



Fourth Meeting of the Scientific, Technical and Advisory Committee (STAC) to the Protocol Concerning Pollution from Land-Based Sources and Activities in the Wider Caribbean.

Panama City, Panama, 18th to 20th July 2018

**REPORT FOR THE ACTIVITIES OF THE LBS REGIONAL ACTIVITY CENTRES
IMA (TRINIDAD AND TOBAGO) AND CIMAB (CUBA)
FOR 2017 – 2018**

For reasons of economy and the environment, Delegates are kindly requested to bring their copies of the Working and Information documents to the Meeting, and not to request additional copies.

ACTIVITY REPORT 2017 – 2018
REGIONAL ACTIVITY CENTRE LBS-RAC/IMA, Trinidad and Tobago

Project Name and Code	Activity	Dates of Activity	Objectives	Source of Funds	Budget (USD)	Estimate of “in kind” Contribution of RAC-IMA (TT\$)	Recipients/ Participants	Outputs
Environmental Monitoring and Assessment of the coast line of Trinidad and Tobago	On-going water, sediment and biota monitoring. Parameters include, physiochemical, nutrients, total suspended solids, chlorophyll a, heavy metals, hydrocarbons. Additional parameters, POPs, to be included in 2018-2019	Sampling conducted during the dry and wet seasons in 2017/2018 at sites within the Gulf of Paria, Trinidad. Commenced 2008	<p>To assess the contribution of land-based sources of pollution in Trinidad</p> <p>To establish tropical marine water quality standards and/or ambient guideline limits.</p> <p>To provide information on contaminant levels in biota (finfish and shell fish) for the protection of human health.</p>	Government of Trinidad and Tobago	\$20,000	\$	Trinidad and Tobago	<p>Water quality data for future SOCAR reports.</p> <p>Data used towards producing a State of the Marine Environment Report 2018 for Trinidad and Tobago.</p> <p>Data to be used to safeguard public health for use in fisheries advisory.</p>

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Bacteriological Water Quality at Popular Recreational Water-Use Sites in Trinidad and Tobago	Bacteriological Water Quality Surveys at popular bathing beaches on the east coast and west coast of Trinidad.	Bacteriological Water Quality Surveys commenced during the wet season of 2017.	<p>To conduct bacteriological water quality surveys at popular beaches in Trinidad for which bathing water quality data is non-existent.</p> <p>To identify possible sources of sewage contamination for each beach surveyed.</p> <p>To continuously monitor bacteriological water quality at popular beaches in Trinidad</p>	Government of Trinidad and Tobago	\$30,210		Trinidad and Tobago	<p>Reports outlining bathing water quality</p> <p>Policy briefs on bathing water quality and pollution sources for all beaches.</p>
Monitoring of coral reef and seagrass beds in Trinidad and Tobago	<p>Coral reefs in Tobago are monitored annually to determine changes in % coral cover</p> <p>Productivity and biomass of seagrass beds at</p>	<p>Coral reef monitoring on Buccoo Reef began in 1992.</p> <p>Monitoring of other reefs began in 2008 and is on-going</p>	To monitor ecosystem health and determine impacts from land-based sources of pollution and climate change.	Government of Trinidad and Tobago	\$117,500		Trinidad and Tobago	<p>Data on ecosystem health that is shared with Management Agencies such as THA.</p> <p>Data will be used in 2018 State of the Marine Environment</p>

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	<p>selected sites in Trinidad and Tobago are monitored 2 times per years</p> <p>Water quality sampling (nutrient, TSS, chl A, bacteria) is conducted at 12 sites in SW Tobago twice per year.</p> <p>Water quality sampling at 4 sites along the NW peninsula of Trinidad is collected 2 times per year</p> <p>Maintenance of 2 Coral Reef Early Monitoring System (CREWS) installed in 2013</p>	<p>Seagrass monitoring commenced in 2002 and is on-going.</p> <p>Water quality monitoring in Tobago and at seagrass sites in Trinidad commenced in 2006 and is on-going</p>						<p>Report and in the development of conservation strategies under the ICZM Process</p> <p>Research reports and peer review publications.</p>

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<p>Hydrological Study of the Caroni River Basin to determine transport and fate of land-based sources of pollutants, and to restore freshwater habitats</p>	<p>Creation of a coupled Hydrological and hydrodynamic model of water and pollutants flows in the Caroni River Basin.</p> <p>Water sample collection for source identification of nutrients using nitrogen isotopes</p> <p>Discharge measurements and water quality testing for nutrient pollution</p> <p>Collection of sediment samples for heavy metals. Collection of Crab samples for heavy metal analysis</p>	<p>On-going Project. - commenced Sept 2015</p> <p>Commenced in Dec 2016. To be completed in March 2019</p> <p>Collected in Nov 2017 and May 2018.</p>	<p>To quantify the fresh and salt water flows and mixing in the Caroni Swamp using hydrological and hydrodynamic modelling</p> <p>To measure and account for the sources, transport paths and fate of a variety of land-based pollutants (heavy metals, sediment and nutrient species), and examine the impact these pollutants have upon biodiversity. Isotopic analysis was used to determine source of nutrients and absorption rate by mangrove forest.</p> <p>To conduct a bacteriological assessment of the mangrove oyster (<i>C. rhizophorae</i>).</p>	<p>Government of Trinidad and Tobago</p> <p>UWI- Research Development Impact Funds</p> <p>Marine Biological Laboratory- University of Boston</p>	<p>\$135,750</p> <p>\$10,000</p> <p>\$20,000</p>		<p>Trinidad and Tobago</p>	<p>A spatiotemporal hydrological model of the discharge of the Caroni River Basin.</p> <p>Estimation of sediment and nutrient transport throughout the Caroni River Basin, and sedimentation rate in the mangrove</p> <p>Final research report and journal articles on the water, sediment and biota quality in the Caroni River Basin and Caroni Swamp.</p> <p>Joint journal publication with MBL on fate and transport of nitrogen in the</p>

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	<p>Bacterial water and oyster sampling</p> <p>Radionuclide analysis of sediment cores for accretion rate-cores collected and send abroad for analysis.</p> <p>Carbon quantification in mangroves-LiDAR processing underway. Plot level data fieldwork underway.</p>	<p>Sampling conducted in 2017 2018.</p>	<p>To determine heavy metal concentration in crabs harvested for human consumption.</p> <p>To measure historical sedimentation rates in Caroni Swamp and model with projected sea level rise to determine the future climate impacts.</p> <p>To determine the carbon sequestration by mangrove forests in Trinidad and Tobago.</p>					<p>Caroni River Basin and Swamp.</p> <p>Freshwater marsh restoration plan.</p> <p>Policy briefs for decision makers.</p> <p>Data to inform management plan for Caroni Swamp</p> <p>Data toward development of the CLME+ Ecosystem based management project proposal.</p>

Related Activities:

2017-2018

1. Signing of the LBS RAC agreement, Dr Lorna Inniss, Coordinator Secretariat of Cartagena Convention UNEP and Honourable Mrs Camille Robinson-Regis, Minister of Planning and Development Trinidad & Tobago, on 4th April 2018, POS, Trinidad and Tobago.
2. Participation in the UNDP/GEF Large Marine Ecosystem (CLME+) Project Ecosystem Based Management Project March 10-11th 2017, Cayene, French Guiana.
3. Participation in the UNEP's State of the Convention Area Report Meeting, March 13th 2017, Cayene, French Guiana.
4. Participation in the UNEP's Third Meeting of the Contracting Parties to the Protocol concerning Pollution from Land Based sources and Activities in the Wider Caribbean Region (LBS), UNEP's 17th Intergovernmental Meeting on the Action Plan for the Caribbean Environment Programme and 14th Meeting of the contracting Parties to the convention for the Protection and Development of the Marine Environment of the Wider Caribbean Region March 14-17th 2017, Cayene, French Guiana.
5. Participation in the Linking the Amazon Basin and the Caribbean Sea- Proposal preparation workshop in Belem, Brazil May 8-12th 2017.
6. Hosting of the Joint Catalysing implementation on the Strategic Action Programme (SAP) for the Sustainable Management of Shared Living Resources in the Caribbean and the North Brazil Shelf Large Marine Ecosystem (CLME+) Sub-project launching workshop Nov 20-24th 2017.
7. Participation in teleconferences during the 2017-2018 period- Data Working Group on State of the Convention Area Report SOCAR. The objective of the working group is to provide feedback on the advancement of the report on water quality criteria parameters, treatment of data etc.
8. Participation during the 2017-2018 period on the production of a draft Upstream Effluent Management Committee Report and Policy for the Oil and Gas sector of Trinidad and Tobago.
9. Participation during the 2017-2018 period for the National Implementation Plan for the Stockholm Convention on Persistent Organic Pollutants for the Republic of Trinidad and Tobago.
10. Working with a stakeholder team to develop CLME+ Ecosystem based management project in the Caroni River Basin. Stakeholders meetings were held with government agencies, farmer groups, and academia.
11. Focal Point for the CMA Project. Launch of Trinidad and Tobago CMA on June 8th 2018.

12. Appointment of the Inter-ministerial Integrated Coastal Zone Management Committee with responsibility of oversee the finalization and implementation of an ICZM Policy. IMA is Deputy Chair of Committee.
13. Hosting of 3rd Community Symposium in 2017-2018 to share research findings with coastal communities.

ACTIVITY REPORT 2017 – 2018

REGIONAL ACTIVITY CENTRE – LBS RAC-CIMAB, HAVANA, CUBA

Project Name and Code	Activity	Date and Host Country	Objectives	Source of Funds	Budget (USD)	Funds contributed by RAC-Cimab (Cuban pesos)	Recipients/ Participants	Outputs
<p>“Environmental Baseline of Domestic Wastewaters that impact marine and coastal areas in Honduras”.</p>	<p>1) “Theory-Practice Workshop on Analytical Techniques for the Evaluation of Marine Water Quality and Wastewater”</p>	<p>January 2017 Honduras</p>	<p>1. a. Provide an overview on monitoring of marine and coastal waters. 1. b. Present general sampling procedures and characterization of marine and coastal waters. 1. c. Present and explain test methods for marine and coastal waters. 1. d. Practical advice on sampling of sea water.</p>	<p>UNEP-CAR/RCU GEF CReW project.</p>	<p>50 000</p>	<p>10 000</p>	<p>60 specialists from: 1) Interactive Center for Water and Environmental Information (CIIHA) 2) Pollution Control and Study Center (CESCCO) 3) Secretary of Energy, Natural Resources, Environment and Mines of</p>	<p>1. Strengthened capacity of human resources in Honduras regarding analytical techniques for evaluation of marine water quality and wastewater. 2. Strengthened capacity of human resources of Honduras regarding identification, inventory and management of land-based sources of marine contamination.</p>

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	2) “Workshop for the Inventory of Pollution Sources and Activities that Impact Marine and Coastal Zones” and Training in “Monitoring and Evaluation of Domestic and Industrial Wastewater”	February 2017 Honduras	2.a. Describe and share methodologies for inventory of sources and activities of pollution in marine and coastal zones. 2.b. Exchange local experience in the inventory of sources and activities of pollution in coastal-marine zones.				Honduras (MiAmbiente)	
“Monitoring environmental quality of ecosystems of the bays of Santiago de Cuba, Cayo Moa, Nipe,	1) Compilation of ecosystem information and bibliographical search for	January 2017 / December 2018	<ul style="list-style-type: none"> Update inventory of land-based sources of pollution for each bay. Assess the hydro-chemical and sanitary 	Ministry of Science, Technology and Environment	2017: 2 560 000 CUP	-	Provincial Delegations of the Ministry of Science, Technology and Environment of Cuba (CITMA)	1) Outcome 1: Report and update of inventory of land-based sources of pollution in each bay.

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Puerto Padre, Cienfuegos, Mariel, Varadero – Cárdenas, Guantánamo, Matanzas, Nuevitas and Sagua”	establishing database. 2) Update inventory of land-based sources of pollution to the ecosystem. 3) Evaluation of the main physical-chemical (nutrients, organic matter), bacteriological (coliforms), biological (phytoplankton and chlorophyll) 4) and organic toxins (hydrocarbon) in the waters of the bays. 5) Analysis and comparison of		quality of the bay waters during rainy and less rainy periods. <ul style="list-style-type: none"> Determine current levels of organic contaminants (hydrocarbons from petroleum) in surface water during rainy and dry periods. Determine level of deterioration of natural communities through studies with biological indicators: (phytoplankton and chlorophyll) in both seasonal periods. Assess the effectiveness of corrective actions proposed to control and 	(CITMA) of Cuba.	120 000 CUC 2018: 2 560 000 CUP 120 000 CUC			2) Outcome 2: Report on the evolution and control of environmental quality in the marine ecosystem of each bay. 3) Outcome 3: Report on the assessment of the effectiveness of actions proposed for controlling and mitigating impacts in the coastal zones being studied. 4) Executive Summary.

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	<p>results achieved with historical records.</p> <p>6) Analysis of the effectiveness of mitigation measures for pollutant sources proposed in previous studies.</p>		mitigate impacts to each bay studied.					
“Integral Environmental Surveillance Plan of the Havana Bay and Adjacent Coastline”	<p>1. Monitoring environmental quality of the waters and sediments through monthly samplings in a network of stations.</p> <p>2. Determine the main carriers of contaminants in the surface currents (Luyano River, Martin</p>	January 2017 / Dec. 2018	<ul style="list-style-type: none"> Implement the Integral Environmental Surveillance System in the bay watershed to guarantee compliance of the recommendations established in the GEF RLA-93/G-41 project for enhancing the environmental status of the bay 	State Working Group of the Havana Bay	<p>2017 200 000.00 CUP</p> <p>38 000.00 CUC</p>	-	<ul style="list-style-type: none"> State Working Group of the Havana Bay Government of the Province of Havana Sources of industrial contaminants into Havana Bay National Institute of 	<p>1. Annual report and evolution of the environmental quality of the waters and sediments of Havana Bay.</p> <p>2. Annual report and contaminant load carried by the main surface currents into Havana Bay.</p>

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	<p>Perez River and Tadeo stream) through monthly samplings.</p> <p>3. Determine the contaminant load carried by storm drainages that directly affect the quality of the water in the bay (Agua Dulce, Matadero and San Nicolás), through monthly samplings.</p> <p>4. Annual monitoring of 10 industrial sources of contaminants.</p>		and its tributary basin.		<p>2018</p> <p>210 000.00</p> <p>CUP</p> <p>40 000.00</p> <p>CUC</p>		Hydraulic Resources	<p>3, Annual report and contaminant load carried by storm drains into Havana Bay.</p> <p>4. Report on contaminant load carried into the bay by 10 sources of industrial contaminants.</p>

Side Activities:

- An expert from RAC-Cimab participated in the Regional Workshop "Amazon – Caribbean Sea for the implementation of a GEF project" in May 2017 and has given follow-up and support to the main coordinator of the project (from the Federal University of Para, Belen, Brazil) in the elaboration of profile project (Concept Project).
- The Director and RAC-Cimab expert participated in the Third Meeting of the Contracting Parties (COP3) to the Protocol Concerning Land-Based Sources and Activities (LBS Protocol) in the Wider Caribbean Region, and the Seventeenth Intergovernmental Meeting for the Action Plan for the Caribbean Environmental Programme (17IGM) and Fourteenth Meeting of the Contracting Parties to the Convention for the Protection and Development of the Marine Environment in the Wider Caribbean Region (COP14), French Guiana, Colombia, March 2017.
- RAC-Cimab expert participated as a guest in the Second Meeting of the Committee of Directors of the GEF IWeco project which was held in Havana in February 2018.
- Mrs. Lorna Inniss, Coordinator of the Caribbean Environmental Programme, was received in the RAC-Cimab in a courtesy visit in February 2018 where she toured the facility and received an explanation about the main activities implemented by Cimab as the LBS Regional Activity Centre, as well as the main projects carried out in Cuba.
- The Director of RAC-Cimab participated in a meeting that was held by Mrs. Lorna Inniss, Coordinator of the PAC, with Cuban environmental authorities (February 2018), which main objectives were to analyse the signing of the Cimab Host Agreement as the Regional Activity Centre and the ratification of the LBS Protocol by Cuba.
- RAC-Cimab is working together with the AMEP Sub-programme in the definition of the activities for the implementation of the Regional Strategy and Action Plan to reduce nutrient load into the Wider Caribbean Region.
- RAC-Cimab is actively participating in the Regional Group of Experts on Monitoring and Evaluation and has participated in teleconferences, discussions and other activities carried out by the Group since its inception, with an emphasis on collaboration for the development of the State of the Region Report (SOCAR).