

TC Document

I. Basic Information for TC

▪ Country/Region:	REGIONAL
▪ TC Name:	Management of E-Waste in Guyana, Suriname and Trinidad y Tobago
▪ TC Number:	RG-T3726
▪ Team Leader/Members:	Rihm Silva, Juan Alfredo (INE/WSA) Team Leader; Lewis, Gilroy Francis (INE/WSA) Alternate Team Leader; Carcasci, Giulia (INE/WSA); Cayetano, Evan Stephen (INE/WSA); Correal Sarmiento, Magda Carolina (INE/WSA); Lopez, Liliana M. (INE/WSA); Reyes Pantoja, Marle Dolores (INE/WSA); Sanmartin Baez, Alvaro Luis (LEG/SGO)
▪ Taxonomy:	Research and Dissemination
▪ Operation Supported by the TC:	n/a
▪ Date of TC Abstract authorization:	08 Jun 2020.
▪ Beneficiary:	Guyana, Suriname and Trinidad and Tobago
▪ Executing Agency and contact name:	Inter-American Development Bank
▪ Donors providing funding:	Multidonor AquaFund(MAF)
▪ IDB Funding Requested:	US\$250,000.00
▪ Local counterpart funding, if any:	US\$0
▪ Disbursement period (which includes Execution period):	24 months
▪ Required start date:	November 2020
▪ Types of consultants:	Firms
▪ Prepared by Unit:	INE/WSA-Water & Sanitation
▪ Unit of Disbursement Responsibility:	INE-Infrastructure and Energy Sector
▪ TC included in Country Strategy (y/n):	no
▪ TC included in CPD (y/n):	no
▪ Alignment to the Update to the Institutional Strategy 2010-2020:	Productivity and innovation; Economic integration; Environmental sustainability

II. Objectives and Justification of the TC

- 2.1 As in many other regions of the world, in the Caribbean the handling of Waste Electrical and Electronic Equipment (WEEE), referred to “e-waste” in this document, is a matter of concern. It is estimated that globally approximately 70% of e-waste ends up in unreported and unknown destinations¹, while the incorrect disposal of this waste can be toxic for humans and the environment.
- 2.2 The Latin American and the Caribbean (LAC) region produced 4.2 million metric tons of e-waste in 2016, with an average of 7.1 kg per capita. Guyana, Suriname and Trinidad and Tobago together generated in 2016, 32 kilotons of electronic waste, 70%

¹ Perkins, D. N., Drisse, M. N. B., Nxele, T., & Sly, P. D. (2014). E-waste: a global hazard. *Annals of global health*, 80(4), 286-295.

of which are generated in Trinidad and Tobago². In addition, the amount of e-waste being generated is increasing rapidly: from 2016 to 2025 the LAC generation of e-waste is expected to grow 2.4% annually³.

- 2.3 The incorrect disposal and incineration of e-waste releases toxic emissions (including lead, cadmium, mercury, and dioxins), which harm human health and pollutes the environment. Both direct exposures during recycling and indirect exposures through environmental contamination come with potentially severe health consequences⁴. In addition, its incorrect disposal prevents the recovery of resources that have market value.
- 2.4 The literature does not offer much evidence on the environmental and health consequences of inadequate management of e-waste in the beneficiary countries in this TC. According to the Basel Convention Regional Centre for Training and Technology Transfer for the Caribbean Region (BCRC-Caribbean)⁵, the mismanagement of e-waste in Suriname has led to the disposal in landfills and public spaces of hazardous waste streams, contaminating air, water and soil through persistent organic pollutants (POPs), heavy metals and other contaminants. In Guyana, local non-governmental organizations (NGOs) have been reporting evidence of dumping of electronic waste in different areas of the country⁶. In Trinidad and Tobago, it is reported that the lack of policies and regulations causes practices of dumping of e-waste in illegal landfills or on the sides of the roads⁷.
- 2.5 Among the main problems of the region in the e-waste management include the lack of information on generation and composition; the lack of policy, legal and regulatory framework (as most countries do not have specific regulations for e-waste in place⁸); and the lack of market conditions for recovery of valuable materials.
- 2.6 In this context, in 2014 the BCRC-Caribbean elaborated reports aiming to provide strategic direction for the region to soundly manage e-waste; as well as specific assessments for two countries: Trinidad and Tobago and Suriname. These documents identified guidelines and pathways for the development of a sub-regional e-waste management system and contain valuable information and recommendations. Nevertheless, more detailed, and updated data is required to elaborate a sub-regional strategy. Specifically, current collection and disposal routes and market conditions

² Baldé, C.P., Forti V., Gray, V., Kuehr, R., Stegmann, P.: The Global E-waste Monitor- 2017, UNU, ITU, ISWA.

³ Lasaridi, K., Terzis, E., Chroni, C., and K. Abeliotis, K. (2018). Statistics on the national arisings of E-scrap and the movement of E-scrap between countries.

⁴ For a review: Perkins, D. N. (2014).

⁵ BCRC-Caribbean. 2016. Assessment of Waste Electrical and Electronic Equipment for the Republic of Suriname.

⁶ <https://www.kaieteurnewsonline.com/2014/09/07/echo-reiterates-urgent-need-for-e-waste-management-in-guyana/>

⁷ <http://www.guardian.co.tt/article-6.2.423872.7e17ff1b95>

⁸ For an extensive review: ITU, Secretariat of the Basel Convention, UNESCO, UNIDO, UNU, WIPO, BCRC-South America, ECLAC (2016). Sustainable management of waste electrical and electronic equipment in Latin America.

should be assessed in more detail to get a realistic view on the quantities available for dismantling and treatment and to propose a potential regional management solution.

- 2.7 The objective of this TC is to support the sustainable management of e-waste in Guyana, Suriname and Trinidad and Tobago through the elaboration of a sub-regional e-waste strategic plan, based on the identification of main challenges and opportunities of the current e-waste management practices for these countries. This TC aims at promoting recycling and reusing valuable materials, hence contributing towards the efforts of creating a circular economy in the Caribbean region.
- 2.8 This TC will produce a diagnostic with the information on the e-waste management practices for the three countries, which will be compiled in new or updated assessment reports. Based on this information, a proposal for e-waste management plan for the three countries will be developed, together with training workshops on e-waste practices. Finally, this TC will support the countries in the development of a business plan and investment model for the sub-regional solution, which will include the identification of markets for sale of recyclable materials.
- 2.9 The TC is consistent with the Update to the Institutional Strategy 2020-2023 (AB-3190-2) and aligned to the challenges of: i) *Low productivity and innovation*, since the proposed e-waste management plan has the potential to boost the creation of markets for recycled materials and innovation in the e-waste recycle sector; and ii) *Limited economic integration*, since the proposed plan will support the creation of new regional markets for e-waste. This TC is aligned with the cross-cutting issue of *Climate Change*, since it has the potential to increase the environmental sustainability of the beneficiary countries, creating in turn ecosystems that are more resilient to the effects of climate change. In addition, the manufacture of electronics releases large amounts of CO₂, whereas when properly recycled, only a fraction of those greenhouse gas emissions are released.
- 2.10 This TC is aligned as well with the 2017 Water and Sanitation Sector Framework Document, where inappropriate disposal of solid waste is identified as a current challenge and sound solid waste management is defined as a clear goal and principle that guides the Division's work. This TC also tackles the challenges of strengthening institutional and operational capacities of the countries in the management of hazardous waste, as identified in the INE/WSA Solid Waste strategy, which is currently under elaboration.
- 2.11 The TC is aligned to the Country Strategies of Guyana, in the priority area of facilitate private sector development; Suriname, in the priority area of private sector development; and Trinidad and Tobago, in the strategic areas of (i) strengthening of public sector institutions and governance; and (ii) private sector development.
- 2.12 Additionally, this operation, financed with resources from the Multidonor AquaFund (MAF, GN-2487), is aligned with the document GN-2487 Proposal for the establishment of the AquaFund, specifically, with section VII, 7.1 paragraph C, by Support for the development of innovative approaches, methodologies and practices that have a potential for replication or scaling-up in a country or sub-region.

- 2.13 In relation to the TC “Support for the Promotion of the Circular Economy in the Solid Waste Management Sector of Trinidad and Tobago” (TT-T110) (in preparation), the project team will ensure that the scope of the two projects will complement each other, in order to avoid double efforts and overlapping. Part of the information generated by this project will be used as inputs for the implementation of the new TC.

III. Description of activities/components and budget

- 3.1 **Component 1. Assessments on e-waste management practices.** The **objective** of this component is to collect and systematize the information available for the e-waste value chain of the three countries. The **activities** of this component are the following: (a) data collection based on literature review and interviews with relevant stakeholders; (b) organization of one workshop for each country with relevant stakeholders (Ministries, private sector, solid waste management authorities, and universities) to socialize the initiative and collect inputs and feedback; (c) based on the results of the activities above, the elaboration of the assessments. The **products** associated with these activities are: (a) 3 reports on the results of the workshops; (b) 3 assessments: 2 updated assessments for Trinidad and Tobago and Suriname, and 1 new assessment for Guyana. The assessments will include information regarding generation, composition, collection, stakeholders analysis, high-level legislative and institutional review, existing pathways of disposal and market conditions for the recovery of recyclable materials. This information will be used to elaborate the proposal management plan of Component 2. The GEF Project Implementing Sustainable Low and Non-Chemical Development in Small Island Developing States (GEF ISLANDS Caribbean Project 1, GEF 10279), looks at the prevention of the build-up of harmful materials and chemicals through establishment of effective circular and life-cycle management systems in partnership with the private sector. A legislative, policy and institutional framework analysis is developed to support the environmentally sound management of hazardous chemicals at national and regional levels in the Caribbean. The information generated by the GEF Project on the institutional and legislative review will be used to as input to feed the Assessments of this Component.
- 3.2 **Component 2. Proposal for sub-regional management plan for e-waste.** The **objective** of this Component is to propose a plan for treatment and disposal of e-waste for the identified countries, based on the information of the Assessments from Component 1; and to design and implement training workshops on e-waste management practices. The **activities** of this component are the following: (a) the elaboration of the proposal plan, with identification of material streams, a definition of treatment requirements, and a comparison of the alternatives in terms of legal and technical requirements as well as a first cost estimation. The design of dismantling centers includes a preliminary design and budget for the proposed solution. (b) The design and implementation of the training workshops. The first workshop will cover e-waste management practices, including background knowledge, technical aspects and Occupational Health and Safety, and will target formal and informal workers. The second workshop will target personnel from government and waste management

companies, as well as e-waste importers and distributors, and will cover models and strategies for e-waste management, including business strategies, policy, and administrative aspects. The trainings will be developed on a request-base, and will be delivered most likely virtually, and alternatively in-person (if viable). The **products** associated with these activities are: (a) 1 Proposal for sub-regional management plan for e-waste. The plan will identify the best operational and infrastructural scheme for the collection, transport, treatment, and disposal of e-waste for the three countries. For the treatment and disposal, the plan will identify the most suitable number and location of the dismantling facilities; and specifically, whether the solution should be centralized (1 dismantling facility for the 3 countries) or decentralized (2-3 dismantling facilities for the 3 countries). The plan will include preliminary design and budget for the proposed solution. (b) Training workshops for waste workers.

3.3 Component 3. Business plan for the sub-regional management plan for e-waste.

The **objective** of this Component is to develop a business plan and investment model for the sub-regional e-waste management solution identified in Component 2. The **activities** of this component are the following: (a) the elaboration of a Cost Analysis. To develop a business plan, the cost factors need to be analyzed for each of the target regions. On overview of cost factors includes several variables, such as collection, purchase of material, transportation, storage, operational cost, marketing, etc. (b) the elaboration of a Conceptual business plan. Based on the cost analysis the dismantling facility is analyzed in terms of economic inputs and outputs. For a defined volume of e-waste (as used for the conceptual design) the main cost factors and potential revenues are considered. This results into an estimated overall balance, showing the financial demand to operate the facility. (c) the elaboration of a Business Plan. The **product** associated with these activities is 1 business plan, based on the results of the Cost Analysis and of the Conceptual business plan. The business plan will include the identification of markets for sale of recyclable materials, and the identification of a suitable public/private/civil society entity that could be able invest in the pilot scale project.

3.4 Component 4. Knowledge creation and dissemination of results. The **objective** of this Component is to organize and systematize the findings on the methodology and results of Components 2 and 3 into a knowledge product, and to socialize these findings with IDB employees, regional partners, and stakeholders. The **activities** of this component are the following: (a) the elaboration of a Technical Note, and (b) the organization of a workshop to socialize the results of the project. The **products** associated with these activities are: (a) 1 Technical Note (or similar knowledge product), and (b) 1 workshop.

3.5 The TC will have a total cost of US\$250.000,00.

Indicative Budget (US\$)

Comp	Description	IDB Funding	Counterpart Funding	Total Funding
1	Assessments on e-waste management practices.	135,000	-	135,000
2	Proposal for sub-regional management plan for e-waste.	70,000	-	70,000
3	Business plan for the sub-regional management plan for e-waste	40,000	-	40,000
4	Knowledge creation and dissemination of results	5,000		5,000
	TOTAL	250,000	-	250,000

IV. Executing agency and execution structure

- 4.1 The activities described will require coordination between the IDB team, the local stakeholders from the three beneficiary countries, as well as inputs from international organizations with specific expertise in the implementation of e-waste management models. To efficiently carry out the management of the activities in a centralized manner, the TC will be executed by the Bank through INE/WSA.
- 4.2 In Guyana, dialogue has been established with the Environmental Protection Agency, focal Point for the Stockholm, Basel, Minamata and Conventions. Additional stakeholders include Ministry of Communities, Guyana Power & Light (GPL), and the Department of Environment. In Suriname, dialogue has been established with the Coordination Environment Cabinet of the President of the Republic of Suriname, focal point for the above Conventions. Additional stakeholders include the Ministry of Public Works, Energie Bedrijven Suriname/Energy Company Suriname (EBS), and the National Institute for Environment and Development in Suriname (NIMOS). In Trinidad and Tobago, dialogue has been established with the Environmental Policy and Planning Division, of the Ministry of Planning and Development, focal point for the Conventions. Additional stakeholders include the Environmental Management Authority, the Trinidad and Tobago Solid Waste Management Company (SWMCOL), Trinidad and Tobago Electricity Commission (TTEC) and the Department of Natural Resources and the Environment, Tobago House of Assembly.
- 4.3 The project counts on the no-objection letter from the Ministry of Planning and Development from Trinidad and Tobago. The no-objection letters from the Governments of Guyana and Suriname will be obtained prior to the beginning of the activities.
- 4.4 To support the execution of the activities in the countries, the Project Team will be supported by two firms which will oversee the implementation of Components 1, 2 and 3.

- 4.5 The BCRC-Caribbean is an organization that supports contracting Caribbean Parties to the Basel, Rotterdam, Stockholm, and Minamata Conventions with implementing their international obligations to sustainably manage wastes and chemicals to protect human health and the environment. Dialogue with the local office of BCRC-Caribbean has been established to coordinate the implementation of this TC provided the previous work done by BCRC-Caribbean in e-waste management in these countries and their close relationship with the local authorities of the sector.
- 4.6 The Institute of Waste Management of the University of Natural Resources and Life Sciences of Vienna (BOKU for its German acronym) has large experience in science-based support of e-waste project in Europe, China, Africa, and Latin America. The institution can provide the necessary input for the region with exceptional expertise in the development of e-waste management systems in developing countries.
- 4.7 The overall supervision of the project will be under the responsibility of Alfredo Rihm (JRIHM@iadb.org). The designated focal point for executing pilot projects will be Gilroy Lewis (GILROYL@iadb.org) and Marle Reyes (MARLER@IADB.ORG) for the beneficiary countries. There are no supervision costs foreseen.
- 4.8 All contracting and procurement activities in the Procurement Plan will be carried out in accordance with the Bank policies as follows: (a) AM-650 for Individual consultants; (b) GN-2765-4 and Guidelines OP-1155-4 for Consulting Firms for services of an intellectual nature and; (c) GN-2303-28 for logistics and other related services; (d) Operational Guidelines for Technical Cooperation Products (GN-2629-1).
- 4.9 In accordance to the Bank policy GN-2765-4, and in consideration of the previous work realized on the same subject, and the specific expertise that the organizations provide, the Project Team recommends hiring BOKU and BCRC Caribbean on a Single- Source Selection basis. Only these firms are qualified and have experience of exceptional value for this job and have a clear advantage over the competition.

V. Major issues

- 5.1 The main risk are the possible delays in activities due to difficulties in the coordination between the different stakeholders involved in the different countries. Both regular engagement with all the stakeholders and close monitoring of the activities will be part of strategy to mitigate this risk both through BOKU as well as through BCRC-Caribbean which is an important and respected regional authority in waste management issues.
- 5.2 Additionally, there is a risk concerning the acquisition of reliable data from the countries to inform the e-waste assessments. To mitigate this risk, i) data from reliable government entities will be prioritized, ii) follow-up interviews will be conducted to verify data, and iii) national validation of the data and associated findings will be conducted through the results validation workshops.
- 5.3 Due to the COVID 19 pandemic, all the activities related to the execution of this CT will be carried out online. To avoid the risk of delays in the implementation of the

project, remote working will be assumed to be the default working method for all the activities.

VI. Exceptions to Bank policy

- 6.1 No exceptions to Bank policy are foreseen.

VII. Environmental and Social Strategy

- 7.1 This TC will finance consultancy products, studies, and plans and, as such, does not require the implementation of specific environmental or social safeguard policies. It is therefore classified as C. (See [SPF](#) and [SSF](#))

Required Annexes:

[Request from the Client - RG-T3726](#)

[Results Matrix - RG-T3726](#)

[Terms of Reference - RG-T3726](#)

[Procurement Plan - RG-T3726](#)