suppliers.

Whilst specific unit prices were not provided, all of the hotels interviewed indicated that prices of alternatives to SUP's were considerably higher in comparison to problematic SUP items. Therefore, when purchasing alternatives to SUP's their main considerations are:

- **Price.**
- **Environmental Impact** of the product.
- **Availability**, consistency and reliability of supplies are priority factors.

Of the eight hotels that participated in JUA KALI LTD. characterization study 100% were aware of the negative environmental impact of single-use plastics, while 75% were very concerned. 88% of hotels have replaced straws and take-away containers with sustainable alternatives, and 100% have replaced or are in transition to replacing some of the following items:

SUP Type	Alternative	%	Notes
<b>Water bottles</b>	Reusable glass and/or aluminum bottles	66.7	Guest rooms furnished with glass bottles for water. One hotel has provided guests with branded Aluminum water bottles.
<b>Cups</b>	Reusable plastic/paper and/or glass	50	Welcome guest cocktails provided in reusable plastic cups or glassware. Staff and guest quarters stocked with non-breakable reusables.
<b>Plates</b>	Reusable ceramic/ plastic/paper/bamboo	50	Non-breakable reusables primarily for staff quarters e.g. canteen.
<b>Cutlery</b>	Silverware and/or reusable plastic/paper/bamboo	50	Silverware now used in staff canteen. Other reusable alternatives primarily used for take-away.
<b>Toiletries</b>	Refillable dispensers or larger bottles	16.7	One hotel has implemented this. A second hotel is actively pursuing this option as well, though they are yet to transition.
<b>Bin liners</b>	Compostable plastic or reusable cloth	50	--

<b>Shower Caps</b>	Reusable cotton	16.7	--
<b>Laundry bags/sacs</b>	Reusable cloth/canvas	50	--

Table 14: Percentage of Hotels that have Replaced SUP<sup>23</sup>

According to JUA KALI LTD. these items represented only 31% of the total SUP waste analysed and were considered the low hanging fruit.

In terms of priority items to be replaced, the hotels that participated in the workshop on waste management indicated the following level of prioritization:

Priority problematic SUP item to be replaced	Alternatives locally available	Local supplier used by hotels to procure these products
<b>1. eating utensils (i.e. cups, plates, containers for take away)</b>	bamboo and coconut cups, compostable/biodegradable cup, straws, plates, food packaging, bamboo straws,	Atwell Dalgleish, RMC Ltd. RJB. Ltd., Massy Stores.
<b>2. water bottles</b>	glass and aluminium bottles, water dispensers	Water companies, Renwick Ltd.
<b>3. toiletries</b>	Dispensers for bathrooms, amenity containers	Renwick Ltd.
<b>4. packaging food products</b>	reusable zip-log bags, compostable/biodegradable food packaging, banana leaf	Atwell Dalgleish
<b>5.garbage bags and bin liners</b>	Biodegradable liner and garbage bags	FDK
<b>6. gloves and aprons</b>		

Table 15: Priority items hotels want to replace and local alternatives and suppliers.

As indicated in previous section, Saint Lucia has recently passed a ban on importation of Styrofoam and “selected plastic food service containers”. This might be related with eating utensils, including containers for take away, being the priority category of SUP to be replaced by hotels. Demand of alternative containers is raising in Saint Lucia.

Furthermore, the Saint Lucia Tourism and Hotel Association is actively participating in projects that aim to reduce the elimination of SUP in the hospitality industry and has developed a guideline on ‘Recommendations to Saint Lucia Hospitality Sector for alternatives to single use plastics’<sup>24</sup> in order to influence and support the sector to eliminate and/or reduce the consumption of SUPs.

<sup>23</sup> JUA KALI LTD. (2019), Waste study on Single-use Plastics within the Accommodations (Hotels) Industry in Saint Lucia

<sup>24</sup> Carl Hunter, Chair of Environmental Committee SLHTA, ‘Recommendations to Saint Lucia Hospitality Sector for alternatives to single use plastics’,

The UN projects *Transforming Tourism Value Chains* and *Phasing-out single use plastics* will be implementing an awareness raising campaign against single use plastic targeting hotels and tourists, which ultimately aims to get pledges from participating hotels to reduce the consumption of SUP and to join the *Global Tourism Plastic Initiative*<sup>25</sup>.

The information above supports the assumption that the demand of alternative products by the hotel sector will only increase in the coming years.

#### 4.1.2.2 Identification of the main obstacles and opportunities for the purchase of more sustainable products/services by hospitality sector stakeholders.

Many hotels in Saint Lucia are already moving towards the elimination and replacement of single use plastics items. Nevertheless, according to the hotels interviewed the following barriers have been encountered:

- **Higher prices.** This is the main obstacle to switch to alternative options indicated by 100% of the hotels interviewed. The cost per unit for alternatives to SUP's are higher, in some instances even double than problematic options.
- **Lack of local alternatives to SUP's.** some products are sourced through reliable and local suppliers. However, there seem to be limitations in product options in comparison to what is known to be available in the global market and hotels cannot easily find what is requested having to import those.
- **Product quality.** According to hotels some alternatives offer lower than problematic items. For instance, they explained that alternative *take away* containers are more susceptible to spills when used for food storage, and paper straws can break down after some time inside the drink. This causes concerns for high-end luxury hotels on the impacts of guest experience since they indicate they must meet the standards expected by highly demanding guests.
- **Guest reaction.** Hoteliers are also concerned that some guest might be disappointed if they do not provide certain items that guest expect to have as can be even seen like souvenirs to take back home (i.e. toiletries).
- **Challenges in storage of products.** Most of the alternatives must be stored under certain specific conditions (i.e. temperature) to avoid product damage and stock losses. Hence products are stored in minimal quantities with the exception of increased buffer stocks needs in anticipation of emergency situation (i.e. potential climate disaster).

Additionally, the JUA KALI LTD. waste study identified high cost, limited options and lack of information on suitable alternatives as the main barriers to procuring alternatives. Nevertheless, only 25% of hotels indicated that it was difficult to source environmentally

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[https://www.oneplanetnetwork.org/sites/default/files/recommendations\\_to\\_the\\_saint\\_lucian\\_hospitality\\_sector\\_for\\_alternatives\\_to\\_single\\_use\\_plastic\\_v1.pdf](https://www.oneplanetnetwork.org/sites/default/files/recommendations_to_the_saint_lucian_hospitality_sector_for_alternatives_to_single_use_plastic_v1.pdf)

<sup>25</sup> <https://www.oneplanetnetwork.org/sustainable-tourism/global-tourism-plastics-initiative>

friendly alternatives to SUPs. The report also highlights that is clear that hotels are unwilling to push for alternatives or complete elimination of SUPs if guests react poorly.

In contrast hotels do also appreciate the opportunities that making the shift towards more sustainable options can bring such as being ahead of increasing regulation towards the elimination of SUPs and being prepared for sustainable and environmental tourism certifications which can ultimately be used for CSR and PR.

Finally, other opportunities identified in the Saint Lucia Hospitality and Tourism Association SLHTA report *Recommendations to the Saint Lucian Hospitality Sector on Alternatives To Single Use Plastics* include<sup>26</sup>:

- Via association & collaboration we can all lower cost and the impacts of investing in unsuitable products via bulk purchasing St. Lucia appropriate products. – Food containers and utensils should not need to be printed/branded and uniformity of a waste product makes it easier for recycling.
- To achieve levelization of the cost of alternatives support from government to remove duties from imported alternatives and or raw materials for on island production is essential.
- Entrepreneurial investment needed to establish local manufacturing of alternatives i.e. bagasse containers and edible cutlery.

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<sup>26</sup> Carl Hunter (2019) Saint Lucia Hospitality and Tourism Association *Recommendations to the Saint Lucian Hospitality Sector on Alternatives To Single Use Plastics*  
[https://www.oneplanetnetwork.org/sites/default/files/recommendations\\_to\\_the\\_saint\\_lucian\\_hospitality\\_sector\\_for\\_alternatives\\_to\\_single\\_use\\_plastic\\_v1.pdf](https://www.oneplanetnetwork.org/sites/default/files/recommendations_to_the_saint_lucian_hospitality_sector_for_alternatives_to_single_use_plastic_v1.pdf)

## CHAPTER FIVE: DEFINITION OF SUSTAINABILITY CRITERIA

### 5.1 Definition of sustainability criteria and means of verification of the three product/service sub-categories in focus

Based on the information presented in preceding Chapters 2, 3 and 4, this chapter develops a list of sustainability criteria and means of verification of the three products in focus which can be used by buyers from the hospitality sector. These criteria are realistic and relevant to the country’s demand and supply characteristics and the majority of which have been validated by our survey respondents. These criteria have been validated by key local stakeholders.

The following tables summarises the validated sustainability criteria for the three products in focus, with emphasis laid on the environmental sustainability criteria.

#### 5.1.1 Air Conditioning

Regarding air conditioning systems, the primary sustainability criterion pertains to its energy efficiency while good working conditions and fair-trade practices are at the forefront of social considerations. As for the economic criteria, it is important to have qualified and reliable after-sales and maintenance services by HVAC companies.

Aspect	SUSTAINABILITY CRITERIA	MEANS OF VERIFICATION
<b>Environmental criteria</b>		
<b>Energy Use</b>	Energy efficiency ratio EER, SEER, COP	<ul style="list-style-type: none"> <li>• EU Energy efficiency labelling indicating average annual energy consumption (Class A to G), COP, EER/SEER and other related info provided by AC manufacturers</li> <li>• ISO certifications for testing and rating for performance</li> </ul>
<b>Refrigerant</b>	Use of low-impact refrigerant (e.g. R-32)	<ul style="list-style-type: none"> <li>• HVAC suppliers and AC installation technicians product specifications and technical sheets.</li> <li>• ISO certifications</li> <li>• International Standards in Refrigeration and Air-Conditioning (UNEP) for refrigerants</li> </ul>
<b>Noise Emissions</b>	Sound output – power and pressure in dB (A)	<ul style="list-style-type: none"> <li>• EU Energy noise standards</li> <li>• Occupational Safety and Health (Noise at Work) Regulations</li> </ul>
<b>Materials</b>	No hazardous materials including toxic substances and heavy metals  Percentage of plastic materials/components which can be recycled	<ul style="list-style-type: none"> <li>• HVAC suppliers and AC installation technician’s product specifications and technical sheets</li> <li>• Manufacturer or HVAC Company has an Environmental Management System (EMS) in place such as ISO 14001</li> </ul>

	Material components are modular, detachable, easy to dismantle and can be individually replaced	
<b>Packaging</b>	Environment-friendly packaging (no PVC or chlorine)	<ul style="list-style-type: none"> <li>• Manufacturer product specifications and technical sheets</li> <li>• Manufacturer/HVAC suppliers have EMS in place such as ISO 14001</li> </ul>
<b>Installation &amp; Maintenance</b>	Installation and servicing by qualified / certified technician	<ul style="list-style-type: none"> <li>• Manufacturer product specifications and technical sheets</li> <li>• After-sell service and/or training provided by supplier</li> </ul>
<b>Disposal</b>	Proper disposal of equipment after life	<ul style="list-style-type: none"> <li>• Manufacturer product specifications and technical sheets</li> <li>• HVAC suppliers have EMS in place and proper waste disposal programme</li> <li>• Manufacturer gives end-of-life instructions for end of life disposal</li> <li>• HVAC supplier disposal options (i.e. buy-back)</li> </ul>
<b>Economic criteria</b>		
<b>Energy consumption</b>	Cost of Operation (electricity consumption) and initial investment in AC equipment	<ul style="list-style-type: none"> <li>• Electricity bill and initial quotations from HVAC companies</li> </ul>
<b>Life of product</b>	Estimated useful life of the AC system	<ul style="list-style-type: none"> <li>• Product description and technical sheets</li> <li>• HVAC company expert advice</li> </ul>
<b>Service provided</b>	After-Sales and Maintenance Costs over the lifetime of the AC system, and cost of proper disposal	<ul style="list-style-type: none"> <li>• HVAC Service Level Agreement</li> <li>• HVAC supplier disposal options (i.e. buy-back)</li> </ul>
<b>Social criteria</b>		
<b>Occupational safety &amp; health</b>	Equipment is in safe conditions for operation and maintenance	<ul style="list-style-type: none"> <li>• Supplier provide equipment guarantee</li> <li>• After-sell service and/or training provided by supplier</li> <li>• Supplier complies with H&amp;S regulations.</li> <li>• Supplier has an occupational health and safety certification (i.e. OSHAS 18001)</li> </ul>
<b>Training for air conditioning technicians</b>	Technicians are properly trained	<ul style="list-style-type: none"> <li>• Supplier provide proper training for technicians</li> </ul>
<b>Fair trade</b>	Product has been manufactured under environment, social and economic ethical conditions.	<ul style="list-style-type: none"> <li>• Ecolabels (i.e. Fair Trade).</li> </ul>

Table 15: Sustainability Criteria and Means of Verification for Air Conditioning Systems



### 5.1.2 Alternatives to single use plastics

Aspect	SUSTAINABILITY CRITERIA	MEANS OF VERIFICATION
<b>Environmental criteria</b>		
<b>Raw material: Biodegradable (Bio-based and Compostable Plastic), recycled</b>	<p>Partly or fully made from renewable natural resources such as corn starch, potato starch, sugar cane or palm leaves</p> <p>Biodegradable through industrial composting</p> <p>'Food grade plastics' - Safe to be in contact with food</p> <p>Made from recycled plastics</p>	<ul style="list-style-type: none"> <li>• Compliance with ISO Standards and ASTM certification: ISO 17088, EN 13432, EN 14995, ASTM D 6400</li> <li>• EU No 10/2011 certification for food safety</li> <li>• Suppliers' technical product sheets / product description</li> </ul>
<b>Raw material: Paper / Bamboo/ Wood Substitutes</b>	<p>Traceability of origin/chain of custody</p> <p>Made from sustainable sourced materials (i.e. paper, wood, bamboo)</p> <p>Product made from materials ethically sourced and manufactured</p> <p>Ensure that there are no chemical additives during processing</p>	<ul style="list-style-type: none"> <li>• Forest Stewardship Council (FSC) and other ecolabels</li> <li>• Ecolabels (i.e. Fair Trade)</li> <li>• Corporate social responsibility policy and reports of manufacturers</li> <li>• ISO certification e.g. ISO 26000 guidance standard on social responsibility</li> </ul>
<b>Packaging</b>	Supplier minimise packaging materials, particularly non environmentally friendly	<ul style="list-style-type: none"> <li>• Manufacturer product specifications and technical sheets</li> </ul>
<b>Waste Disposal</b>	<p>Biodegradable plastics with the ASTM D6400-12 standard can be aerobically composted in Municipal or Industrial facilities.</p> <p>Can be re-used, composted or recycled by local recyclers for exports</p>	<ul style="list-style-type: none"> <li>• Compliance with ISO Standards and ASTM certification: ISO 17088, EN 13432, EN 14995, ASTM D 6400</li> <li>• Suppliers provide guarantee that product can be recycled locally or that there is proper local collection to be exported and adequately recycled</li> </ul>
<b>Environmental management</b>	<p>Manufacturer has an environmental management system and minimise energy use</p> <p>Manufacturer tracks carbon emissions</p> <p>Manufacturer has a solid waste management plan</p>	<ul style="list-style-type: none"> <li>• Manufacturer is certified ISO 14001 for environmental management systems and/or energy management systems</li> <li>• Manufacturers' company profile/ sustainability report/ environmental compliance certificates</li> <li>• Manufacturers' company profile / environmental compliance certificates</li> </ul>

<b>Socio-economic criteria</b>		
<b>Occupational safety &amp; health</b>	Supplier ensure healthy and safe conditions for workers	<ul style="list-style-type: none"> <li>• Supplier complies with H&amp;S regulations</li> <li>• Supplier holds a H&amp;S certification (i.e. OSHAS 18001)</li> </ul>
<b>Employment</b>	Creation of employment for locally produced substitutes	<ul style="list-style-type: none"> <li>• Sustainability reports, annual reports, company websites</li> </ul>
<b>Livelihoods</b>	Reduced impact on marine ecosystem (including fish supply) and ocean pollution	<ul style="list-style-type: none"> <li>• Annual fish catch, reports from relevant Government bodies and Saint Lucia Department of Fisheries, Soufriere Fisherman Cooperative.</li> </ul>

*Table 16: Sustainability Criteria and Means of Verification for Alternatives to Single-Use Plastics*

While the environmental criteria may differ for each product category, it can be argued that all product categories should be evaluated under similar set of social and economic criteria. For instance, all product categories can influence the structure of employment based on gender equality and diversity, comply with relevant labour laws, provide good employment conditions and adopt sound occupational health and safety measures for their employees. Moreover, the practice of transparent and fair-trade practices and good corporate social responsibility are also deemed to be important socio-economic sustainability criteria during the selection of suppliers during the procurement process.

## CHAPTER SIX: CONCLUSIONS AND RECOMMENDATIONS

### 6.1 Conclusions

Based on the information and findings described in this study this section aims to summarise the recommendations for hospitality sector procurers to introduce and develop sustainable procurement strategies and action plans to increase the consumption of the sustainable products in focus in this report.

#### 6.1.1 AIR CONDITIONING

Recommendations to support and encourage hospitality procurers to make the shift towards efficient air conditioning system include awareness, training, information, incentives and an adequate regulatory framework.

- **Awareness and training** must be provided to both **hotel procurers and hotel maintenance managers** in order to increase their knowledge and understanding of the complexity of air conditioning equipment and the importance of timely and proper servicing, as well as to stay abreast of new cutting-edge technology. This will allow them to make more informed decision and chose the right equipment according to their needs, maximising energy efficiency.
- **Sustainability criteria should be introduced** by hospitality procurers when sourcing equipment according to relevant sustainability standards ensuring they can be adequately disposed at the end of their life cycle (i.e. take-back system offered by suppliers). By incorporating sustainability criteria in their procurement process, suppliers to the hospitality industry will need to adhere to more environmentally sound practices and provide more sustainable products.
- HVCA suppliers should play an important role to provide **information and advice on technical aspects**, including key performance indicators of the AC equipment (i.e. EER, SEER, COP, noise level, anti-rust product feature) and refrigerants used (i.e. zero ODP and low GWP refrigerants) to support procurers during the purchasing decision to choose the most energy efficient option according to their needs and resources. Therefore, provision of **training and/or information** to suppliers should be contemplated by the Government.
- **Increasing awareness on available, sustainable and efficient options in the market** such as on the new generation of refrigerants R-32 which has a significantly lower GWP and is more energy efficient. Hotels should prioritise the adoption of DC Inverter split units using R-32 for maximum energy performance and lower carbon footprint. In addition, if the equipment uses R-32 refrigerant, hotels would need to ensure that the HVAC supplier has qualified technicians trained in safe handling of R-32 refrigerant. This calls for increasing efforts in improving the capacity of the existing technical training at local and regional level.
- As indicated in section 2.4.1, currently there are **incentives on energy efficient equipment** based on their ERR and COP, although this could be enhanced. The transition to low GWP and energy-efficient refrigerants could be achieved by providing incentives

to favour energy-efficient systems using low-GWP refrigerants or imposing higher customs duty on systems using high-GWP refrigerants.

- Further needed efforts should focus on enacting adequate regulation such as the draft of the *Energy Efficiency Bill* and the upcoming *National Colling Strategy* ensuring they establish **minimum energy performance standard** in Saint Lucia, therefore ensuring AC equipment with low energy efficiency cannot be imported in the market.
- **Mandatory energy labelling of ACs.** Additionally, the *Energy Efficiency Bill* and the upcoming *National Colling Strategy* should make energy efficiency labelling on all AC equipment mandatory. This would promote sales of the most energy efficient appliances. Labelling requirements for AC equipment should also encompass the type of refrigerant used and establish minimum requirements such as low GWP index.
- Appropriate **financing mechanisms** via intermediary financing institutions should help hoteliers and service providers to access the needed resources for the procurement of efficient equipment. Information on financing options such as green equipment leasing should be provided to the hospitality sector, particularly to medium and small hotels. Moreover, lending/credit institutions should be provided with the necessary relevant sensitisation.
- **After-sales service and the maintenance costs** of the AC equipment throughout its lifetime should also be factored during the procurement process. This includes ensuring proper **disposal** of the equipment after its life and the refrigerant which needs to be removed by a certified technician prior to disposal.
- **Electricity usage projection.** Hotels should be able to request a reliable and accurate forecasting model for electricity consumption for the different HVAC options being considered prior to purchase. This would provide a more realistic 'overall lifetime operating cost' of the air conditioning system, thereby justifying the initial higher investment of efficient AC systems.
- **Mapping and benchmarking codes of practices** of local suppliers and comparing them against international suppliers would also help raise competitiveness and the quality standards of local suppliers.
- **Different and innovative approaches tailored for Saint Lucia** such as linking the purchases to a licensing system and/or exploring a phased-out approach towards gradual replacement should be considered.

### 6.1.2 ALTERNATIVES TO SINGLE-USE PLASTICS

Recommendations to support and/encourage hospitality procurers to eliminate/reduce the consumption of single use plastic items include awareness, training, information, incentives and an adequate regulatory framework.

- It is important to acknowledge that the main objective of hotels should be to **eliminate and reduce the consumption of single use plastic items**. When this is not possible alternative options described in this study should be considered based on the understanding that they might also have negative environmental impacts and how to eliminate or minimise those.
- **Sustainability criteria should be introduced** by hospitality procurers when sourcing alternatives to single-use plastics according to relevant sustainability standards ensuring they can be adequately disposed at the end of their life cycle, for example locally recycled or can biodegrade. By incorporating sustainability criteria in their procurement process, suppliers to the hospitality industry will need to adhere to more environmentally sound practices and provide more sustainable products.
- **Provision of training and awareness** on single-use plastic reduction and alternative options is crucial to enable hotels to introduce these sustainability criteria in their tender requirements and to understand the negative impacts of these alternative products even if they are certified and classified as eco-friendly options.
- **Partnerships and engagements between suppliers and hotels** procurers should be facilitated and encouraged. Suppliers and hotels should work together to find innovate and tailored solutions for the hospitality sector towards circular economy approaches, benefiting the local economies and the environment.
- An adequate **national regulatory framework** to ban, restrict and manage the consumption of SUP in line with global trends should be a priority for the local government. Additionally, the hospitality sector should introduce **sectoral policies and/or agreements** to find solution to eliminate single use plastics.
- Provision of **incentives** by the government for suppliers and hotels would increase the substitution of problematic single use plastics, such as reducing rates of import duty or introducing taxes on non-eco friendly options.
- **Bans on single use plastics**. Hotels should assess the feasibility of eliminating and banning certain items from procurement processes, particularly unnecessary items such as plastic straws and shower caps.
- **Educating and sensitising guests and tourists** during their stay is critical to reduce the use of single-use plastics in hotels. This can be done by displaying communications materials, sharing campaigns against single use plastic items in social media and informing guest upon arrival showing conscious leadership.
- Joining forces with international initiatives such as the **Global Tourism Plastic Initiative** <sup>27</sup> **making pledges** to reduce problematic single use plastics would also help to raise awareness and would enable hotels, businesses, governments, and other tourism stakeholders to take concerted action, leading by example in the shift towards circularity in the use of plastics.

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<sup>27</sup> <https://www.oneplanetnetwork.org/sustainable-tourism/global-tourism-plastics-initiative>

- The majority of alternatives to single use plastics are imported which increases their carbon footprint. **Research, development and investment in local alternatives products** suitable for the Saint Lucian context, such as the production of ‘vegan bottles’ from sugar cane, would not only reduce/eliminate the consumption of single-use plastics on the island but also would help to foster local entrepreneurship. This would include **ensuring adequate recycling methods for alternatives** to problematic single use plastics such as compostable and/or biodegradable plastics, whether locally produced or imported.
- Government and the wider public sector could also serve as a catalyst to promote procurement practices by reviewing **public procurement** policy, strategy and enabling institutional and legislative regulatory environments.
- A **plastic circular economy approach tailored for Saint Lucia and the OECS region** would be the most efficient approach to combat plastic pollution and other waste issues in the region.