ENVIRONMENTAL AND SOCIAL CODES OF PRACTICE (ESCoP)

FOR

THE PROCUREMENT AND INSTALLATION OF RADIO COMMUNICATION EQUIPMENT

Saint Lucia Health System Strengthening Project (P166783)

November 2024

Acronyms and Abbreviations

CERC	Contingent Emergency Response Component
C-ESMP	Contractor's Environmental and Social Management Plan
CoC	Code of Conduct
EEW	Electric and Electronic Waste
EHD	Environmental Health Department
EHSG	Environment, Health and Safety Guideline
EPHS	Essential Package of Health Services
ESMF	Environmental and Social Management Framework
ESCoP	Environmental and Social Code of Practice
ESMP	Environmental and Social Management Plan
ESHS	Environmental Social Health and Safety
E&S	Environmental and Social
EWMP	E-waste Management Plan
GBV	Gender Based Violence
GCC	General Contract Condition
GM	Grievance Mechanism
GoSL	Government of St. Lucia
H&S	Health and Safety
HSSP	Health System Strengthening Project
MoHWEA	Ministry of Health Wellness Project Implementation Unit
OSH	Occupational Safety and Health
SEA	Sexual Exploitation and Abuse
SH	Sexual Harassment
SLSWMA	St. Lucia Solid Waste Management Authority
PBF	Performance Based Financing
PIU	Project Implementation Unit
PPD	Physical Planning Department
PPE	Personal Protective Equipment
RSLPF	Royal St. Lucia Police Force
SH	Sexual Harassment
SEA	Sexual Abuse and Exploitation
TOR	Terms of Reference
USD	United States Dollars
WBG	World Bank Group

Contents

1.0 Background

The Health System Strengthening Project (HSSP) is one of the most recent initiatives forged out of a partnership with the Government of Saint Lucia and the World Bank Group. The aim of the project is to improve the accessibility, efficiency, and responsiveness of healthcare delivery in Saint Lucia to its population. Improvement of the island's healthcare sector has been a long-standing priority for the Government of Saint Lucia (GoSL), however the high prevalence of non-communicable diseases coupled with the continuing threat of highly infectious diseases such as Coronavirus (COVID-19) and dengue have highlighted the demand for a heightened momentum to this commitment.

Within the HSSP there is a focus on four (4) major components which are as follows: Design and Implementation of an Essential Package of Health Services (EPHS); Strengthening of the Health sector's service delivery in support of the essential Package of Health Services (EPHS); Institutional Capacity building, Project Management and Coordination; and Contingent Emergency Response Component (CERC).

Component 2: Public Health Preparedness and Response will focus on Health Information Systems and Surveillance and Public Health Emergency Preparedness and response. The aim of the second component is to strengthen the healthcare service delivery in support of the Essential Package of Health Services. One of the activities under component two is the procurement and installation of radio communication equipment.

The HSSP is managed by a stand-alone Project Implementation Unit (PIU), located within the Ministry of Health and Wellness. The PIU is responsible for the execution of the project components including the procurement and installation of the radio communication equipment.

2.0 Introduction

The Ministry of Health Wellness and Elderly Affairs (MOHWEA) indicates that Saint Lucia's health sector Radio Communication System (RCS) was installed and commissioned in 2020. The National Emergency Management Organisation (NEMO) provided technical support for the conventional Land Mobile Radio's (LMR) procurement and installation. The design was deficient, the installed network did not deliver the intended services, and there were budgetary and other build-out challenges. Hence, the MoHWEA is utilizing funds under the HSSP to undertake an upgrade to the system.

The environmental and social impacts related to the procurement and installation of the radio communication equipment are expected to be minor, temporary, localized and readily managed by industry standard and typical mitigation measures. Negative impacts expected during the works are related to: noise and road safety concerns caused by traffic movements; pollution from construction materials and electronic waste; and occupational safety and health risks from installation activities, especially working at height, and working with electrical circuits. Reflecting on the nature and scale of the proposed activity, this Environmental and Social Codes of Practice (ESCoPs) describes the mitigation measures to be applied by the contractor to ensure that the environmental, social and health and safety risks are minimized. The mitigation measures are identified by reference to the General Conditions of Contract (GCC) of the Procurement and Installation document that will be used to procure

the Contractor undertaking the works. Where necessary, this ESCOP identifies E&S Specifications that are to be added to the procurement document to supplement the GCC, and accompanying ESHS Specifications that set out the detailed actions that the Works Contractor must undertake to deliver works to the agreed standard.

2.1 Purpose of the ESCOP

This ESCOP describe the avoidance, mitigation and/or management measures needed to address the potential adverse E&S risks and impacts associated with activities during the procurement and installation of the radio communication equipment, clearly identifying where the provisions of the Standard Procurement Document are adequate or where additional ESHS Specifications are needed.

Where delivery of good environmental, social, and health and safety practices require specific actions to be taken by the contractor, these have been described in sufficient detail for the Contractor to be able to implement them.

This ESCoP therefore not only identifies the potential risks and impacts that may arise from the procurement and installation of the Radio Communication Equipment, but also indicates what controls need to be integrated into the procurement process to ensure that the Contractor delivers the works in compliance with project requirements.

3.0 Scope of Works

The contractor will procure the following equipment and systems for installation

(a) Lot 1: Supply and Installation of Passive, IP Network and Communications Equipment:

-	Telecom Tower (6 m)	3 units
-	Customized Telecom Shelter	3 units
-	42U – High Telecom Indoor/Outdoor Cabinet	13 units
-	Optical Distribution Frame	16 units
-	Router with NIM card	8 units
-	Switch L2/L3 - 48 Ports	8 units
-	Microwave Radio	16 units

(b) Lot 2: Supply and Installation of Core Network and End-Users Equipment and Antenna Systems:

-	Node Controller	4 units
-	Fleet Management Server	2 units
-	Network Management Server	2 units
-	KVM Switch	2 units
-	Logging Recorder Server	2 units
-	Dispatch Controller	2 units
-	Dispatch Console	2 units
-	RoIP Gateway	10 units
-	OTAP Backup Radio	3 units
-	RF Repeater (Digital)	12 units
-	RF Repeater (Analogue) Upgrade	3 units
-	Receiver (Rx) Filter	13 units
-	Frequency Reference	8 units

- Receiver (Rx) Multicoupler 10 units
- Transmitter (Tx) Combiner – 2 channels 5 units
- Transmitter (Tx) Combiner – 3 channels 5 units
- VHF/UHF Antenna (BS - Repeater) 32 units
- VHF/UHF Antenna (Fixed Mobile) 70 units
- VHF/UHF Antenna (Vehicle Mobile) 40 units
- Lightening Protectors (BS - Repeaters) 36 units
- Lightening Protectors (Fixed Moble) 16 units
- Fixed Mobile Radio – Cabinet 70 units
- Fixed Mobile Radio - Battery (Back-up) 70 units
- Fixed Mobile Radio (Base) 70 units
- Vehicle Mobile Radio 40 units
- Portable Radio 100 units
- Cables and installation kits

and

(c) Lot 3: Supply and Installation of Power Systems:

- 42U – High Telecom Battery Cabinet 5 units
- (optional)
- Uninterruptible Power Supply (UPS) 3 units
- DC - Distribution Panel (DST-20) 5 units
- DC - DC Converter Panel (48/24/12) 5 units
- DC Rectifier (Single Phase) 5 units
- Power Inverter (optional) 5 units
- NSB Battery (12Vdc - 400aH) 80 units
- AC Generators 10KW (optional) 5 units
- PV Solar Systems 10KW (optional) 5 units
- Cables and installation kits.
- Training of the Purchaser's staff.

The Disaster Management Radio Communications Network will be deployed at 8 Project Sites:

(a) Dennery
(b) Massacre
(c) Moule A Chique
(d) Mt. Tabac
(e) Petit Monier/Plateau
(f) Government Information Technology Service
(g) Data Centre and
(h) FIRE/EMS.

Equipment is expected to be placed atop existing communications towers in most instances. However, at three or more locations, it is likely that new towers must be erected. Electrical supplies at the existing communications towers will be utilized at most locations. Generators may also be purchased and installed where needed. Additionally, the erection of outdoor cabinets will require minor excavation works.

4.0 Applicable National Environmental Policy and Legal Framework

The St. Lucia Telecommunications Act 2015, thereafter referred to as the Act, provides for the regulation of telecommunications and for related or incidental matters. The principal object of the Act is to give effect to the purposes of the Treaty Establishing the Eastern Caribbean Telecommunications Authority (ECTEL) and to regulate the telecommunications sector in Saint Lucia. Other objects of the Act are to ensure the public interest and national security are preserved; the application of appropriate standards in the operation of telecommunications; and the overall development of telecommunications in the interest of the sustainable development of Saint Lucia.

The Act calls for the establishment of The National Telecommunication and Regulatory Commission (NTRC0. The functions of the NTRC include advising the Minister on the formulation of national policy on telecommunication matters with a view to ensuring the efficient, economic and harmonised development of the telecommunication and broadcasting services and radio communications of Saint Lucia; ensuring compliance with the Government's international obligations on telecommunications; being responsible for technical regulation and the setting of technical standards of telecommunications and ensure compatibility with international standards; planning, supervising, regulating and managing the use of the radio frequency spectrum in conjunction with ECTEL, including the assignment and registration of radio frequencies to be used by all stations operating in Saint Lucia or on any ship, aircraft, vessel, or other floating or airborne contrivance or spacecraft registered in Saint Lucia;

Saint Lucia's health sector must operate its radio communication services within the NTRC's legal framework conditions and policies for Land Mobile Radios (LMR). However, as a Government Ministry, the MOHWEA has waivers regarding payment of fees and renewal for their operating licenses. All pertinent regulations for the protection of the environment and the safety of workers, including the Labour Code and applicable regulations will also be adhered to during the activity.

All electronic equipment that emits electromagnetic energy must be certified as meeting US FCC class B or END 55022 and END 50082-1, or equivalent, emission standards. Class B devices are digital devices that are marketed for use in residential environments, regardless of whether they are also used in commercial, industrial, or business environments. Class B limits are more stringent than Class A limits, which are for devices marketed for use in commercial, industrial, or business environments.

5.0 World Bank Safeguard Policies Triggered

OP/BP 4.01 Environmental Assessment is triggered for this project. There are likely to be some concerns relating to inconvenience or nuisance (e.g., dust, noise, and construction waste) to surrounding areas during construction. These potential impacts are regarded as minor, site-specific, and reversible in nature, and for which mitigation measures can be readily identified. Given the small scale and nature of these installation works it is considered appropriate to prepare an ESCoP to address any potential adverse environmental and social impacts. No other environmental safeguard policies are triggered.

6.0 Site Specific Potential Environmental Risks and Impacts

The potential environmental and social impacts associated with civil works at the facility may include:

- impacts to contractors' personnel health and safety, particularly working at heights and working with electrical equipment;
- hazards related to traffic when delivering large pieces of equipment;
- hazards from inadequate waste generation and disposal management, especially electronic waste;
- possible workplace discrimination or harassment.

It is anticipated that the potential negative environmental and social impacts will be minor, short-term and site-specific. These risks will be mitigated mainly through worker training and site management procedures. In the event of an onsite incident, investigation and response plans will be executed to mitigate their impact on individuals and on the wider community.

6.1 Mitigation of the Associated Risks

The identified risks are readily manageable through standard operating procedures and good work practices and the mitigation measures, monitoring and supervision responsibilities will be included in the contracts for the works.

Taking into consideration the type, location, sensitivity and scale of the planned works and the characteristics and size of potential impacts, preparation of the ESCoP is considered the most appropriate environmental safeguard instrument for this project. In preparing the ESCoP, references were made to applicable national environmental legal framework, World Bank operational policies and procedures, the project ESMF,[1] World Bank Group Environment Health and Safety Guidelines (EHSGs), and local construction guidelines.[2]

Rigorous application of the ESCoP will ensure that any adverse impacts caused by the works are avoided or minimized. ESHS Specifications have been prepared and included in this ESCoP to address environmental issues, including working at heights, working with electrical equipment, and general occupational and community health and safety measures. These contractor specifications will be included in contractor bidding documents. In addition, an electronic waste management plan (EWMP) is also annexed to this ESCoP, which has some elements related to the installation contractor and others related to the operations phase. Compliance is to be monitored throughout construction and the responsibilities, as detailed

[1] The project ESMF can be found at the following website: https://documents.worldbank.org/en/publication/documents-reports/documentdetail/217921528453817811/environmental-and-social-management-framework

[2] The relevant EHSGs can be found at the following websites: https://documents1.worldbank.org/curated/en/157871484635724258/pdf/112110-WP-Final-General-EHS-Guidelines.pdf and https://documents1.worldbank.org/curated/en/118311496115696454/pdf/115328-WP-ENGLISH-Health-Care-Facilities-PUBLIC.pdf

below, along with the corresponding General Contract Conditions (GCCs) to which the contractor must adhere.

6.2 Table of Impacts & Mitigation Measures

Table 6.2 Installation Phase Impacts and Mitigation Measures

Area / Aspect	Potential Impacts / Issues	Mitigation Measures	Monitoring Requirements	Responsibility for Mitigation	Responsibility for Monitoring and Supervision	Comments / Relevant contract conditions
Environmental Pollution	Noise	– Choose construction machinery and equipment with low noise levels if utilizing. – During operations generators, air compressors and other powered mechanical equipment should be shielded, and equipment placed as far away from residential areas as possible. – Regularly maintain vehicles and machinery to avoid noise emissions. – Minimize vehicle speeds and use of horns especially at night.	Throughout Construction	Contractor	Supervising Consultant PIU	*Technical Specifications 3.04 specifies that operational noise shall meet applicable standards.* .
	Solid Waste Management During Installation	– The contractor will follow the guidelines set out in the EWMP for reducing EEW. – Contractors should minimize waste generation. – All waste should be collected and disposed properly off site to the approved landfill. – Records of waste disposal should be maintained as proof of proper management. – Whenever feasible contractors should reuse and recycle appropriate and viable materials.	Throughout Construction	Contractor	PIU	*The contractor must adhere to relevant measures in the Electronic Waste Management Plan (EWMP) in Annex 2 of this ESCoP.*
Safety and Security	Traffic and Pedestrian Safety	– Contractors should put in place a traffic management system and conduct worker training				

	Access Management	to ensure safe public passage and to minimize traffic disruption by construction vehicles. – Where reasonably practicable all loading and unloading of construction vehicles should be within the site boundary. No parking or stockpiling of materials will be allowed along the public roadway. – No materials shall be stored so that they encroach on, or in any way adversely affect operation of, sections of roadway which are in use by the public or result in siltation or blockage of drains. – Adequate lighting must be provided onsite particularly if work is to proceed after hours. – Installation of proper signage and instructions. – Onsite personnel should wear high-visibility clothes and reflective vests. – Compliance with all guidelines and protocols established by the Department of Transport and Royal St. Lucia Police Force (RSLPF). – Temporary safety fences should be appropriately high above ground level where necessary. - Contractors should ensure safe and continuous access to the clinics, hospital, residences and businesses.				*GCC 9.18 addresses requirements for site security.*

	Worker safety	The bidding document and contract will require that the content of the Health and Safety Manual as required by the GCC shall only be the ESHS Specifications annexed to this ESCOP document, unless otherwise instructed by the Supervising Engineer. In addition: – Skilled personnel should be engaged. – Appropriate sign-posting of construction sites should inform workers of rules and regulations to be followed. – Occupational health and safety training should be conducted regularly and reinforced by supervisory staff. – Workers' PPE should comply with industry good practice (i.e., always hard hats and safety shoes, and as needed protective masks, safety glasses, hearing protection, and harnesses). – Contractors should adopt low noise equipment and reduce mechanical noise at work sites.	Throughout Construction	Contractor	Supervising Consultant Contractor PIU	*ESHS Specification No. 3 includes additional OHS requirements.* *GCC 9.11 sets out the safety requirements that the contractor will comply with.* *GCC 9.12 requires worker training, including E&S matters. As a minimum the Contractor will ensure that all workers participate in the general induction: General Induction for Construction Workers: Safety, Health and the Environment to be found here, https://www.wbgkggtf.org/node/3823 shall be provided as training to all Contractor's Personnel. Each Contractor's Personnel shall receive the general induction prior to their start of any Works activity on site, and at least midway through the work period.* *Records of the general induction training provided shall be kept. The record shall include a copy of the induction given and as a minimum the following details: Name and signature (or mark) of trainee; Employer/ organization they work for; Date of induction training attended.*
	Slippage and Falling, Working at Heights	– All staff on site will receive training on reducing the risk of slippage and falls. – Personnel will be required to wear appropriate PPE at all times. – Scaffolding and harnesses will be utilized for working at heights.		Contractor		*ESHS Specification No. 1 requires the Contractor to perform measures to handle specific risks associated with the performance of tasks at heights.*

	Working with electrical equipment	– Make sure that the user of the equipment is trained to use it safely. – Make sure the user knows which personal protective equipment to wear, how to use it, and make sure they do.	Throughout Construction	Contractor		*ESHS Specification No. 2 requires the Contractor to perform measures to handle specific risks associated with the performance of working with electrical equipment.*
	Risk of Social Conflict with the Contractor's personnel and the wider public.	– Any conflict between the onsite personnel and members of the public should be reported to the PIU and the relevant authorities. – The Contractor should assign responsibility for dealing with complaints from the general public to the site foreman or supervisor. Reports will also be accepted during consultations with stakeholders and the wider public. – The Contractor should establish a Grievance Redress Mechanism (GRM) for the communities and workers which sets out the relevant dates, details of the complainant, the nature of the complaint, action taken, and other relevant details. – The contractor should take appropriate measures to ensure protection against discrimination. – The Contractor will maintain a CoC for all personnel, including the sub-contractors for site activities. The CoC will form part of the workers' and sub-contractor contracts. Worker training shall include sensitization on the CoC and interactions with the general public. – The CoC will prohibit all forms of sexual exploitation	Throughout Construction	Contractor	PIU	*GCC 9.9 references the Code of Conduct which applies in this regard.* *SEA/SH is addressed in the CoC and training for it is addressed in GCC 9.12.*

	Stakeholder Engagement	and abuse and sexual harassment (SEA/SH). – Ensure protection against discrimination. – The GRM will have a channel for the uptake of grievances related to SEA/SH and gender-based violence (GBV). The Contractor shall: – Promote the GRM through ongoing community outreach and consultation. – Ensure that there is adequate stakeholder consultation. – Provide relevant contract-related information, as the Employer and/or Project Manager may reasonably request to conduct Stakeholder engagements. – Directly participate in Stakeholder engagements, as the Employer and/or Project Manager may reasonably request.				*GCC 9.13 covers the requirements for stakeholder consultation.* *GCC 9.17 addresses the requirement for a grievance mechanisms.*

6.3 Operations Phase Impacts and Mitigation Measures

Area	Potential Impacts / Issues	Environmental and Social Risk	Comment	Proposed Mitigation

Operations	Generation of electrical and electronic waste	High	A large number of electronic items will be procured. After the useful life of the items, and in and if items have to be replaced due to malfunctioning prior to the end of the useful life.	Adherence to the EWMP (electronic waste management plan). Training in the management of EEW for the users of the network.

6.3 Management Strategies and Implementation Plans (MSIPs)

The contractor will need to provide Management Strategies and Implementation Plans (MSIPs) to address key risks or impacts identified, some of which are outlined within the mitigative measures highlighted in table 6.2. These plans must offer comprehensive and concise details outlining means and methods to address the respective risk areas. Specific MSIPs are required for key ESHS risks due to the potential for impacts on the workforce. In addition to adhering to the mitigation measures in the table above, the Contractor will be required to prepare MSIPs for the following:

Working at Heights: The construction of the towers will require working at heights. The safety of the workforce, is paramount, hence it is mandatory that the contractor provides adequate personal protective equipment and training for the workers undertaking work at heights to create a safe working environment.

Working with Electrically Charged Items: Installation of the radio communication network will require working with electrically charged items. The contractor provide the necessary PPE and training to employees undertaking work of that nature to create a safe working environment.

7.0 Implementation Arrangements / Responsibilities

The Contractor is directly responsible for implementation of the contract in accordance with the GCCs and ESHS Specifications, and thereby deliver the requirements of the Contract. Day-to-day supervision and monitoring of compliance with requirements will be undertaken by the Supervision Consultant, who will inspect the works periodically to ensure that the Contractor is in compliance with approved documents.

The PIU's Environmental and Social Specialist will perform spot checks and periodic visits, to ensure that the Supervising Consultant is performing and holding the contractor to account for delivering to requirements. Collaborating agencies may also carry out monitoring, in connection with implementation of any of the project components, which fall under its jurisdiction.

Key responsibilities of the Supervising Consultant, MoHWEA PIU and the Contractor are as follows:

(a) MOHWEA & Project Implementation Unit (PIU) will be responsible for:

- Further the proper management of the environmental and social risks and impacts by ensuring that the Supervising Consultant is providing adequate oversight and reporting on ESHS issues.
- Engagement with project-affected peoples and other stakeholders.
- Evaluate the monitoring and supervision of project activities and ex-post evaluations.
- Publicising the Grievance Redress Mechanism and Grievance Redress Management.
- Systematically documenting evidence of its activities and outcomes and providing information to the World Bank team as needed.
- Promptly informing the WB of the occurrence of significant incidents or accidents, i.e. incidents or accidents resulting in the loss of at least three days of work.

(b) The Supervising Consultant (SC) will be responsible for:

- Addressing potential installation and operational ESHS risks.
- Final review of ESHS aspects of designs to ensure that they form a sound and comprehensive basis for addressing potential installation and operational ESHS.
- Preparation of ESHS Specifications for inclusion in the tender document and the subsequent works contract.
- Supervision of the contractor's compliance with contractual obligations.
- Reviewing and approving the Method Statements and MSIPs and requiring revisions and updates as needed.
- Ensuring that contractors are properly briefed in relation to the importance of ESHS matters during the works.
- Reviewing and approving the Contractor's work plans, Method Statements, and other plans, and requiring revisions and updates as needed.
- Ensuring that Contractors are properly briefed in relation to the importance of ESHS matters during construction.

(c) The Contractor

- Complying with the ESHS provisions of the contract, including any subcontractor(s), to the satisfaction of the Supervising Consultant and PIU.
- Adopting and implementing the E&S Specifications to meet the requirements of the Contract
- Responding to the SC and PIU to describe how they will deliver the ESHS requirements of the Contract, in terms of the tools, equipment and methods they will use.
- The Contractor must assign a qualified, competent individual to serve as E&S Officer to be present on site as required and to ensure compliance with mitigation measures provided in the ESCoP and fulfill the corresponding conditions in the contract. Additionally, the Contractor must provide an Accident Prevention Officer or HS Manager as required by the GCC.
- Contractor is required to obey other national relevant legal regulations and laws.
- The Contractor will assume the costs during the construction phase for complying with the ESHS requirements as a subsidiary obligation of the main work activity, and not separated in the BOQs.

Annex 1: ESHS Specifications for the Key Specific Risks

ESHS Specification 1: Safety at Heights

ESHS Specification 2: Working with Electrically Charged Equipment

ESHS Specification 3: Occupational Health and Safety

ESHS Specification 1: Safety at Heights

Project Activity/ Impact Source	ESHS Impacts	Typical Measures / Management Strategies
Working at heights	Increased risk of falls	Working at height remains one of the biggest causes of fatalities and major injuries on construction sites. Common cases include falls from roofs, ladders, and through fragile surfaces. 'Work at height' means work in any place where, if there were no precautions in place, a person could fall a distance liable to cause personal injury (for example a fall through a fragile roof down an unprotected lift shaft, stairwells). To reduce the inherent risks associated with working at heights the Contractor shall adopt the guidelines in the OECS Building Code[3] and adhere to the following: LADDERS All ladders, when in use, shall be set up in a manner to be secure and to prevent slipping; and ladders, except stepladders or other self-supporting ladders, shall be securely fastened to a permanent support at the top, and if necessary, at the bottom, and braced to prevent swaying, bending or shaking. Ladders, leading to floors, stagings or platforms, shall extend at last three feet above the level of such floors, stagings or platforms. No single ladder shall exceed 6m (20 feet) in length. When greater heights are to be reached, intermediate platforms shall be erected. Ladder landings shall be at least 1.2m (4 feet) square and equipped with handrails and toe boards. Ladder rungs shall be spaced uniformly as near to 300mm (12 inches) as is practicable. When used temporarily, in place of stairways or runways, ladders serving traffic in both directions simultaneously shall be at least 1m wide. If separate ladders are provided for going up and coming down, they shall be marked "UP" and "DOWN" respectively at each floor and platform level. Ladders, other than sectional or extension ladders, shall not be extended by joining two or more together. SCAFFOLDS

[3] https://oecs.int/en/our-work/knowledge/library/sustainable-energy/oecs-building-codes?start=36

		Properly constructed scaffolds shall be provided for all work which cannot be done safely by workmen standing on permanent or solid construction, except when such work can be done safely from ladders. All such scaffolds shall be substantially constructed, to support at least four times the maximum load and shall be secured to prevent swaying. Planks used in the construction of stationary scaffolds shall be not less than 50mm (2 inches) nominal thickness. Where such planks overlap at the ends, the overlap shall be not less than 150mm (6 inches). Planks shall be so placed that they cannot tip under the weight of the worker at any point. Nails used in the construction of scaffolds shall be of ample size and length to carry the loads they are intended to support, and all nails shall be driven full length. No nails shall be subject to direct pull. Ropes, cables and blocks used in the support of swinging scaffolds shall be of sufficient size and strength to sustain at least six times the maximum loads to which they will be subject. Where acids are likely to come into contact with them, ropes shall not be used in the support of scaffolds, but steel cables properly protected by grease or oil or other effective method shall be used instead. Every scaffold, the platform level of which is more than 1.8m (6 feet) above the ground or above a permanent or temporary floor, other than iron workers' scaffolds and carpenters' bracket scaffolds, shall be provided with guard rails and toe board extending the full length of the scaffold and along the ends except where ramps or runways connect with them, unless otherwise enclosed or guarded. On suspended, swinging and pole scaffolds, the space between guard rails and toe boards shall be fitted with wire mesh screens securely attached. Where objects are likely to fall on a scaffold from above, a substantial overhead protection shall be provided. Not more than 3m (10 feet) above the scaffold platform, and at doorways, passageways or other points where workers must pass under scaffolds, a substantial overhead protection shall be provided. No materials or equipment, other than required by the workers, shall be placed on scaffold platforms. Fit all fall protection equipment properly to the workers' bodies. Carry out a dynamic risk assessment prior to undertaking work at heights. Employees with medical conditions such as seizures or vertigo not allowed to work at heights as the condition may impair their ability to work safely.

ESHS Specification 2: Working with Electrically Charged Equipment

Project Activity/ Impact Source	ESHS Impacts/Concerns	Typical Measures / Management Strategies
Electrical works	Electrocution resulting in serious injury or death.	A Safe Attitude towards Electricity may Save life and property. Advise LUCELEC of any anticipated dramatic increase in electricity consumption. Overloading

		the system may result in problems on the site and neighbouring communities. Do not tamper with any meters, as this can result in damage to property, and increase the risk of fatal injury to workers. If there is need to cut large trees near power lines, inform LUCELEC which will assist by lowering the lines so that the danger to life and property is reduced. Always dry hands before handling plugs or switches. Do not substitute the fuse in panels with ordinary wire or anything else. This can cause a fire and can even be deadly. Only proper plugs must be inserted into sockets. Avoid using loose wires. Do not break off an earth pin to fit a plug into a different socket. Do not clean equipment while they are still plugged in. Do not put electrical equipment off by pulling the cord out of the outlet. This will damage the equipment or could cause a fire. Know the wattage of all equipment. Never plug too many pieces of equipment into the same outlet, as this poses a serious fire risk. Two or three plugs is the maximum; have additional sockets fitted. Too many pieces of electrical equipment on the same circuit can lead to overloading which leads to overheating and may consequently lead to an electrical fire. Extension cords should be only for temporary use. Only use tools that are properly insulated and carry essential marks of safety and integrity compliance: British Standard Kitemark (BSI) the American Underwriters Limited mark (UL) or the European IEC approval on any electrical equipment. Do not drill holes into walls without ascertaining the location of buried electrical wires.

		Do not climb power poles and transmission towers. Keep ladders and scaffolds away from power lines. Perform a Risk Assessment to identify the hazards, the risks arising from those hazards, and the control measures you should use. Add a lock-out system to avoid anyone working with charged equipment unknowingly. Check that the electrical equipment is suitable for the work and way in which it is going to be used. Check that the electrical equipment is in good condition. Check that the equipment is suitable for the electrical supply with which it is going to be used, and the electrical supply is safe. It is often beneficial to use a Residual Current Device (RCD) between the electrical supply and the equipment. Make sure that the user of the equipment is trained to use it safely. Make sure the user knows which personal protective equipment to wear, how to use it, and make sure they do.

ESHS Specification 3: Occupational Health and Safety

Project Activity / Impact Source	ESHS Impact / Concerns	Typical Measures / Management Strategies
All construction activities	Work activities impacting the health and safety of workers	The Contractor will have full regard for the safety of all persons entitled to be on the site and manage the site and works in an orderly manner appropriate to avoidance of dangers.

		The standards and guidelines regarding health and safety, namely the St. Lucia Labour Code, The Factories Regulations (Cap 106 of 1948), and Employees (Occupational Health and Safety) Act (No. 10 of 1985), as well as relevant sections of the OECS Building Code, will be adhered to. The Contractor will: Provide workers with PPE that comply with industry good practice. Provide protective clothing, safety boots, helmets, masks, gloves, and goggles, to the personnel, appropriate to the materials in use.[4] Designate a qualified senior member of the site staff to serve as Health and Safety Officer with the responsibility to ensure that all workforce health and safety matters are properly and fully addressed. Carry the requisite insurances. Provide adequate on-site first aid facilities with qualified first-aiders, together with evacuation plans/and procedures for seriously injured persons. Conduct regular health and safety training and convene regular health and safety meetings with workforce to emphasize safe work practices and expectations.[5]

[4] The appropriate PPE needs to be identified and in place before starting work, used and maintained regularly, and its use and maintenance monitored;

- Eye and face protection for flying particles, molten metal, liquid chemicals, gases or vapours, light radiation: safety glasses with side-shields, protective shades.
- Head protection for falling objects, inadequate height clearance, and overhead power cords: plastic helmets with top and side impact protection.
- Hearing protection for noise: ear plugs or ear muffs.
- Foot protection for falling or rolling objects, pointed objects, corrosive or hot liquids: safety shoes and boots.
- Hand protection for hazardous materials, cuts or lacerations, vibrations, extreme temperatures: gloves made of rubber or synthetic materials (Neoprene), leather, steel, insulating materials.
- Respiratory protection for dust, fogs, fumes, mists, gases, smokes, vapours: facemasks with appropriate filters for dust removal and air purification.

[5] *As a minimum the Contractor will ensure that all workers participate in the general induction: General Induction for Construction Workers: Safety, Health and the Environment to be found here,* https://www.wbgkggtf.org/node/3823 *shall be provided as training to all Contractor's Personnel. Each Contractor's Personnel shall receive the general induction prior to their start of any Works activity on site, and at least midway*

		Engage persons who are skilled and qualified for the tasks to which they are assigned, in accordance with the other ESHS Specifications in this ESCoP. Ensure that extinguishers and adequate water for firefighting are available at the entrance to the site. Ensure safety around excavations, pits, or trenches, by installing temporary barriers such as wire fencing, netting and road pins, chestnut paling fencing, or similar. Report accidents and incidents to the Supervising Engineer and Labour Department within 24 hours, and follow subsequent reporting and follow-up procedures as directed by the Supervising Engineer.

through the work period. Records of the general induction training provided shall be kept. The record shall include a copy of the induction given and as a minimum the following details: Name and signature (or mark) of trainee; Employer/ organization they work for; Date of induction training attended.

Annex 2: Electronic Waste Management Plan

ELECTRONIC WASTE MANAGEMENT PLAN

FOR

THE PROCUREMENT AND INSTALLATION OF RADIO COMMUNCIATION EQUIPMENT

UNDER

THE HEALTH SYSTEM STRENGTHENING PROJECT

Saint Lucia Health System Strengthening Project (P166783)

November 2024

ABBREVIATIONS AND ACRONYMS

BFR	Brominated Flame Retardants
CPU	Central Processing Unit
CSO	Central Statistics Office
DED	Department of Economic Development and Youth Economy
DOF	Department of Finance
EEE	Electrical and Electronic Equipment
EHD	Environmental Health Department/Division
EHS	Environmental, Health, And Safety
EMP	E-Waste Management Plan
ESCP	Environmental and Social Commitment Plan
ESS	Environmental and Social Standard
ESS	Environment and Social Specialist
EU	European Union
EWMP	E-Waste Management Plan
GRM	Grievance Redress Mechanism
ICT	Information and Communications Technology
IRD	Inland Revenue Department
IT	Information Technology
LDC	Less Developed Countries
MoHWEA	Ministry of Health Wellness and Elderly Affairs
MOIP	Ministry of Public Infrastructure
PAH	Polyaromatic Hydrocarbons
PCB	Printed Circuit Board
PDO	Project's Development Objective
Pop	Persistent Organic Pollutants
PPE	Personal Protective Equipment
PVC	Polyvinyl Chloride
SIDS	Small Islands Developing States
SMS	Single Messaging System
SLWMA	St. Lucia Solid Waste Management Authority
US	United States
WB	World Bank
WEEE	Waste of Electrical and Electronic Equipment

1.0 Background

The Health System Strengthening Project (HSSP) is one of the most recent initiatives forged out of a partnership with the Government of Saint Lucia and the World Bank Group. The aim of the project is to improve the accessibility, efficiency, and responsiveness of healthcare delivery in Saint Lucia to its population. Improvement of the island's healthcare sector has been a long-standing priority for the Government of Saint Lucia (GoSL), however the high prevalence of non-communicable diseases coupled with the continuing threat of highly infectious diseases such as Coronavirus (COVID-19) and dengue have highlighted the demand for a heightened momentum to this commitment.

Within the HSSP there is a focus on four (4) major components which are as follows: Design and Implementation of an Essential Package of Health Services (EPHS); Strengthening of the Health sector's service delivery in support of the essential Package of Health Services (EPHS); Institutional Capacity building, Project Management and Coordination; and Contingent Emergency Response Component (CERC).

Component 2: Public Health Preparedness and Response will focus on Health Information Systems and Surveillance and Public Health Emergency Preparedness and response. The aim of the second component is to strengthen the healthcare service delivery in support of the Essential Package of Health Services. One of the activities under component two is the procurement and installation of radio communication equipment.

The HSSP is managed by a stand-alone Project Implementation Unit (PIU), located within the Ministry of Health and Wellness. The PIU is responsible for the execution of the project components which including the procurement and installation of the radio communication equipment.

2.0 Introduction

The Ministry of Health Wellness and Elderly Affairs (MOHWEA) indicates that Saint Lucia's health sector Radio Communication System (RCS) was installed and commissioned in 2020. The National Emergency Management Organisation (NEMO) provided technical support for the conventional Land Mobile Radio's (LMR) procurement and installation. The design was deficient, the installed network did not deliver the intended services, and there were budgetary and other build-out challenges. Hence, the MoHWEA is utilizing funds under the HSSP to undertake an upgrade to the system.

The environmental and social impacts related to the procurement and installation of the radio communication equipment are expected to be minor, temporary, localized and readily managed by industry standard and typical mitigation measures. Negative impacts expected during renovation are related to: noise caused by traffic movements and installation works; pollution from waste; working at height, and working with electrical circuits. Reflecting the nature and scale of the proposed activity, this Environmental and Social Codes of Practice (ESCoPs) describes the mitigation measures to be applied by the contractor to ensure that the environmental, social and health and safety risks are minimized. The mitigation measures are identified by reference to the General Conditions of Contract (GCC) of the World Bank's Small Works Standard Procurement Document that will be used to procure the Contractor undertaking the works. Where necessary, the ESCOP identifies E&S Specifications that are to be added to the procurement document to supplement the GCC, and ESCOPs that set out the detailed actions that the Works Contractor must undertake to deliver works to the agreed standard.

3.0 Objectives of the EWMP

The main objective of the EWMP is the achievement and subsequent maintenance of sustainable and integrated E-Waste management practices in an effective and efficient manner throughout implementation of the activity. In general terms, this EWMP will:

(i) Serve as a tool for the reduction of E-waste generation, as well as for the promotion of reuse and recycling initiatives to extract value from E-waste.
(ii) Contribute to effective E-Waste Management,
(iii) Reduce associated costs to e-waste management activities through efficient e-waste management and disposal activities.
(iv) to establish a Standard Procedure to support the management of Electrical and Electronic waste;

The Waste Management Plan provides a framework for the safe efficient and environmentally sound management of waste produced by the project in compliance with both national and international requirements that govern waste management. The plan contains operational provisions for waste management, including clear steps and budgetary provisions for monitoring overall performance in the management of waste.

3.1 E- Wastes Management During Procurement, Installation and Operations

This EWMP, will be implemented during the procurement, and installation of the radio communication equipment and will follow and comply with the ESS1 and ESS3 of the Environmental and Social Framework (ESF) of the World Bank. This EWMP will be adopted and implemented for all project activities and at each project site. The EWMP will also be relevant during the operation phase of the Radio Communication Network. It also includes an integrated management approach for electrical and telecommunication waste, that could occur during, upgrade or renewal of installations and infrastructures, as well as during operation and replacement of electrical equipment. This plan also complies with existing national legislation and regulations.

3.2 Legal and Institutional Framework

In Saint Lucia, a number of Government and statutory agencies have responsibility for environmental management in one form or another under various pieces of legislation.

The following provides a general overview of the agencies, laws and regulations pertaining to various sections that have relevance to waste management. They cover areas such as environmental, and hazardous waste management, and public health.

The legal framework supports the development and operations of the EWMP during project implementation, and is based in the local legislature, regulations, resolutions, norms, international treaties, and other legally binding instruments that apply to the project. The legislative basis for waste management in Saint Lucia continues to evolve as understanding of the central importance of sustainable waste management to the country has increased[6]. Nevertheless, there are pieces of legislation that are relevant to waste management:

[6] E-waste Management Policy and Regulatory Framework for Saint Lucia.pdf

(1) The Waste Management Act 2004[7] and amendments in 2007 and 2021

The Saint Lucia Waste Management Act (2004) provides for the management of waste. It establishes the Saint Lucia Solid Waste Management Authority (SLSWMA), provides for waste management planning, licensing of facilities including waste haulers, regulation of operations, and for powers of authorized officers.

(2) The Public Health Act of 1975 and attendant Regulations to present. No. 10, 11, 12, 13, 14, 15, 16, 18, 20, 21, and 22 of 1978]: Public Health [Disposal of Offensive Matter] Regulations: Industrial Waste Works] Regulations. This Act lays down rules for the promotion and preservation of the health of the inhabitants of Saint Lucia. The Minister may make regulations prescribing all matters required by this Act, such as collection, removal and sanitary disposal of rubbish other offensive matter; and the quality control on food, drugs, cosmetics and devices.

(3) Employees (Occupational Health and Safety Act) Act 10 of 1985 in force from 10 December 1985 (S.I.93/1985). The Act sets new and improved standards of occupational health and safety in places of employment. And to ensure, so far as is reasonably practicable, that risks of accident and injury to health do not arise as a result of the handling, storage, transport, use and disposal of dangerous substances;

4) The Public Finance Management Act 2020 Part IX – is the legislative framework through which public assets are procured and disposed. The section **Acquisition, Use and Safe Custody subsection (2) states that** an accounting officer shall, in the case of a government agency that is under the oversight of the Director of Finance, be responsible for the acquisition, safe custody, control, transfer and disposal of all government property in the prescribed manner.

Disposal of Assets, subsection (2) places the responsibility for informing the Director of Finance, not less than 30 days before initiating the disposal of a public asset, on the accounting officer of the procuring entity that intends to dispose of the asset, to ensure that there are no risks or liabilities that are likely to arise from the disposal of the asset.

Subsection 4 (a) states that The Director of Finance shall designate an appropriate Officer to determine the appropriate method for disposal of public assets which are unserviceable or in surplus to the needs of the government.

4.0 Institutional Framework

This includes the institutions involved in project administration, management, and operations and institutions which provide oversight of the project activities. Each agency will have responsibility for monitoring based on their mandate and the day-to-day responsibilities of their respective institutions. As such, environmental management and monitoring of this project by the public sector will involve several bodies, each with its own statutory responsibilities or other traditional roles. These bodies will work cooperatively, within a coordinated framework, if efficient and effective environmental management from the public sector perspective is to be achieved.

The Ministry of Finance, Economic Development and the Youth Economy derives its mandate and functions from The Saint Lucia Constitution Order 1978 and other related subordinate laws, including; the Finance Administration Act, Chapter 15.01 (2005) and acts establishing agencies and auxiliary organisations. As such this Ministry plays a pivotal role in the co-ordination of development planning; mobilisation of

[7] file:///C:/Users/Admin/Downloads/waste-management-act.pdf

public resources; and ensuring effective accountability for the use of such resources for the benefit of all stakeholders.

The Ministry of Finance, Economic Development and the Youth Economy oversees and coordinate the planning and management of the country's financial and economic resources, including those from external sources, utilising suitable consultative mechanisms to deliver a high quality of service to the public, and to contribute to the formulation of appropriate polices, in order to accelerate social and economic development.

The mandate of the Ministry relevant to the project are:

- To ensure that all accounting and administrative functions comply with the Financial Act, Financial Regulations, Procurement and Stores Regulations and Staff Orders through the facilitation of sound management practices.
- To oversee the Financial (Administration) Act and attendant regulations as well as the procurement process to ensure greater transparency and economy in the use of government resources.

Saint Lucia Solid Waste Management Authority (SLSWMA)- The main institution in Saint Lucia responsible for waste management, is the Saint Lucia Solid Waste Management Authority. The Authority, established in 1996 is mandated to 'manage, regulate, control and treat waste either alone or in conjunction with private companies or organizations The Authority is responsible for the provision of coordinated and integrated systems to collect, treat, recycle and dispose of solid waste, including hazardous waste, as well as to manage sanitary landfills. Some of the activities of the SLSWMA, are related to e-waste collection and transportation, as well as to the licensing and approval of waste management facilities.

Presently the Authority, through solid waste management contractors, collects solid waste from residential properties, government/public offices and institutions. Additionally, the Authority makes provision for the disposal of solid waste at two waste management facilities namely the Deglos Sanitary Landfill and the Vieux-Fort Solid Waste Management Facility. Consistent with its mandate it is also responsible to establish and promote a resource recovery system that would serve to divert a number of waste streams away from the landfills resulting in the extension of the life of the landfills.

Ministry of Planning (MOP)- The Waste Management Act 2004 identifies the Ministry of Planning as the Planning Authority of the SLSWMA. As the Planning Authority the ministry's functions include accepting and reviewing applications for the operations of waste management facilities as well as waste haulage licenses. In issuing a Waste Management Facility License, the Ministry will specify conditions for the management of waste during the construction, operation or decommissioning of the licensed facility. The Planning Authority or the Authority may suspend or cancel a Waste Management Facility License or a Waste Haulage License as the case may be, in the event of a violation of a condition of such License, which violation poses an imminent danger of environmental damage. The Planning Authority or the Authority may also give notice to a holder of a Waste Management Facility License or Waste Haulage License requiring the holder to remedy the violation within a period of fifteen days and during that period, the holder's License shall be suspended and, at the expiry of such period, the Planning Authority or the Authority as the case may be, may cancel a License, if the holder fails to remedy the violation. The Planning Authority also has power, during a state of emergency to require any person to take any action that the Authority considers reasonably necessary for the safe management of waste.

Environmental Health Department- The Ministry of Health through its Environmental Health Department, has the responsibility for reviewing plans, monitoring and enforcing public health and sanitation regulations and practices, and promoting public awareness on matters relating to public health and the environment. These include practices that affect health such as food preparation, sanitation, solid waste management,

liquid and solid waste disposal, dust and air pollution, water quality, and some occupational health and safety matters.

Other agencies with roles and interest in the management of waste and environmental protection include the Department of Sustainable Development, and the Ministry for Agriculture, Fisheries, Food Security and Rural Development.

MoHWEA- The implementing agency is the MoHWEA.

Collectors/Recyclers
Currently, St. Lucia has four e-waste recyclers who provide E-waste collection, transportation, limited handling, storage and shipment abroad of all e-waste received.

4.1 International Conventions

St. Lucia is signatory to a number of International Agreements and Conventions which speak to the management of waste generally and E-waste in particular. In 1994 Saint Lucia became a signatory to the Basel Convention. The overarching objective of the Basel Convention is to protect human health and the environment against the adverse effects of hazardous wastes. Its scope of application covers a wide range of wastes defined as “hazardous wastes” based on their origin and/or composition and their characteristics, as well as two types of wastes defined as “other wastes” - household waste and incinerator ash.

The provisions of the Convention center around the following principal aims:

- the reduction of hazardous waste generation and the promotion of environmentally sound management of hazardous wastes, wherever the place of disposal;
- the restriction of transboundary movements of hazardous wastes except where it is perceived to be in accordance with the principles of environmentally sound management; and
- a regulatory system applying to cases where transboundary movements are permissible.

The first aim is addressed through a number of general provisions requiring States to observe the fundamental principles of environmentally sound waste management (article 4). A number of prohibitions are designed to attain the second aim: hazardous wastes may not be exported to Antarctica, to a State not party to the Basel Convention, or to a party having banned the import of hazardous wastes (article 4). Parties may, however, enter into bilateral or multilateral agreements on hazardous waste management with other parties or with non-parties, provided that such agreements are “no less environmentally sound” than the Basel Convention (article 11). In all cases where transboundary movement is not, in principle, prohibited, it may take place only if it represents an environmentally sound solution, if the principles of environmentally sound management and non-discrimination are observed and if it is carried out in accordance with the Convention’s regulatory system.

The regulatory system is the cornerstone of the Basel Convention as originally adopted. Based on the concept of prior informed consent, it requires that, before an export may take place, the authorities of the State of export notify the authorities of the prospective States of import and transit, providing them with detailed information on the intended movement. The movement may only proceed if and when all States concerned have given their written consent (articles 6 and 7).

The Basel Convention also provides for cooperation between parties, ranging from exchange of information on issues relevant to the implementation of the Convention to technical assistance, particularly to developing countries (articles 10 and 13). The Secretariat is required to facilitate and support this cooperation, acting as a clearing-house (article 16). In the event of a transboundary movement of hazardous wastes having been carried out illegally, i.e. in contravention of the provisions of articles 6 and 7, or cannot be completed as foreseen, the Convention attributes responsibility to one or more of the States involved,

and imposes the duty to ensure safe disposal, either by re-import into the State of generation or otherwise (articles 8 and 9).

The Convention also provides for the establishment of regional or sub-regional centres for training and technology transfers regarding the management of hazardous wastes and other wastes and the minimization of their generation to cater to the specific needs of different regions and subregions (article 14). Fourteen such centres have been established. They carry out training and capacity building activities in the regions.

The Annex-VIII hazardous waste of the convention lists the following applicable entries to e- waste:

- A1010 metal wastes and waste consisting of alloys of any of the following: antimony, arsenic, beryllium, cadmium, mercury, selenium, tellurium, thalium.
- A1020 waste having as constituents or contaminants, excluding metal waste in massive form, any of the following: antimony compounds, beryllium, beryllium compounds, cadmium, cadmium compound, lead, lead compounds, selenium, selenium compounds, tellurium, tellurium compound.
- A1030 wastes having as constituents or contaminants any of the following: arsenic, Arsenic compounds, mercury, mercury compound, thallium, thallium compounds.
- A1160 waste lead-acid batteries, whole or crushed.
- A1170 unsorted waste batteries excluding mixtures of only list B batteries. Waste batteries not specified on list B containing Annex I constituents to an extent to render them hazardous. [Note: List B batteries include: waste batteries conforming to a specification, excluding those made with lead, cadmium or mercury].
- A1180 waste electrical and electronic assemblies or scraps containing components such as accumulators and other batteries included in list A, mercury- switches, glass from cathode ray tubes and other activated glass and PCB- capacitors or contaminated with.
- A2010 glass waste from cathode ray tubes and other activated glass destined for direct reuse and not for recycling or final disposal.

List B includes B1110 electrical and electronic assemblies (including printed circuit board, electronic components and wires) destined for direct reuse, not for recycling or final disposal.

The Stockholm Convention: The Stockholm Convention on Persistent Organic Pollutants (POPs), requires parties to take measures to reduce or eliminate the unintentional release of POPs such as Hexachlorobenzene, pentachlorobenzene, polychlorinated biphenyls, and polychlorinated dibenzo-p-dioxins and dibenzofurans from open burning of waste.

Other relevant International Treaties focused on E-waste management are The Protocol Concerning Pollution from Land Based Sources and Activities to the Convention for the Protection and Development of the Marine Environment of the Wider Caribbean Region (under the Cartagena Convention), and the Programme of Action for the Sustainable Development for Small Island Development States.

Also, as part of international bindings and responsibilities for achieving sustainable development the following International Agencies: United Nations Environmental Program (UNEP), Organization of Eastern Caribbean States (OECS), Caribbean Public Health Agency (CARPHA), Caribbean Alliance for Sustainable

Tourism (CAST), can all be approached to provide support for establishing sound practices towards implementation of the EWMP.

4.2 Gaps in National Legislative Framework

There is no specific regulation on e-waste in place in St. Lucia, but there is legislation and regulation on general and hazardous waste. However, some of the activities of the Saint Lucia Solid Waste Management Authority (SLSWMA), created by the Waste Management Act (Act), are related to e-waste collection and transportation, as well as to the licensing and approval of waste management facilities. The Waste Management Act 2004 does not make explicit reference to E-waste, and there are no specific rules and guidelines to regulate E-waste disposal in the Act. However, the Act does refer to hazardous waste, with section 51 (2) (c) stating that the Minister in collaboration with the Planning Authority may make regulations for the collection and treatment of hazardous waste.

A consultancy was commissioned in 2017 for the development of an e-waste management policy and regulatory framework for St. Lucia, including an assessment of current e-waste treatment and a forecast of e-waste volumes and values. The Report from the consultancy included recommendations for the handling of E-waste but these recommendations have not been legislated.

5.0 Electronic Products to be Procured Under the Project

Electronic products to be procured for the Radio Communication upgrade include

(a) Lot 1: Supply and Installation of Passive, IP Network and Communications Equipment:

-	Telecom Tower (6 m)	3 units
-	Customized Telecom Shelter	3 units
-	42U – High Telecom Indoor/Outdoor Cabinet	13 units
-	Optical Distribution Frame	16 units
-	Router with NIM card	8 units
-	Switch L2/L3 - 48 Ports	8 units
-	Microwave Radio	16 units

(b) Lot 2: Supply and Installation of Core Network and End-Users Equipment and Antenna Systems:

-	Node Controller	4 units
-	Fleet Management Server	2 units
-	Network Management Server	2 units
-	KVM Switch	2 units
-	Logging Recorder Server	2 units
-	Dispatch Controller	2 units
-	Dispatch Console	2 units
-	RoIP Gateway	10 units
-	OTAP Backup Radio	3 units
-	RF Repeater (Digital)	12 units
-	RF Repeater (Analogue) Upgrade	3 units
-	Receiver (Rx) Filter	13 units
-	Frequency Reference	8 units
-	Receiver (Rx) Multicoupler	10 units
-	Transmitter (Tx) Combiner – 2 channels	5 units

- Transmitter (Tx) Combiner – 3 channels 5 units
- VHF/UHF Antenna (BS - Repeater) 32 units
- VHF/UHF Antenna (Fixed Mobile) 70 units
- VHF/UHF Antenna (Vehicle Mobile) 40 units
- Lightening Protectors (BS - Repeaters) 36 units
- Lightening Protectors (Fixed Moble) 16 units
- Fixed Mobile Radio – Cabinet 70 units
- Fixed Mobile Radio - Battery (Back-up) 70 units
- Fixed Mobile Radio (Base) 70 units
- Vehicle Mobile Radio 40 units
- Portable Radio 100 units
- Cables and installation kits

and

(c) Lot 3: Supply and Installation of Power Systems:

- 42U – High Telecom Battery Cabinet 5 units
- AC Power Conditioning Unit 8 units
- Uninterruptible Power Supply (UPS) 3 units
- DC - Distribution Panel (DST-20) 5 units
- DC - DC Converter Panel (48/24/12) 5 units
- DC Rectifier (Single Phase) 5 units
- Power Inverter 5 units
- NSB Battery (12Vdc - 400aH) 80 units
- AC Generators 10KW 5 units
- PV Solar Systems 10KW 5 units
- Cables and installation kits.

6.0 Purpose of an E-Waste Management

An E-Waste Management Plan (EWMP) is used to describe the waste management related issues within the Electrical and Electronic Equipment (EEE) industry sector and specify the best way to address these issues, giving specific actions, targets and timeframes. The aspects related to the generation and management of all types of waste must be considered from the very beginning, during the predesign, contracting, construction, and operational phases. In all cases, provisions shall be taken to minimize waste production and to provide proper management to reduce the impacts that these may have on the environment.

The EWMP, establishes responsibilities in relation to the risks and impacts throughout all project phases, and it shall be implemented consistently with the requirements spelled out in the project's ESMF to avoid negative impacts to stakeholders and livelihood, biodiversity and habitats nearby and surroundings of the project sites and activities.

7.0 E-waste Definition and General Considerations

E-waste is a term used to cover items of all types of electrical and electronic equipment (EEE) and its parts that have been discarded by the owner as waste without the intention of reuse. Although e-waste is a general term, it is considered to cover TV's, computers, mobile phones, white goods (fridges, washing machines, dryers, etc.), home entertainment and stereo systems, toys, toasters, kettles – almost any household or home business item with circuitry or electrical components with power or battery supply. E-waste contains materials that, if mishandled, can be hazardous to human health and the environment, but, most importantly, also materials that are valuable and scarce.

E-waste, as per European Union (EU) directive (WEEE Directive, EU, 2002a), is defined as "Electrical or electronic equipment which is waste including all components, subassemblies and consumables, which are part of the product at the time of discarding." This Directive's electrical and electronic equipment categories are given in Annex II. Basel Convention covers all discarded/disposed materials that possess hazardous characteristics and all wastes considered hazardous on a national basis. Annex I refer to E-waste, which is considered hazardous under Article 1, para. 1(a) of the Convention.

E-waste volumes are growing exponentially simply because of the market demand. The proper treatment of e-waste avoids negative impacts and yields many benefits. E-waste, if not properly treated, can have negative impacts, both on human health and on the environment. However, sustainable treatment of e-waste avoids these negative impacts.

The appropriate handling of e-waste can both prevent serious health and environmental damage and also recover valuable materials, especially for common metals and precious metals. The recycling chain for e-waste is classified into three main subsequent steps: i) collection; ii) sorting/dismantling and pre-processing (including sorting, dismantling and mechanical treatment); and, iii) end processing. All three steps should operate and interact in a holistic manner to achieve the overall recycling objectives.

The main objectives of sustainable e-waste recycling are: i) Treat the hazardous fractions in an environmentally sound manner; ii) Maximize the recovery of valuable materials; iii) Create eco-efficient and sustainable business; and, iv) Consider social impact and local context.

Hazardous Material in E-waste does not pose any environmental and health impacts unless it is dismantled and recycled. A major cause of these impacts is the improper way of dismantling and recovering the material from E-waste in these EEE are released into the environment. The workers involved in dismantling and recycling activities are exposed to this hazardous material. There are a number of chemical and metals in E-Waste as listed in Table 5 below.

Table 5 Toxic Substances in E-waste

1 Substance	2 Occurrence in E-waste
3 Halogenated compounds	4
5 PCB (polychlorinated biphenyls)	6 Condensers, Transformers
7 TBBA (tetrabromo-bisphenol-A)PBB (polybrominated biphenyls) 8 PBDE (polybrominated diphenyl ethers)	9 Fire retardants for plastics (thermoplastic components,cable insulation) 10 TBBA is presently the most widely used flame retardantin printer circuit boards
11 Chlorofluorocarbon (CFC)	12 Cooling unit, Insulation foam
13 PVC (polyvinyl chloride)	14 Cable insulation
15 Heavy metals and other metals:	16
17 Arsenic	18 Small quantities in the form of gallium arsenide withinlight emitting diodes
19 Barium	20 Getters in cathode ray tubes (CRTs)
21 Beryllium	22 Power supply boxes which contain silicon-controlledrectifiers and x-ray lenses
23 Cadmium	24 Rechargeable computer batteries, fluorescent layer (CRT 25 screens), printer inks and toners, photocopying-machines(printer drums)
26 Chromium VI	27 Data tapes, floppy-disks
28 Lead	29 CRT screens, batteries, printed wiring boards, televisionsets, PC monitors, light bulbs, lamps

30 Lithium	31 Li-batteries
32 Mercury	33 Fluorescent lamps that provide backlighting in LCDs, insome alkaline batteries and mercury wetted switches
34 Nickel	35 Rechargeable NiCd-batteries or NiMH-batteries, electrongun in CRT
36 Rare Earth elements (Yttrium, Europium)	37 Fluorescent layer (CRT-screen)
38 Selenium	39 Older photocopying-machines (photo drums)
40 Zinc sulphide	41 Interior of CRT screens, mixed with rare earth metals

8.0 E-waste Environmental and Health Impacts

Different hazardous materials, as mentioned above, are released during E-waste recycling. Mostly these materials are hazardous chemicals and heavy metals which are released into the environment and pose health risks. Hazardous materials are released when E-waste is dismantled, plastic parts are burnt, metals are recovered through chemical processes and discarded parts are disposed of on land and water under unsafe manner. Owing to unsafe recycling practices, the health of the workers involved in the E-waste recycling operations and communities living in the vicinity of E-waste recycling operations are at risk.

The scrappers usually don't use protective gears. They handle extremely toxic waste with their bare hands. Workers involved with the breaking of the computers are at the risk of inhalation of dust that may contain lead, barium oxide and phosphorus. Lead may cause neurotoxicity, high blood pressure, and muscle pains, and learning disabilities among children. Barium oxide can cause severe skin irritation and ingestion is harmful, and chronic exposure may lead to damage of Central Nervous System (CNS), spleen, liver, kidney or bone marrow.

Mostly the above-mentioned hazardous chemicals and toxic metals are persistent toxic substances (PTSs), which are released in the environment and can enter the food webs. Several PTSs are known to be endocrine disrupters, posing adverse health effects such as reproductive disorders, developmental deformities, and cancer in both humans and wildlife.

Dioxins, released from burning of E-waste are known carcinogens, which accumulate in the human body and may cause changes in the immune system, glucose metabolism and reproductive problems.

Dioxins are persistent organic pollutants (POPs) and they take a long time to break down once they are in the environment. Inhalation of cadmium fumes or particles can be life threatening. Cadmium exposure may cause kidney damage. The International Agency for Research on Cancer (IARC) has classified cadmium as a human carcinogen (group I) on the basis of sufficient evidence in both humans and experimental animals.

Acute mercury exposure may give rise to lung damage. Chronic poisoning is characterized by neurological and psychological symptoms, such as tremor, changes in personality, restlessness, anxiety, sleep disturbance and depression. High mercury exposure results in permanent nervous system and kidney damage. It has also been possible to detect proteinuria at relatively low levels of occupational exposure. Metallic mercury is an allergen, which may cause contact eczema.

The symptoms of acute lead poisoning are headache, irritability, abdominal pain and various symptoms related to the nervous system. People who have been exposed to lead for a long time may suffer from memory deterioration, prolonged reaction time and reduced ability to understand. Acute exposure to lead is known to cause proximal renal tubular damage. Long-term lead exposure may also give rise to kidney damage.

Inorganic arsenic is acutely toxic and intake of large quantities leads to gastrointestinal symptoms, severe disturbances of the cardiovascular and central nervous systems, and eventually death. Populations exposed to arsenic via drinking water show excess risk of mortality from lung, bladder and kidney cancer, the risk increasing with increasing exposure. There is also an increased risk of skin cancer. Studies on various populations exposed to arsenic by inhalation, such as smelter workers, pesticide manufacturers and miners in many different countries consistently demonstrate an excess lung cancer.

Beryllium can cause sensitization, lung and skin disease in a significant percentage of exposed workers.

Calcium chromate, chromium trioxide, lead chromate, strontium chromate, and zinc chromate are known human carcinogens. An increase in the incidence of lung cancer has been observed among workers in industries that produce chromate and manufacture pigments containing chromate.

Exposure to relatively high concentrations of antimony (9 mg/m3 of air) for a longer period of time can cause irritation of the eyes, skin and lungs. As the exposure continues more serious health effects may occur, such as lung diseases, heart problems, diarrhea, severe vomiting and stomach ulcers.

Exposure to Lithium can cause loss of appetite, nausea, vomiting, diarrhea and abdominal pain, headache, muscle weakness, twitching, blurred vision, loss of coordination, tremors, confusion, seizures and coma.

Zinc can cause eminent health problems, such as stomach cramps, skin irritations, vomiting, nausea and anemia. Very high levels of zinc can damage the pancreas and disturb the protein metabolism, and cause arteriosclerosis.

Cobalt dust may cause an asthma like disease with symptoms ranging from cough, shortness of breath and dyspnea to decreased pulmonary function, nodular fibrosis, permanent disability, and death. Exposure to cobalt may cause weight loss, dermatitis, and respiratory hypersensitivity.

The two products of PVC combustion are of particular concern including hydrogen chloride, which is corrosive, highly toxic gas that can burn skin and cause severe, permanent respiratory damage; and dioxin, the most dangerous known man-made carcinogen, which will persist in the environment for a long period of time. PVC is the largest contributor to the world's dioxin burden.

Occupational exposures to high levels of pollutant mixtures containing PAHs have resulted in symptoms such as eye irritation, nausea, vomiting, diarrhea and confusion. Mixtures of PAHs are also known to cause skin irritation and inflammation. Health effects from chronic or long-term exposure to PAHs may include decreased immune function, cataracts, kidney and liver damage (e.g., jaundice), breathing problems, asthma like symptoms, and lung function abnormalities, and repeated contact with skin may induce redness and skin inflammation. Naphthalene, a specific PAH, can cause the breakdown of red blood cells if inhaled or ingested in large amounts.

9.0 Benefits from Sustainable E-Waste Management Practices

Sustainable management practices, i.e., recycling operations, contribute considerably to reducing greenhouse gas emissions. Primary production of metals that are part of E-waste usually is a large contributor to greenhouse gas emissions, i.e., mining, concentrating, smelting and refining, especially of precious and special metals have a significant carbon dioxide (CO2) impact due to the low concentration of these metals in the ores and often difficult mining conditions. But, "mining" of old phones, servers, or old computers to recover the contained metals – if done in an environmentally sound or correct manner – needs only a fraction of energy compared to mining ores in nature.

Recycling of E-Waste equipment reduces the amount of land that has to be set aside specifically as landfill zones which in turn can be used for far more productive and socially beneficial usages such as low-income housing, more farming, or renewable energy power supplies. Recycling means that less money and energy

has to be expended for the mining of the various minerals, which are consumed during the manufacturing process for the production of E-Waste equipment.

The environmental footprint of a phone, a computer, and other electronic devices could be significantly reduced if treated in environmentally sound managed recycling operations, which prevent hazardous emissions and ensure that a large part of the contained metals is finally recovered for a new life. This E-Waste Management plan does not include or mandates for the establishment of an E-Waste recycling infrastructure, but points in the direction that; building a sustainable recycling infrastructure creates jobs and contributes to capacity building. The sustainable collection, sorting, manual dismantling, and pre-processing of e-waste could create a significant number of jobs in the countries that would develop this activity.

10. E-Waste Management in Saint Lucia

St. Lucia's e-waste management system is developing slowly. Currently, there are four e-waste recyclers in St. Lucia that collect and export e-waste without recycling it, *i.e.*, most of the time they pack e-waste as they receive it and export it to overseas refineries, mainly in China and Canada[8]. The Basel Convention[9], which St. Lucia adopted in 1994, requires that e-waste be sent to legally established e-waste recycling companies and refineries overseas, in order to comply with international regulations.[2] On island some e-waste is manually disassembled with common tools, but no specialised machinery is used to shred, impact, and fragment or granulate e-waste parts. Thus, the e-waste value chain in St. Lucia is basically limited to collection, storage and exportation. In addition, based on the e-waste management practices in St. Lucia, workers who manually dismantle e-waste products do not face a substantial risk of exposure to toxins because e-waste composed of hazardous substances, such as lead from cathode ray tube (CRT) TVs, is stored and exported without any treatment[10].

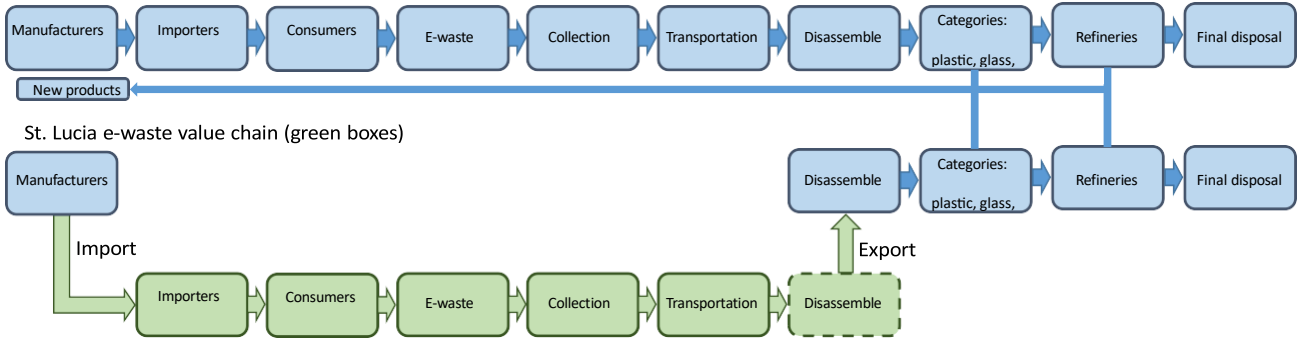
[8] E-waste Management Policy and Regulatory Framework for Saint Lucia.pdf

[9] Source: http://www.basel.int/TheConvention/Overview/tabid/1271/Default.aspx.

[10] E-waste Management Policy and Regulatory Framework for Saint Lucia.pdf

Figure 1 below provides a comparison of the general E-waste value chain and the existing situation in St. Lucia

General e-waste value chain



Note: Disassembling in St. Lucia is done only for few e-waste materials, e.g., desktop PCs.

Extracted from the E-waste Management Policy and Regulatory Framework for Saint Lucia

11. Recommended Procedures for E-waste Management

This section describes the procedures for E-waste management for the project. Currently there exists on island a system with limited collection capacity as well as a general lack of awareness of the handling of E-waste, no mechanism of retailer take-back and producer takeback, hence, the E-waste management procedure in the document should be followed by the project.

Other hazardous e-waste materials can be generated in small quantities by the project through a variety of activities such as equipment and building maintenance activities and include such items as batteries (such as nickel-cadmium or lead-acid); and lighting equipment, such as lamps or lamp ballasts, etc. These types of waste should also be managed, following the guidance provided in the document.

11.1 E-Waste Prevention Processes

This should be designed and operated to prevent, reduce or minimize, the quantity of e-waste generated and hazards associated with the e-waste generated in accordance with the following strategy: i) Substituting raw materials or parts with less hazardous or toxic materials, or with those where processing generates a lower e-waste volume; ii) Adopting and implementing good housekeeping and operating practices, including inventory control to reduce the amount of E-waste resulting from materials that are out-of-date, off-specification, contaminated, damaged, or are an excess to operational needs; and, iii) Reducing/minimizing hazardous e-waste generation by implementing stringent e-waste segregation to prevent the commingling of non-hazardous and hazardous e-waste.

11.2 Procurement of Electronic Items of a High Quality from Reputable Retailers/Sources

The first mitigation measure is to ensure that all electronic devices are procured from retailers or credible sources, that all devices will have a clear date of manufacture and warranty and the item is of a high quality. This will avoid procurement of poor quality, refurbished, or used second hand electronic devices with a shorter life cycle that leads to a rapid generation of E-waste. All items should be purchased where applicable, with protective covers and insurance. If possible, retailers or source of electronic items should be engaged where a repair, renewal, recycling or take back scheme option is offered.

11.3 Recycling and Reuse

In addition to the implementation of e-waste prevention strategies, the total amount of e-waste may be significantly reduced through the implementation of reuse and recycling plans, which should consider the following elements: i) Identification and reuse/recycling of products that can be reintroduced into the operational processes ii) Investigation of external markets for recycling by other industrial processing operations located in the neighbourhood or region of the facility (e.g., e-waste exchange); iii) Establishing reuse/recycling objectives and formal tracking of e-waste generation and recycling rates; and, iv) Providing training and incentives to employees in order to meet objectives.

12. Key Activities / Stages in the E-waste Management Plan

12.1 Make an Inventory of the E-waste

The project will make an inventory of the electronic items purchased. The implementing agency will be responsible for developing and updating the E-waste inventory. This inventory should be reconciled with the inventory of the procured ICTs. In some cases, during operation of the RCN, the existing or new ICT equipment would become part of the E-waste, ensuring that the inventory is updated periodically for incorporating any changes with respect to allocation, movement, auction etc. This type of E- waste will also be included in the inventory with the remarks 'Obsolete ICTs' against such E- waste. This inventory will be useful in identifying the quantum of the E-waste collected at the respective sites.

12.2 Treatment and Disposal

If e-waste materials are still generated after the implementation of feasible e-waste prevention, reduction, reuse, recovery, and recycling measures; then, e-waste materials should be treated and disposed of following all measures to avoid potential impacts to human health and the environment. Selected management approaches will be consistent with the specifications of E-waste characteristics and local regulations, and will include treatment and/or disposal at the permitted facilities specially designed to receive the e-waste. Information from the SLSWMA indicate that there are four (4) E-waste processors / recyclers, listed below, which provide E-waste management services to the general public, and three out of the four currently export the materials[11]. However, the Authority explained that currently the E-waste produced by government Departments are mainly stored for extended periods before being disposed at the SLSWMA landfill.

Table 12.2 E-waste recyclers in St. Lucia

42	Recycler	43	Materials collected
44	Construction and Recycling Ltd.	45	Metal, **e-waste**, batteries
46	Recycle It Ltd.	47	Metal, plastic, paper/cardboard, glass, **e-waste**, batteries, tires
48	Renew Saint Lucia Ltd.	49	Metal, plastic, paper/cardboard, **e-waste**, batteries
50	Mr. Marcelle	**51**	Metal, plastic, **e-waste**
52		53	

Source: Te-Hsin Tsai, "A Study of Recycling in Saint Lucia", November 2013.

12.3 Awareness and Sensitization

Awareness and sensitization of project staff and contractors (as applicable) who will use or install the electronic devices on the proper disposal once they become damaged, irreparable or at their end of life is vital. The project office will include in the sensitization the usefulness and significance of E-waste recycling, and the need for returning all electronic items procured by the project to a collection point that should be identified.

[11] A Study of Recycling in Saint Lucia (2013)

13. Monitoring, Review and Reporting

The implementation of the EWMP including monitoring and reporting, during the procurement and installation process will be managed by the Consultant attached to MoHWEA.

13.1 Adaptive Management Arrangements

These are defined as alternative managerial actions, different from what was originally planned. These managerial arrangements must be adopted due to unforeseen events during project implementation, which in turn generate a need for an adaptive management approach to address the new and unexpected situations. The EWMP shall be updated in case an adaptive management arrangement is needed. All specific details and considerations shall be properly recorded in the Plan.

14. Grievance Mechanism (GM)

The procedures for the GM are based on the ESS10. The project's GM will be used to receive grievances associated with the EWMP. The GM aims to quickly address all relevant grievances to minimize and/or eliminate negative impacts of the project on affected persons. In satisfying its aim, the GM will ensure that grievances are identified early and that the redress mechanisms are appropriate and expeditious, ultimately preventing escalation or un-manageable circumstances. The GM will help to minimize or eliminate conflicts with the potential to compromise the project development objective. The GM will enable the PIU to address grievances against the Project. It must be noted that this GM covers grievances that relate to the impacts that the project will have on its stakeholders, as listed in the Stakeholder Engagement Plan.

Annex 1: List of Recyclers in St. Lucia

_Status	Zone	Name_of_Recycler	Name_of_Business	Address	Contact_Number
Active	Castries South	Kurneil Lynch/Collins Lynch	Renew Saint Lucia	Deglos	719-2575/718-1511
Active	Castries Inner	Albertin Richlieu Jr.	Construction & Recycling Ltd.	Castries	458-2514/584-5256/286-7567
Active	Vieux-Fort	Frank Flood	Recyclene Solutions Limited	St. Jude's Highway	720-7915
Active	Castries South	David Gayle	D & D Recycle Ltd.	Cul De Sac	584-8630
Active	Castries South	Wayne Neale	Greening the Caribbean	Odsan	489-5642
Active	Micoud	Gurprit Singh	Gurprit Singh Recycling	Mon Repos	712-0549
Active	Castries Inner	John James	John James Ship Chandler Recycling Services	La Pansee	384-9416/519-7733
Active	Castries Outer/Dauphin	Kent Desir	St. Lucia Linen Services Ltd.	Union	719-9273/719-9280
Active	Anse La Raye	Wilson Sifflet	St. Lucia Distillers Group of Companies	Roseau	456-3118/456-3100
Active	Castries South	Stephen Antoine	Caribbean Clay Products	Ferrands, Cul De Sac	451-5675/715-6455
Active	Vieux-Fort	Carla Cotter	Chemical Manufacturing & Investment Co. Ltd.	Cedar Heights	454-6133/454-9115
Active	Castries South	Aaron Leon	Leon's Backhoe and Trucking Service	Bexon	719-6923
Active	Vieux-Fort	Larry Cadette	Larry's Scrap Metal	Vieux Fort Town	712-5201/722-3535
Active	Gros-Islet	Hilary Morgan	Biohelps Ltd.	Grande Riviere	451-4180/285-7386

References

Basel Convention, Partnership for Action on Computing Equipment (PACE), Revised Guideline on Environmentally Sound material Recovery and Recycling of End-of-Life Computing Equipment, July 26, 2103

Environmental Waste Management, Environmental, Health, and Safety (EHS) Guidelines General

EHS Guidelines. International Finance Corporation, World Bank Group (IFC-WBG), 2007

E-Waste Plan An Integrated Management Plan for the Grenada Digital Governance for Resilience Project, 2013

South Africa E-Waste Industry Management Plan V-1. Waste Policy and Information Management,

Saint Lucia Waste Management Act 2004

Telecommunications Management Group, Inc, E-waste management policy and regulatory framework for Saint Lucia Contract, No. ITU-SSA No. 12843

Te-Hsin Tsai (Grace) A STUDY OF RECYCLING IN SAINT LUCIA (2013)