MARITIME TECHNOLOGY COOPERATION CENTRE CARIBBEAN (MTCC Caribbean)

CAPACITY BUILDING FOR CLIMATE MITIGATION IN THE MARITIME SHIPPING INDUSTRY

THE GLOBAL MTCC NETWORK (GMN) PROJECT

2nd Southern Sub-Regional Workshop Report

MTCC Caribbean

(17th & 18th March 2019)

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THE UNIVERSITY OF TRINIDAD AND TOBAGO

The MTCC Caribbean is hosted by the University of Trinidad and Tobago

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MTCC Caribbean 2nd Southern Sub-Regional Workshop Executive Summary

MTCC Caribbean facilitated the 2nd of two workshops targeting the countries of the Southern Caribbean for the purpose of building capacity for climate change mitigation in the maritime shipping industry. The 2nd Southern Sub-Regional Workshop was hosted from March 18th - 19th, 2019, at the University of Trinidad and Tobago’s Chaguaramas Campus. This workshop was the last of six sub-regional (national) workshops that aim to facilitate capacity building in the region by working with maritime administrations, port authorities, relevant government departments and related stakeholders to facilitate compliance with MARPOL Annex VI.

The 2nd Southern sub-regional workshop served as a medium for the exchange of knowledge, ideas and experiences concerning the reduction of emissions from ships and the existing legal and institutional frameworks. Valuable feedback and information was obtained from the territories of the southern sub-region. The workshop’s main outcomes included:

- Determining the Non Party Stakeholders that can lead in the implementation of decarbonized maritime operations
- Determining the level of readiness for the use of a Digital Platform while considering the following criteria:
  - Reporting via the online portal
  - Synergy with existing online platforms, if any
  - Access to results and the levels of access
  - HR and Technical requirements if any
  - Any other information to be added to the country portal
    - Bunker inventories
    - Emission monitoring
    - Port technology
- All countries will be consulted to identify whether they have an enabling environment for Non-party Stakeholders and Private Sector actors to be leaders in developing a decarbonized maritime industry
- Countries are asked by their respective delegates at the IMO to support the voluntary multi-donor trust fund at MEPC.74
- Countries are asked to update the country information on their GISIS modules, and engage with relevant stakeholders to assign specific roles as per the modules.

- Barbados
  - The Ministry of Maritime Affairs and the Blue Economy (MMABE) is a good model that will be modelled as an Institutional construct. This country will liaise with the Port department to determine the barriers to the implementation of the MTCC Data gathering form.
  - MTCC Caribbean will liaise with the EE focal point, and informally with its points of contact at the MMABE, to follow up on implementation of the form. Familiarisation
with reporting requirements and data collection can be provided by MTCC Caribbean using videoconferences as well as Webinars for shipping agents or maritime personnel directly involved in the clearance of vessels.

- Request that Barbados shares the results of Active and Passive sampling of emissions within Ports/its surrounding areas.

- **Guyana**
  
  - Noted the implementation of the MTCC data collection form. MTCC believes this implementation was directly influenced by MTCC Caribbean’s presentation at the Senior Maritime Administrators (SMA) meeting and the High Level Symposium (HLS) and we would endeavour to continue to be present at these events.
  
  - The Maritime Administrations are encouraged to liaise with established Energy sector organizations and to capitalize on lessons learnt in Trinidad and Tobago as they develop their Maritime and Blue Economies to ensure that they are developing this sector in a decarbonized manner.

- **Suriname**
  
  - Will liaise with their Pilots to enhance data gathering
  
  - They will liaise with their Port State Control to determine how they can assist in implementing the MTCC Data Gathering Form.

- **Trinidad and Tobago**
  
  - Trinidad and Tobago is currently the only territory in the Caribbean with a Single Electronic Window. Explore how the current Maritime Portal can be improved
  
  - Fleet assessment in reference to GHG emissions.
  
  - Explore how we can cooperate with the Ports to reduce emissions in ports

The logistics for the regional participants traveling to and from Trinidad and Tobago were coordinated by MTCC Caribbean’s Technical Secretariat. The workshop was attended by a mix of regional stakeholders comprising representatives from maritime administrations, shipping agents, ship owners, ship operators, regulators, ministry representatives, maritime technology providers, green energy providers, international organizations and academics; realizing 83% of targeted attendees from the region. Eight regional maritime administration representatives from four territories of the southern sub-region were selected by their respective maritime administrations to attend the workshop.

Upon completion of the workshop, the Director of MTCC Caribbean emphasized the importance of the effective integration of the maritime sector into the climate agenda of all MTCC territories.
2 MTCC Caribbean 2\textsuperscript{nd} Southern Sub-Regional Workshop

2.1 Preparation for 2\textsuperscript{nd} Southern Sub-Regional Workshop

MTCC Caribbean’s 2\textsuperscript{nd} Southern sub-regional workshop preparation was undertaken in accordance with the following IMO guidelines & documents:

- The Project Coordinating Unit (PCU) flowchart for regional workshops
- Arrangements, services, equipment to be provided by the MTCC Caribbean
- MTCC Caribbean & IMO responsibilities
- Arrangements check list MTCC Caribbean

MTCC Caribbean requested each territory to nominate two representatives with relevant technical expertise from their maritime administrations to participate at the workshop.

Six overseas representatives were flown in; two representatives each attended from Barbados, Guyana and Suriname. These participants, upon selection by their respective maritime administrations, were required to complete a nomination and acceptance form along with the submission of a copy of their passport bio-data page. (Refer to the “MTCC Caribbean Southern sub-regional workshop - nomination & acceptance forms” folder, submitted as part of the Southern sub-regional workshop completion report package, for a copy of the signed forms).

The processing of travel documentation and associated logistics to enable overseas participation by the representatives and MTCC team members were facilitated by MTCC Caribbean’s Technical Secretariat. MTCC Caribbean facilitated the purchase of the airline tickets and the issuance of reduced Daily Subsistence Allowances (DSA’s) directly to the overseas participants attending the workshop (Refer to Appendix I for a copy of the signed DSA receipts). Ground transfers to and from the airport were covered under the DSA for overseas participants. Transportation from the hotel to the venue of the workshop was facilitated by MTCC Caribbean’s Technical Secretariat. All meals other than those provided at the workshop for the duration of their stay were also covered by MTCC Caribbean’s contract with the hotel.

MTCC Caribbean chose Crews Inn Hotel and Marina as a suitable venue for accommodation of overseas participants, with an additional room booked for use by MTCC staff members involved in facilitating the workshop. The hotel provided suitable accommodation for the participants and
adhered to the requirements as per the IMO’s guidelines. The University of Trinidad and Tobago’s Chaguaramas Campus was chosen as the venue to host the workshop as it is suitably equipped to do so and the associated cost was absorbed by the host institute.

2.2 Southern Sub-Regional Participants

MTCC Caribbean’s target for workshop participation totaled 50 representatives which included:

- Ambassador Aad Biesbroek, Head of the Delegation of the European Union Delegation to Trinidad and Tobago;
- Mr. Colin Young, Regional Maritime Advisor for the Caribbean, International Maritime Organization (IMO);
- Professor Sarim Al-Zubaidy, President, The University of Trinidad and Tobago
- Eight MTCC staff members – Mrs. Vivian Rambarath-Parasram, Captain Sukhjit Singh, Mr. Stephan Nanan, Mr. Isikeli Waqa, Mrs. Sarita Mahabir-Lee, Ms. Suzette Balkaran, Mr. Tevin Parris and Mr. Michael Razack;
- 8 Regional Maritime Administration Representatives;
- 24 Regional Maritime Stakeholders from the host country (Trinidad and Tobago);
- Online Participants

2.2.1 Regional Maritime Administration Representation

Figure 1 illustrates the distribution of the representatives of the four regional maritime administrations that were present at the workshop. A total of 8 maritime administration representatives were present on day 1 and 7 were present on day 2 of the workshop. These figures amounted to an average of 83% participation which surpasses the MTCC Caribbean target of 80% for regional representation as per the Performance Monitoring Plan.

Figure 1 – Regional Maritime Administration Representation
2.2.2 Technology Providers

Following the positive feedback from the 3rd, 4th and 5th sub-regional workshop participants on the presentations of energy efficient technology providers, MTCC Caribbean approached various technology providers to deliver presentations at the 6th sub-regional workshop. The technology providers were asked to deliver a presentation on their respective developments relating to alternative fuels/energy efficient technologies and operations/missions abatement technologies available to commercial ships in the Caribbean region. The following are the providers that presented at the 6th sub-regional workshop via videoconference:

- Skysails;
- ABB Marine & Ports; and
- DNV-GL;

2.2.3 Regional Maritime Stakeholder Participation

Regional maritime stakeholder invitations were extended to various institutions, namely;

- BPTT (whom presented on the fleet wide measures taken to increase efficiency and reduce their carbon footprint)
- Ministry of Planning, Multilateral Environmental Agreements Unit
- Trinidad and Tobago Pilots’ Association
- National Energy Corporation
- Atlantic LNG
- Methanex Trinidad Limited
- Point Lisas Industrial Development Company
- Trinidad and Tobago Maritime Officer’s Association
- The Shipping Association of Trinidad & Tobago
Various Shipping Agents
Various Vessel Owners and Operators
Various Technology providers

Figure 2 illustrates the overall participation at the workshop. MTCC Caribbean targeted a total of 50 participants for both days of the workshop. Overall the workshop had participation from 43 representatives on day 1 and 40 on day 2. This figure amounted to 86% participation on day 1 and 80% on day 2. These figures give an average of 83% participation which surpasses the MTCC Caribbean target of 80% for representation as per the Performance Monitoring Plan. (Refer to Appendix II for pictures of the workshop participants). This total is inclusive of the European Union representative, the IMO representative and the MTCC Caribbean team which facilitated the workshop. The workshop was also live streamed globally.

Figure 2 – Overall participation for 2nd Southern Sub-Regional Workshop
2.2.4 Workshop Participants Gender Ratio

There was a 29:14 ratio of male to female attendees for day 1 and 4 7:3 ratio for day two, as illustrated in figure 3 below.

**Figure 3 – Participant’s Gender Ratio**

![Gender Ratio - Day 1](image)

![Gender Ratio - Day 2](image)

2.3 2nd Southern Sub-Regional Workshop Day 1

The first day of the 2nd Southern sub-regional workshop commenced with the opening ceremony followed by presentations from MTCC Caribbean representatives. The workshop also facilitated stakeholder feedback and discussion via question and answer sessions following each presentation.

2.3.1 Registration

Upon arrival at the workshop venue all participants were required to sign the registration form, and were subsequently issued a name tag and workshop folder. Guest speakers for the opening ceremony were seated at the head table and participants were seated within the adjacent conference space.

2.3.2 Opening Ceremony

The opening ceremony began with opening remarks from Mrs. Vivian Rambarath-Parasram, Director and Head, MTCC Caribbean. In her remarks, Mrs. Rambarath-Parasram welcomed the participants and expressed MTCC Caribbean’s gratefulness to the European Union and IMO for their continued investment. The Director stated that as MTCC Caribbean entered into the final stage of the project, the MTCC was on track to deliver on all of its project objectives. She emphasized that capacity building is integral to the GMN Project and that to date, MTCC Caribbean is happy to report successful implementation. Mrs. Rambarath-Parasram also indicated that MTCC Caribbean continues to pursue alliances to foster participation in the pilot projects. She highlighted the countries that are currently a part of MTCC Caribbean’s data collection efforts and the establishment of 14 EE focal points in the Caribbean region. The Director recognized the efforts and advocacy of the maritime administrations under its purview, with the Maritime Authority of Jamaica receiving special thanks for facilitating MTCC Caribbean’s participation and presentations at the High Level Symposium and Senior Maritime Administrators workshop in Jamaica. The Director went on to emphasize the importance of leveraging all available opportunities and mechanisms to mitigate the harmful effects of climate change.
change and encouraged all local, regional and international stakeholders with climate interest to collaborate with MTCC Caribbean to reduce the duplication of efforts and maximize the benefits of climate finance available to the region. She ended by thanking the participants of the southern sub-region for being present to share their country’s insights and experiences in decarbonizing the maritime sector, and acknowledged the support of MTCC Caribbean’s stakeholders in achieving the MTCC’s success to date.

Professor Sarim N. Al-Zubaidy, President of The University of Trinidad and Tobago welcomed the participants on behalf of the University and acknowledged the European Union and International Maritime Organization. He highlighted the vulnerability of Trinidad and Tobago as a Small Island Developing State, stating that, in alignment with the UN’s SDG 13, the University has taken a strategic approach to climate action through the work of MTCC Caribbean. He underscored the need for governmental support and an enabling environment for maritime climate action through policy and legislation, explaining that most Caribbean territories lack the aforementioned and thus have been slow to act in reducing carbon intensive production and consumption patterns. Professor Al-Zubaidy highlighted MTCC Caribbean’s success to date including its capacity building workshops, its data collection efforts and its technology needs assessment. He also quoted the commendation received by the MTCC from the IMO’s midterm evaluation and expressed pride in the Technical Secretariat which is staffed exclusively by UTT’s maritime graduates. The President continued that the IMO’s endorsement bodes well for the MTCC’s continued work in creating the first baseline of maritime energy efficient technology in shipping in the Caribbean. He also made clear the intent of MTCC Caribbean to move toward self-sustainability via continued research in maritime climate action. Professor Al-Zubaidy further applauded MTCC Caribbean’s work and commended its network of national and regional partners, and its seamless integration into the University’s Centre for Maritime and Ocean Studies, pointing out the use of its well qualified human resource and collaborative efforts toward achieving project objectives. In closing, the president thanked the local, regional and international organizations that have assisted MTCC Caribbean in achieving its goals.

His Excellency Ambassador Aad Biesebroek, Head of Delegation of the European Union to Trinidad and Tobago, brought greetings on behalf of the European Union. He stated that almost two years ago he attended the launch of MTCC Caribbean, and explained that it would be part of a global network promoting greener practices. He pointed out that the European Union decided to financially contribute to this IMO implemented project because it has everything to do with the fight against climate change. The ambassador stated that most scientists agree that there are clear signs that global warming is taking place and there is a need to keep further warming well below 2 degrees Celsius of the established pre-industrial baseline. He explained that the Paris agreement has 195 parties and 185 ratifications and that in order to meet each country’s long term goals, each sector must play a part. He clarified that the transportation, industry and electricity generation sectors are key and that international shipping emits about 2.5% of global GHG emissions. He further offered that fortunately, there is significant untapped potential to reduce vessel emissions as the investments in low carbon technology and operations are economically sound. He highlighted that in the EU there are set GHG targets for the maritime transport sector, and monitoring, reporting and the verification of CO2 emissions from large ships using EU ports occurs. The ambassador reminded participants that the EU is
supporting and funding research through the Horizon 2020 Programme which will assist in the fight against climate change. He was pleased that the private sector was actively involved in the workshop and in closing, thanked the IMO and UTT for their roles in facilitating MTCC Caribbean’s work.

Mr. Colin Young, the IMO’s Regional Maritime Advisor for the Caribbean, followed with his greetings on the IMO’s behalf. Mr. Young began by extending his appreciation to the European Union for their financial support and the European Commission for their continued cooperation in the implementation of the GMN project. He also thanked the GMN’s Project Coordination Unit and the technical experts at the Marine Environment Division for their dedication. Mr. Yong extolled MTCC Caribbean’s performance and noted that it is the only MTCC headed by a woman. He emphasized the IMO’s World Maritime Day theme for 2019 “Empowering Women in the Maritime Community” and the concerted effort being made by the IMO to help the industry and women achieve representation that is in keeping with the 21st century expectations. Mr. Young indicated that although international shipping represents around 2.2% of global emissions in 2012, this is expected to rise between 50% - 250% by 2050, based on model scenarios. He stated that in April 2018, the Resolution MEPC.304(72) “Initial IMO Strategy on reduction of GHG Emissions from Ships” was adopted. He indicated that at the heart of this strategy, IMO confirms its commitment to reducing GHG from International shipping and phasing them out as soon as possible. Mr. Young ended his greetings by stating that during the 73rd session of IMO’s MEPC in October 2018, a program of follow up actions of the initial strategy was approved. He drew the participants’ attention to action 4 on capacity building, technical cooperation, and research and development. Mr. Young stated that MTCC Caribbean and all other MTCCs can play an integral part and encouraged the support of stakeholders for MTCC Caribbean to play a leading role in building capacity and promoting low carbon shipping.

The opening ceremony ended with greetings from Lt. Cmdr Ronald Alfred, Director of the Maritime Services Division of the Ministry of Transport; Trinidad and Tobago’s maritime administration. Lt. Cmdr Alfred began by acknowledging the efforts of the EU and IMO, as well as the support of the regional maritime administrations and our shipping stakeholders. He stated that the importance of shipping is recognized but sustainability is key, a fact recognized by the IMO in its efforts to curb GHG emissions from ships, especially considering that sea transport is expected to grow. Lt. Cmdr Alfred outlined the requirements for decarbonizing shipping which are in line with MTCC Caribbean’s objectives. He reaffirmed his support for the MTCC, and stated that the MTCC’s work will contribute to sustainably expanding the maritime sector. The director explained that Trinidad and Tobago’s maritime sector is identified as one of seven key sectors for expansion in the national development plan which has prompted interest in blue economy initiatives and cold stacking, among others. He indicated that Trinidad is well positioned for easy implementation and regulation of maritime sub-sector activities. He stated that as a result of these activities, environmental sustainability is of the utmost importance. Lt. Cmdr Alfred highlighted that the work of MTCC Caribbean will enhance their understanding of emissions levels, potential impacts from shipping, build awareness and inform policy decisions. The director closed by emphasizing the impacts of climate change on Trinidad and Tobago and stressed that all Caribbean countries should do their part toward mitigating GHG emissions from shipping. (Refer to Appendix III for pictures from the Opening Ceremony or refer to the “MTCC
2.3.3 Policy Considerations for Decarbonizing the Maritime Sector of the Caribbean

The first presentation on the agenda of the 2nd Southern sub-regional workshop was presented by Mrs. Vivian Rambarath-Parasram, Director and Head of MTCC Caribbean. The presentation titled “Policy Considerations for Decarbonizing the Maritime Sector of the Caribbean” included a brief recap of the GMN and MTCC Caribbean’s project objectives. Mrs. Rambarath-Parasram addressed the issue of climate change by highlighting the insufficient progress and the problem at hand. Her presentation included an update on the implementation of MARPOL Annex VI, the Kyoto Protocol and the Paris Agreement within the 16 Caribbean territories. The presentation included the opportunities for climate action and key IMO initiatives on climate action including the GLOMEEP and GMN projects, and the Initial GHG Strategy. The director outlined the opportunities and responsibilities for non-party stakeholders to collaborate at the governmental level and with each other toward climate action goals. Mrs. Rambarath-Parasram delivered an overview of the existing CARICOM initiatives addressing climate action and the need for enhancing regional cooperation. She ended by stating the results of MTCC Caribbean’s participation at the Senior Maritime Administrator’s meeting and the High Level Symposium, and detailed the policy imperatives for the decarbonization of the maritime sector.

She asked that participants consider three questions during the course of the workshop:

1. What (if any) institutional resources can your maritime administrations dedicate to maritime climate action?
2. What specific synergies do you recommend for greater inclusion of maritime climate action in NDCs in your respective countries? and
3. Who are the non-party stakeholders that can lead climate action in your respective countries? (Refer to Appendix IV, Presentation I).

2.3.4 Analysis of Alternatives in view of the International Maritime Organization’s 2020 Sulphur Cap

Captain Sukhjit Singh, Deputy Director and Technical Head of MTCC Caribbean presented on the “Analysis of Alternatives in view of the International Maritime Organization’s 2020 Sulphur Cap”. Captain Singh began his presentation by detailing the 2020 Sulphur Cap and the options available post 2020. He outlined the options of low sulphur fuel oil, four main types of scrubbers and alternative fuels. Captain Singh went on to highlight the decision factors that ship owners consider when selecting the available options and expected response from the industry to the options. Captain Singh ended his presentation by reiterating IMO’s initial strategy on reduction of GHG emissions from ships and the areas of concern for administrations in the Caribbean region. (Refer to Appendix IV, Presentation II)
2.3.5 Calculating GHG Inventory and Establishing Shipboard Energy Efficiency Operational Index (EEOI) Baseline using Bottom Up Analysis Methods & Verifying Results using Full Mission Simulators

Mr. Isikeli Waqa, Energy Efficiency Adviser of MTCC Caribbean, presented on “Calculating GHG Inventory and Establishing Shipboard Energy Efficiency Operational Index (EEOI) Baseline using Bottom Up Analysis Methods & Verifying Results using Full Mission Simulators”. Mr. Waqa began by addressing the level of global GHG emissions from maritime shipping. He then went on to discuss three methods for the establishment of a GHG Inventory and EEOI on ships operating in the Caribbean. Mr. Waqa also outlined energy efficient up-take methods available on full mission simulators. He concluded his presentation by discussing the use of marine simulators for verifying GHG emissions and energy efficiency aboard ships. (Refer to Appendix IV, Presentation III)

2.3.6 Addressing Maritime GHG through Nationally Determined Contributions (NDCs)

Mr. Stephan Nanan, GHG Adviser of MTCC Caribbean, presented on “Addressing Maritime GHG Emissions through Nationally Determined Contributions (NDCs)”. Mr. Nanan began by addressing the critical dimensions of sustainable development and NDCs. The presentation provided an analysis of the United Nations’ Emissions Gap followed by the Caribbean nations’ NDCs as it relates to transport. Mr. Nanan highlighted countries that possess Maritime specific NDCs such as Japan, Turkey, India, etc., and encouraged Caribbean representatives to lobby for Maritime specific targets to be incorporated into their NDCs. Mr. Nanan ended by providing recommendations for the Caribbean region and identifying MTCC Caribbean’s future work in this aspect of climate action. (Refer to Appendix IV, Presentation IV)

2.3.7 Results from the 1st Southern Sub-Regional Workshop

Ms. Suzette Balkaran of MTCC Caribbean’s technical secretariat followed with her presentation on the “Results of the 1st Southern sub-regional workshop”. Ms. Balkaran began by stating that Trinidad and Tobago, which is part of the Southern Sub-Region, was the first country to initiate data collection and that 3 of the 4 countries report data. She also provided the participants with an update of MTCC Caribbean’s Regional Steering Committee (RSC) and EE Focal points for the Southern sub-region. Ms. Balkaran delivered a review of the outcomes from the 1st Southern sub-regional and highlighted MTCC Caribbean’s participation and outcomes at the High Level Symposium. She also highlighted the current status of the Southern sub-region and presented its progress to date. In closing, Ms. Balkaran outlined the expectations of the Southern sub-region in relation to capacity building and data collection for the pilot projects. (Refer to Appendix IV, Presentation V)

2.3.8 Open Discussions & Feedback Sessions

At the end of day 1, MTCC Caribbean facilitated an open discussion to allow workshop participants a forum for questions/concerns/comments related to the project.
2.4 Southern Sub-Region Workshop Day 2

The second day of the Southern sub-regional workshop consisted of scheduled presentations by country delegates of the four (4) countries represented. Representatives of each country were asked to prepare and present a Country presentation, with respect to MARPOL Annex VI implementation, outlining the country’s legal, institutional and technological capacity. Prior to the respective country presentations, technology providers DNV-GL, ABB and SkySails provided a brief insight into their work and services which was followed by Capt. Singh’s presentation on MTCC Caribbean’s Technology Needs Assessment. This presentation was followed by Vessel operator BPTT’s presentation on their efforts toward reducing GHG emissions from their fleet and Mr. Nanan’s presentation on MTCC Caribbean’s Pilot Projects. Following the Country presentations, Mrs. Rambarath-Parasram and Capt. Singh facilitated a final plenary which was followed by the distribution of certificates.

2.4.1 Safer, Smarter, Greener – DNV-GL Technologies

Mr. Tore Longva, DNV-GL, presented on “Batteries” as a safer, smarter and greener technology. Mr. Longva presented batteries and hybrid systems as a new way of providing power and propulsion. He provided workshop participants with technical examples on the impact of replacing generators with a battery, as well as fully electric and battery hybrid ships and illustrated case studies concerning same. The presentation was facilitated via videoconference (Refer to Appendix IV, Presentation VI).

2.4.2 Azipod® D – gearless thruster

Mr. Luis Moratalla, Digital Service Manager, ABB Inc. Marine & Ports, presented on “Azipod® D – gearless thruster”. Mr. Moratalla gave a brief overview of ABB Marine and Ports’ business and global presence. His presentation included the various Azipod solutions available for installation from ABB and focused on one in particular; the Azipod D. Mr. Moratalla went in depth with the technical specifications and operations of the Azipod D, illustrating the benefits of the system compared to its traditional geared counterparts and gave examples of its usage on vessels. The presentation was facilitated via videoconference. (Refer to Appendix IV, presentation VII)

2.4.3 SkySails Technology

Mr. Falko Fritz, SkySails Group, presented on SkySails’ “Towing Kite Technology”. His presentation provided a brief history of the technology and its applications internationally. Mr. Fritz went on to provide technical details on the development of towing kite technologies including research, production, installation, launch & recovery, daily operations, savings and other benefits. He also emphasized that SkySails is the only company worldwide that delivers large scale automated towing kites for ships. Mr. Fritz encouraged participants to take on board the technology as a solution to reduce emissions from shipping. The presentation was facilitated via videoconference (Refer to Appendix IV, Presentation VIII).

2.4.4 MTCC Caribbean’s Technology Needs Assessment

Captain Sukhjit Singh, Deputy Director and Technical Head of MTCC Caribbean, presented on “MTCC Caribbean’s Technology Needs Assessment (TNA)”. He detailed the objectives of the
TNA, the methodology adopted and the results acquired. In his presentation, Captain Singh emphasized the importance of each stakeholder targeted for the TNA and the factors taken into account when developing the questionnaires. Captain Singh ended by identifying the proposed Technology Action Plan (TAP) stemming from the results of the TNA and activities in the next phase that will be aligned with the top priorities identified by stakeholders, namely:

- Economics of maritime operations after the uptake of EE technology;
- Availability of financial support for uptake of EE technology; and
- Upcoming regulations/future legal requirements. (Refer to Appendix IV, Presentation IX).

2.4.5 BPTT - Charting a course towards reducing Marine GHG

Mr. Sham Parasram, BPTT, presented on “Charting a course towards reducing Marine GHG”. Mr. Parasram began by outlining BP’s commitment targets toward reducing carbon emissions globally and reducing their carbon footprint. The focus was brought to their marine carbon footprint in particular, owing to the fleet of offshore supply vessels that service their operations. He then outlined the GHG and efficiency challenges faced by operating their fleet from 2017 to date, and listed the steps and initiatives undertaken to overcome these challenges. Mr. Parasram ended his presentation by explaining BP’s future GHG reduction strategies. (Refer to Appendix IV, Presentation X).

2.4.6 An Update on MTCC Caribbean’s Pilot Project

Mr. Stephan Nanan, GHG Adviser of MTCC Caribbean, presented “An Update of MTCC Caribbean’s Pilot Projects”. In his presentation Mr. Nanan aligned MTCC Caribbean’s pilot projects with the capacity building initiatives and provided the intended outcomes for the pilot projects. His presentation went on to illustrate the data collection process and the data reporting systems currently utilized for the pilot projects. Mr. Nanan also provided preliminary data analysis of the data collected and collated. The presentation also provided an update on the reporting mechanism as per IMO mandatory requirements for Antigua & Barbuda, Belize, Jamaica, Trinidad & Tobago and St. Vincent & the Grenadines. Mr. Nanan ended the presentation by highlighting the challenges and mitigation strategies for MTCC Caribbean’s pilot projects and called for more partnerships with relevant stakeholders (Refer to Appendix IV, Presentation XI).

2.4.7 Report on MARPOL Annex VI – Barbados

Ms. Shaina McAllister, Senior Environmental Technician, Environmental Protection Department & Ms. Sophia Grimes, Senior Research Officer, Ministry of Maritime Affairs and the Blue Economy both presented on behalf of the Maritime Ministry. (Refer to Appendix IV, Presentation XII)

2.4.8 Report on MARPOL Annex VI - Guyana

Mr. Keon Hestick, Pilot Trainee, Maritime Administration Department of Guyana, presented on behalf of the Department. (Refer to Appendix IV, Presentation XIII)
2.4.9 Report on MARPOL Annex VI – Suriname

Ms. Claudine Krommie, Legal Officer 2nd, Maritime Authority of Suriname presented on behalf of the Authority. (Refer to Appendix IV, Presentation XIV)

2.4.10 Report on MARPOL Annex VI – Trinidad and Tobago

Mr. Richmond Bassant, Maritime Administrator – Pollution Prevention, Maritime Services Division, presented on behalf of the Division. (Refer to Appendix IV, Presentation XV)

2.4.11 Summary of Outcomes and Next Steps

Mrs. Rambarath-Parasram and Captain Sukhjit Singh facilitated the final presentation of the workshop. The presentation highlighted the outcomes of the workshop and the next steps in relation to Maritime Climate Action in the Southern sub-region and MTCC Caribbean overall. (Refer to Appendix IV, Presentation XVI)

2.4.12 Issue of Certificates

MTCC Caribbean’s 2nd Southern Sub-Regional Capacity Building workshop concluded with the issuing of certificates for Successful Completion and Participation in the workshop. (Refer to Appendix V for sample of MTCC Caribbean Certificate) (Refer to the “MTCC Caribbean Southern sub-regional workshop – Pictures“ folder submitted as part of the Southern sub-regional workshop completion report package for pictures of the certificate distribution).

3 Records of Regional Workshop Activities

3.1 Regional Workshop Agenda

The 2nd Southern sub-regional workshop agenda was circulated to all participants prior to the event. Minor alterations were made leading up to the workshop. (Refer to Appendix VI for the 2nd Southern sub-regional workshop final agenda)

3.2 Participation and Signature lists

Participants were required to sign the participation list on entry for both days of the workshop (Refer to Appendix VII for the participants’ signature list).

3.3 Materials Distributed

A workshop folder was created and distributed to the workshop participants upon registration on the first day along with individual nametags attached to project branded lanyards (Refer to Appendix VIII, for Images of the Workshop Folder and Nametags distributed). MTCC Caribbean, in an effort to reduce its carbon footprint distributed an electronic version of the MTCC Caribbean workshop feedback form & IMO’s workshop feedback form.

The distributed documents included:

- The 2nd Southern Sub-Regional Workshop Agenda
• The MTCC Caribbean branded Note Pad and Pen
• The MTCC Caribbean Workshop Feedback Form
• The IMO Workshop Feedback Form

4 Proof of Travel

The six regional participants that utilized international air transport to attend the event were required to present proof of travel (Boarding Passes) for their inbound and outbound flights. (Refer to folder “MTCC Caribbean Southern sub-regional workshop - proof of travel” folder submitted as part of the MTCC Caribbean’s 2nd Southern sub-regional workshop completion report.)

5 Sub-Regional Workshop & MTCC Caribbean’s Webpage

MTCC Caribbean and the UTT have uploaded the presentations, pictures and other related content from the 2nd Southern sub-regional workshop to the MTCC Caribbean’s webpage, available at (www.u.tt/mtcc-caribbean). (Refer to Appendix IX for screenshot of uploads to webpage)

6 Visibility Activities

Both traditional and social media were used to publicize and promote the MTCC Caribbean’s 6th sub-regional workshop. All workshop materials including feedback forms, presentations, nametags, and workshop participation certificates were also developed as per guidelines set out in the Communication and Visibility Plan.

6.1 Invitations & Online Releases

Prior to the workshop, letters of invitation were sent to the four (4) maritime administrations from the southern sub-region reinforcing the objectives of the GMN project and MTCC Caribbean. The letter also requested the nomination of two (2) representatives to attend MTCC Caribbean’s 2nd southern sub-regional workshop. Invitations to dignitaries and speakers for the workshop followed a similar format. Invitation letters were also sent to regional stakeholders in a similar fashion. (Refer to Appendix X for samples of the invitation letters)

A workshop flyer (Refer to Appendix XI) was created and uploaded onto MTCC Caribbean’s webpage, Facebook page and Twitter account. The flyer outlined the aims and objectives of the workshop; invited the general public to “Like & Follow” MTCC Caribbean’s Facebook page; subscribe to the YouTube channel; and visit the webpage.

The abovementioned invitations, emails, Facebook posts and flyers included the following statements;

• This Project is financed by the European Union and Implemented by the International Maritime Organization.
• MTCC Caribbean is hosted by The University of Trinidad and Tobago.
Online releases of presentations and photos were also uploaded to MTCC Caribbean’s Facebook page & Twitter Account upon completion of the workshop. WhatsApp groups were also utilized to facilitate efficient communication between MTCC Caribbean and the regional participants.

6.2 Branding, Logos and Marking

The layout of the 2nd Southern sub-regional workshop included a standing banner and a welcome screen that illustrated the role of the European Union, the IMO and UTT in accordance with the MTCC Caribbean approved Communication and Visibility plan. (Refer to Appendix XII for pictures of the layout of the workshop). Directly outside of the workshop area, MTCC Caribbean’s approved pop up banner was placed and featured the logos of the abovementioned institutions. The banner was used to increase institutional visibility during photo opportunities. (Refer to Appendix XIII for a picture of the pop up banner).

The workshop material distributed to participants such as the various forms, lanyards, nametags and folders were all in compliance with MTCC Caribbean’s approved Communication and Visibility plan and included the European Union, IMO, MTCC, GMN and UTT graphic identities. All presentation templates used by the MTCC Caribbean Team also included these graphic identities and the prescribed statement mentioned in section 6.1 above. The logos were immediately visible on each slide of the presentations in accordance with the MTCC Caribbean approved Communication and Visibility plan. (Refer to Appendix XIV for a sample of slides used).

7 MTCC Caribbean Satisfaction Questionnaires and Analysis of Responses

To measure the effectiveness of the workshop and better understand the needs of the region, the MTCC Caribbean Feedback Form (Refer to Appendix XV for a copy of the form) as well as the standard IMO Feedback Form were distributed. Online versions of the form were used in order to increase feedback and reduce our carbon footprint.

The feedback received from the participants was positive; they identified areas of the workshop that were most beneficial, recommended suggestions for improvement and identified topics of interest for future workshops. (Refer to the “MTCC Caribbean 2nd Southern Sub-Regional Workshop Feedback Form” folder submitted as part of MTCC Caribbean’s 2nd Southern Sub-Regional Workshop Completion Report). This folder contains the tabulated spreadsheet for the responses generated from MTCC Caribbean’s Workshop Feedback Forms and the IMO’s Feedback Forms which were issued on behalf of the Project Coordination Unit (PCU) of the GMN.

7.1 MTCC Caribbean’s Southern Sub-Regional Workshop Feedback Form - Results

A total of 9 MTCC Caribbean Feedback Forms were completed and collected over the two (2) days of the workshop. The MTCC Caribbean feedback forms indicated the following results (Refer to table 1 & figure 6) for the workshop content. The majority of the responses received
Maritime Technology Cooperation Centre Caribbean (MTCC Caribbean)

had a high percentage of positive feedback, indicating a high degree of satisfaction with the content of the workshop. The exceptions were that one respondent indicated that they were neutral for four of the questions, and another disagreed that the program was well paced within the allotted time. MTCC Caribbean has committed to better time management in the final regional workshop in response to this feedback. A commitment has also been made to improve the rate of workshop feedback by designating time during the workshop for the participants to fill the forms.

Table 1 – MTCC Caribbean Workshop Feedback form Responses – Workshop Content

<table>
<thead>
<tr>
<th>Workshop Content</th>
<th>Strongly Agree</th>
<th>Agree</th>
<th>Neutral</th>
<th>Disagree</th>
<th>Strongly Disagree</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. The content of the presentations were relevant to the workshop objectives</td>
<td>4</td>
<td>5</td>
<td></td>
<td></td>
<td></td>
<td>9</td>
</tr>
<tr>
<td>2. The workshop improved my understanding of the implementation of MARPOL Annex VI</td>
<td>7</td>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td>9</td>
</tr>
<tr>
<td>3. The content was relevant to my current needs</td>
<td>1</td>
<td>7</td>
<td>1</td>
<td></td>
<td></td>
<td>9</td>
</tr>
<tr>
<td>4. The content met my expectations and needs</td>
<td>2</td>
<td>6</td>
<td>1</td>
<td></td>
<td></td>
<td>9</td>
</tr>
<tr>
<td>5. I am satisfied with the content</td>
<td>2</td>
<td>6</td>
<td>1</td>
<td></td>
<td></td>
<td>9</td>
</tr>
<tr>
<td>6. I will recommend participation in MTCC Caribbean activities to other stakeholders</td>
<td>6</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
<td>9</td>
</tr>
<tr>
<td>7. The program was well paced within the allotted time</td>
<td>3</td>
<td>5</td>
<td>1</td>
<td></td>
<td></td>
<td>9</td>
</tr>
<tr>
<td>8. Course presentations were clear and understandable</td>
<td>4</td>
<td>5</td>
<td></td>
<td></td>
<td></td>
<td>9</td>
</tr>
<tr>
<td>9. The material was presented in an organized manner</td>
<td>4</td>
<td>5</td>
<td></td>
<td></td>
<td></td>
<td>9</td>
</tr>
<tr>
<td>10. The speakers were knowledgeable on the topic</td>
<td>6</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
<td>9</td>
</tr>
<tr>
<td>11. The activities of the course were interesting</td>
<td>4</td>
<td>4</td>
<td>1</td>
<td></td>
<td></td>
<td>9</td>
</tr>
<tr>
<td>12. I would be interested in attending a follow-up, more advanced workshop on this same subject</td>
<td>5</td>
<td>4</td>
<td></td>
<td></td>
<td></td>
<td>9</td>
</tr>
</tbody>
</table>

Caribbean Workshop – Content
The MTCC Caribbean feedback forms indicated the following results (Refer to table 2 and figure 7) for the workshop delivery. As seen in figure 7, the majority of the responses suggested that the programme overall ranged from good to excellent regarding workshop delivery.

**Table 2 – MTCC Caribbean Workshop Feedback form Responses – Workshop Delivery**

<table>
<thead>
<tr>
<th>Working Content</th>
<th>Excellent</th>
<th>Very Good</th>
<th>Good</th>
<th>Fair</th>
<th>Poor</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Visuals</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td></td>
<td></td>
<td>9</td>
</tr>
<tr>
<td>Acoustics</td>
<td>2</td>
<td>4</td>
<td>3</td>
<td></td>
<td></td>
<td>9</td>
</tr>
<tr>
<td>Conference Area and Meeting Space</td>
<td>1</td>
<td>4</td>
<td>4</td>
<td></td>
<td></td>
<td>9</td>
</tr>
<tr>
<td>Hand-outs</td>
<td>4</td>
<td>5</td>
<td></td>
<td></td>
<td></td>
<td>9</td>
</tr>
<tr>
<td>The Programme Overall</td>
<td>1</td>
<td>5</td>
<td>3</td>
<td></td>
<td></td>
<td>9</td>
</tr>
</tbody>
</table>

**Figure 7 – MTCC Caribbean Workshop Delivery**
The MTCC Caribbean Feedback forms also required participants to answer three open ended questions of which the most common answers can be summarized as follows;

1. Which part of the workshop was most beneficial to you?
   • The information on the technology needs assessment
   • Country reports and hearing other states’ experiences and finding out what worked best for them
   • Information from Technology providers and advances in technology for reducing marine GHG
   • All aspects
   • The presentations of Day 2
   • The presentation of Mr. Stephan Nanan and also the presentation of Ms. Suzette Balkaran
   • The presentation by delivered by BP

2. Do you have any suggestions for the improvement of future workshops?
   • Representatives from Ship owning companies to discuss their approach
   • Increased participation by Trinidad and Tobago maritime industry and oil and gas majors, as well as the relevant Private Sector Stakeholders
   • Topics regarding the results of other MTCCs and how the research work of all the MTCCs synergize
   • Practical Demonstrations
   • More information from a landside perspective
   • None

3. Please identify two topics that you would like to learn more about in future workshops.
   • Current and future EE and GHG Mitigation Technologies for climate change mitigation
   • Alternative Technologies and other countries’ implementation systems.
   • Maritime Conservation Initiatives in Trinidad & Tobago & the Caribbean
   • The role of the IMO and policy considerations for decarbonizing Maritime Operations
   • The legal framework of implementation for MARPOL Annex VI
   • Environmental impacts of port and harbour operations
   • SEEMP, EEDI, maritime port and route optimization
   • UTT - Online Facilitations in the Maritime Industry
   • How to secure funding for air quality monitoring programmes.
8 Looking Ahead

The 2nd Southern Sub-Regional Workshop served as a forum for the exchange of knowledge, ideas and experiences with respect to the reduction of GHG emissions from ships and the increase in energy efficiency on-board ships, specific to the region. Valuable feedback and information were obtained from the territories of the southern sub-region.

The workshop developed on the preliminary baselines for the existing regional and national legal frameworks obtained via MTCC Caribbean’s research in addition to the feedback from MTCC Caribbean’s 1st Regional Workshop and 1st Southern Sub-Regional Workshop. Participants were apprised of the status of climate action in relation to low carbon shipping in the Caribbean region and given an analysis of alternatives in view of the IMO’s 2020 sulphur cap. They were also shown methods of calculating GHG inventories and establishing shipboard EEOI baselines, and presented with avenues to address maritime GHG emissions through NDCs.

The existing reporting systems for the countries of the southern sub-region were discussed with a view to integrating MTCC Caribbean’s data collection form within these systems. Integration has already been achieved through Trinidad and Tobago, Suriname and Guyana as their maritime administrations currently implement MTCC Caribbean’s data collection form. The workshop was also used as a forum to share the results of MTCC Caribbean’s TNA and provide an update on MTCC Caribbean’s pilot projects to date.

It is anticipated that relationships which were established at the workshop between technology providers and industry majors will greatly contribute to the success of MTCC Caribbean’s pilot projects, as participants have a greater understanding of the need for energy efficient technology, data collection, and the process to achieve same.

MTCC Caribbean expects that the knowledge transfer that occurred at the workshop will aid each territory in implementing positive changes within the relevant institutions to achieve compliance. Dialogue with the participants for further exchange of data and clarification concerning their legal and institutional readiness for achieving compliance with MARPOL Annex VI will continue as scheduled.

Key stakeholders were targeted for buy-in into the project, and capacity building via webinars will continue to be facilitated for increased project awareness. These webinars will be designed to assist stakeholders in collecting data for the pilot projects.

MTCC Caribbean’s final capacity building workshop is carded to be held from July 1st - 3rd, 2019 within the Southern sub-region and will focus on achieving the projected outcomes as the project comes to a close.
Appendices

Appendix I – Signed DSA Receipts

**RECEIPT**

Date: 18/03/2019

No.: 61

Received From: MTCC Caribbean

Amount: USD 195.00

Amount: One Hundred and Ninety Five Dollars

For Payment of Reduced Daily Subsistence Allowance (DSA)

From: 17/03/2019 to 20/03/2019

Paid by: [ ] Cash

[ ] Check No.

[ ] Money Order

Received By: Sophia Grimes

Signature: [Signature]

**RECEIPT**

Date: 18/03/2019

No.: 62

Received From: MTCC Caribbean

Amount: USD 195.00

Amount: One Hundred and Ninety Five Dollars

For Payment of Reduced Daily Subsistence Allowance (DSA)

From: 17/03/2019 to 20/03/2019

Paid by: [ ] Cash

[ ] Check No.

[ ] Money Order

Received By: Shaina McAllister

Signature: [Signature]

**RECEIPT**

Date: 18/03/2019

No.: 63

Received From: MTCC Caribbean

Amount: USD 195.00

Amount: One Hundred and Ninety Five Dollars

For Payment of Reduced Daily Subsistence Allowance (DSA)

From: 17/03/2019 to 20/03/2019

Paid by: [ ] Cash

[ ] Check No.

[ ] Money Order

Received By: Romain Seurattan

Signature: [Signature]
RECEIPT
Date 18/03/2019  No. 64

Received From MTCC Caribbean  Amount USD 195.00

Amount One Hundred and Ninety Five Dollars

For Payment of Reduced Daily Subsistence Allowance (DSA)

From 17/03/2019 to 20/03/2019  Paid by [ ] Cash
[ ] Check No.  [ ] Money Order

Received By Keon Hestick

Signature

RECEIPT
Date 18/03/2019  No. 65

Received From MTCC Caribbean  Amount USD 260.00

Amount Two Hundred and Sixty Dollars

For Payment of Reduced Daily Subsistence Allowance (DSA)

From 17/03/2019 to 21/03/2019  Paid by [ ] Cash
[ ] Check No.  [ ] Money Order

Received By Racel Coulor

Signature

RECEIPT
Date 18/03/2019  No. 66

Received From MTCC Caribbean  Amount USD 260.00

Amount Two Hundred and Sixty Dollars

For Payment of Reduced Daily Subsistence Allowance (DSA)

From 17/03/2019 to 21/03/2019  Paid by [ ] Cash
[ ] Check No.  [ ] Money Order

Received By Claudine Krommie

Signature
Appendix II – Workshop Participants
Appendix III – Opening Ceremony Pictures

Mrs. Vivian Rambarath-Parasram, Director & Head, MTCC Caribbean

Professor Sarim N. Al-Zubaidy, President of the University of Trinidad and Tobago
His Excellency Ambassador Aad Biesebroek, Head of Delegation of the European Union to Trinidad and Tobago

Mr. Colin Young, Regional Maritime Advisor for the Caribbean, International Maritime Organization
Lt. Cmdr Ronald Alfred, Director of the Maritime Services Division of the Ministry of Transport
Appendix IV – Presentations from Workshop

Presentation I – Mrs. Vivian Rambarath-Parasram, Director and Head of MTCC Caribbean: “Policy Considerations for Decarbonizing the Maritime Sector of the Caribbean

17/04/2019
Insufficient Progress in Climate Action

- Maritime Climate Action:
  - In 2017, ships and offshore oil and gas activities caused 11,000 premature deaths and USD 1.4 trillion in economic welfare losses. Yet, 2018 has also seen a slowdown in global action, challenging non-Annex V (non-Party) stakeholders, such as cities, regions, companies, insurers and others.
  - Insufficient commitments of non-Annex V Parties (Non-Annex V Parties) continue to fall short of the goals of the Paris Agreement.
  - Climate actions by non-Party stakeholders can contribute significantly to delivering countries’ commitments and improving the ambition of those commitments.

CARICOM Initiatives

- CARICOM Declaration (2016) for climate action calls for immediate:
  - Recognition of the specific needs and special circumstances of small island developing states (SIDS), small island developing states (SIDS), and least developed countries (LDCs) and making their voices heard in regional and international negotiations.
  - Insufficient progress on the implementation of the Intergovernmental Panel on Climate Change (IPCC) fourth assessment report.
  - Insufficient progress on the implementation of the Intergovernmental Panel on Climate Change (IPCC) fourth assessment report.
  - Insufficient progress on the implementation of the Intergovernmental Panel on Climate Change (IPCC) fourth assessment report.

Source: GC&A Yearbook 2018
CARICOM’S RESPONSE TO IPCC Special Report on the Impacts of Global Warming of 1.5°C Above Pre-industrial Levels (1.5°C Special Report) 2018

- CO2, on the international community to act with utmost urgency to rapidly shift fiscal flows to just transition – an effective pathway consistent with limiting warming to 1.5°C
- UAE developed a context for demonstrating progress towards the mobilization of $100 billion per annum by 2020 and further demonstrate their commitment to efforts to reduce that climate finance gap through 2024
- Stress the importance of achieving a balance in the provision of security, connectivity, and sustainability, including logistical and financial assistance for adaptation and mitigation; free and fair trade; and efforts to mitigate and adapt to the deleterious impacts of climate change.

DOMESTIC POLICY REQUIREMENTS FOR ENHANCED IMPLEMENTATION

- Inclusion of Maritime climate action in NDCs in respective countries
- Defining Domestic and International Shipping
- Series of national and international and itemization of relevant supplies
- Domestic shipping in National GHG Inventory
- Port emission studies
- Enabling Non-Party Stakeholders to take the lead in climate action
- Support for establishment of a Regional reporting system for GHG emissions from ships

REGIONAL INSTITUTIONS FOR MARITIME CLIMATE ACTION

- Leverage the existing legal and institutional context such as:
  - CBAP: Caribbean Basin Programme
  - CIGC: Caribbean Islands Group of Governments
  - Regional Maritime Administrations such as the CMA, COPEP
  - CARICOM S&H
- Engaging with Non-Party Stakeholders
- Enabling Non-Party Stakeholders to take the lead in Climate Action through appropriate legislative and policy interventions.

INSTITUTIONAL REQUIREMENTS FOR ENHANCED IMPLEMENTATION

- Regional and Local synergies in regional and domestic policies for Maritime climate action. Dealing with economic and socio-economic consequences
- National Maritime sector emissions must be accounted for in the NDCs of respective countries
- Leadership by Non Party Stakeholders to lead climate action

Policy Imperatives for Decarbonisation of Maritime

- Leveraging Regional Platforms of the IMO and other International fora
- Developing maritime sector climate management
- Strengthening maritime sector climate management
- Capacity building on climate mitigation
- Policy at sea level: dealing with maritime administration
- Safety/Regulation of Domestic shipping in NDC targets
- Incorporating in the IMO, the key aspects of international cooperation for maritime climate action
- Building Environmental Technology Bases
- Policy for greener ships and related technology and shipping
INSTITUTIONAL REQUIREMENTS FOR ENHANCED IMPLEMENTATION

- What (if any) institutional resources within maritime administrations can be dedicated to maritime climate action?
- Existing BE focal points?
- What specific synergies do you recommend for greater inclusion of Maritime climate action in NDCs to your respective countries?
- Who are the Non Party Stakeholders that can lead climate action in your respective countries?
Presentation II – Captain Sukhjit Singh, Deputy Director and Technical Head of MTCC Caribbean: “Analysis of Alternatives in view of the International Maritime Organization’s 2020 Sulphur Cap”.

17/04/2019
Shipowner Decision Factors

- Other IMO regulations (e.g., ballast water or future GHG)
- Shipowner financial condition (capital costs and operating expenses)
- Availability of finance (project-specific)
- Ability to recover capital investment (operational incentives)
- Charterer base differential
- Existing vessel or new build

Role of Administrations

- IMO recognizes the need for effective enforcement if the intended IMO 2020 benefits are to be realized.
- Estimates of deliberate non-compliance have been as low as 3% and as high as 20%
- Clearly, deliberate non-compliance will look more attractive to unsupervised vessel operators if enforcement is weak
- Fines are small

World Seaborne Trade Growth Forecast 2018–2023:
Volume projected to grow +3.8%
Maritime Technology Cooperation Centre Caribbean (MTCC Caribbean)

17/04/2019

MTCC Caribbean’s 2nd Southern Sub-Regional Workshop – Completion Report
Presentation III – Mr. Isikeli Waqa, Energy Efficiency Adviser of MTCC Caribbean: “Calculating GHG Inventory and Establishing Shipboard Energy Efficiency Operational Index (EEOI) Baseline using Bottom Up Analysis Methods & Verifying Results using Full Mission Simulators”. 

17/04/2019
17/04/2019
Maritime Technology Cooperation Centre Caribbean (MTCC Caribbean)

17/04/2019

MTCC Caribbean’s 2nd Southern Sub-Regional Workshop – Completion Report

- Marine Simulations and Energy Efficient Operations on Ships
  - Existing Technology and on-shore R&D for EE Operations available in UK
  - Upgrades Methods for Air Pollution (MARPOL Annex VI)
  - Technology available through simulation models (verification of EE Operations)
  - EE Operations – bringing reality as close as possible to the classroom environment
- Monitoring Fuel Consumption for Main Propulsion and Auxiliary Engines
  - Use of Flow meters – cubic meter / hour
- Fuel Economy Monitor – kg / nautical mile
17/04/2019

Maritime Technology Cooperation Centre Caribbean (MTCC Caribbean)

MTCC Caribbean’s 2nd Southern Sub-Regional Workshop – Completion Report

- Specific Fuel Oil Consumption – grams/kWh

- Noting the Fuel Oil Service Tank readings

- Energy Efficient fuel-take Methods available onFull Mission Simulators
  - Waste Heat Recovery System – Exhaust Gas
  - Shaft Generator
  - Power Management System for Electrical Generators
  - SRF Efficiency Calculator – Real Time
  - Fresh Water Generator – Jacket Water
  - Marine Auto Load Program
  - Electronic Fuel Injection – Engines with no Camshaft
  - Super Variable Injection Timing Fuel Pump – Engines with Camshaft

- Waste Heat Recovery System – Exhaust Gas
  - Exhaust gases account for the most energy losses in the marine diesel engine.
  - To improve efficiency a WHRS is implemented which captures the VH from the EG (350 – 400 deg celsius)
  - The EG is diverted to a EGB which produces superheated steam to drive steam turbine generators, cargo pumps and other pumps like the bilge pump.
  - The TG connected to MSAB can take over the electrical load from the running diesel generator and allow for shutdown thus economising E/R operations, improving engine efficiency and also allowing for reduced carbon emissions.
MTCC Caribbean’s 2nd Southern Sub-Regional Workshop – Completion Report
Presentation IV – Mr. Stephan Nanan, GHG Adviser of MTCC Caribbean: “Addressing Maritime GHG Emissions through Nationally Determined Contributions (NDCs)”

17/04/2019

Presentation Outline

• Agenda 2030 – SDGs – Paris Agreement
• Nationally Determined Contributions (NDCs)
• UN Environmental Emissions Gap Analysis
• Caribbean Nations NDCs – Transport
• Nations with Maritime Specific NDCs
• Challenges Affecting the Sector’s Ambition
• Recommendation for Caribbean Region
• Future Work

Nationally Determined Contributions

• The Bottom Up Approach
• Parties decide their own approach
• NDCs – Submitted by parties laying out their plans
• Through domestic policy
• Progressive – scale up ambition in revised NDCs every 5 years

UNFCCC – Agenda 2030 – SDGs – Paris Agreement

25th September, 2015 – 193 Member States

UN Environmental Emissions Gap Analysis

• 181 countries have submitted initial NDCs – 1 country has submitted 2nd NDC
• Current commitment = 2°C rise by end of century
• Catastrophic and total for SDI
• Global GHG Emissions show no sign of peaking
• Following 2 years of stabilization – Global CO2e increased in 2017 to exceed high of 33.5 Gt, an increase of 1.7 Gt compared with 2016
**Maritime Technology Cooperation Centre Caribbean (MTCC Caribbean)**

17/04/2019

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**Nations with Maritime Specific NDCs - RMI**
- The Republic of the Marshall Island
- First Nation to submit 2nd NDC (Nov 2018)

**Revised and more ambitious 2025 target**

---

**Other Maritime Initiatives linked to NDCs**
- Pilot Project 1: "Update of Ship Energy Efficient Technologies and Operations" (Domestic shipping and ports)
  - Development of SEERPs for various vessels of varying categories in the domestic fleet
  - Development and implementation of port energy management plans

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**Nations with Maritime Specific NDCs - Fiji**
- NDC Implementation Roadmap 2017-2030
  - Improved Maintenance for Sea Vessels
  - Focus on the highest fuel-consuming sea vessel
  - GHG mitigation between 2021-2030: 5,000 tCO2/yr.

**Expected total investment required over the period (2021-2030): USD 4.8 million**

---

**Other Maritime Initiatives (Ports)**
- Port-based financial incentives
- Environmentally differentiated port fees
- 28 of the 100 largest international ports
- Based on an index related to ship characteristics
- Financial incentives for ships reducing speed when approaching the port
- Prioritize slot allocation to greener ships

---

**Nations with Maritime Specific NDCs - Fiji**
- Identified Key Enabling Element and Capacity Building and Technical Assistance Needs
- Review and update the Maritime Transport Decree
- Complete a comprehensive transport data agreement on fuel consumption and GHG emissions in maritime transport
- Awareness campaign for owners, operators, associations and other relevant stakeholders for mitigation in maritime transport
- Strengthen data and information gathering, reporting, and verification, and to increase compliance

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**Challenges Affecting the Sector’s Ambition**
- Lack of tangible data for high level ambition targets
- Buy in from key transport stakeholders
- Connect Sector-specific strategies to NDCs
- More climate change expertise in transport ministries
Recommendation for Caribbean Region

- Domestic Shipping, locally and regionally.
- More shipping less emissions - including shipping where possible in multimodal transport solutions - freight
- Green ship
- More cooperation between maritime administrations/ stakeholders and Planning and Environmental ministries.
- Increase maritime sector ambition in revised NDCs.
- Stimulation fleet consumption and GHG emission data collection leading for better informed decisions.

Future Work

- Continue to offer assistance to all Caribbean Nations in implementing GHG emissions mitigation strategies within the region.
- Continue the drive for data gathering and reporting for more informed decision making regionally and internationally.
- An informed assessment of the GHG emissions reduction potential through the implementation of practices and policies for domestic/regional shipping.
MTCC Caribbean’s 2nd Southern Sub-Regional Workshop – Completion Report
Presentation V - Ms. Suzette Balkaran, MTCC Caribbean’s technical secretariat: “Results of the 1st Southern sub-regional workshop”

17/04/2019
Outcomes of the 1st Southern Sub-Region (SSR) Workshop

- Need for effective integration of the Maritime Sector in the Climate agenda of all SSR countries.
- Identified the need for legal and institutional reform as the status of existing legal and institutional reform has been confirmed.
- All countries welcomed partners for implementation.
- Preliminary results from pilot projects were shared and the initial challenges identified.
- Participants welcomed the technology options for their needs.

MTCC Caribbean - Working for you

- MTCC Caribbean participated in a high-level symposium (HLS) for Transport Ministers of the Caribbean Region.
- MTCC Caribbean able to include two options within the Resolution: Support of the Voluntary Trust Fund at the IFC.
- MTCC Caribbean committed to the SSR National Climate Change Policy and support the SSR Caribbean’s Data gatherings.

Following the HLS, MTCC Caribbean participated in the Senior Maritime Administration Workshop and interacted with IMO’s Secretary General and members of IMO’s technical cooperation division.

Where are we now?

- Adoption of the Resolution by all SSR countries.
- Effective implementation of the Resolution.
- Follow-up of the workshop.

Where do we go from here?

- Continuation of efforts and support from partners.
- Checking the progress of implementation.
- Follow-up of the workshop.
Coming Soon...

- Continuing discussions with Guyana, Suriname and Trinidad and Tobago to increase data collection.
- Facilitate discussions with Barbados to integrate the data collection form into their existing method of data collection for vessels calling at their ports.
- Further strategies to be explored on streamlining the data collection process for the Southern Sub-Region and the entire Caribbean Region.
Presentation VI - Mr. Tore Longva of DNV-GL: “Batteries”

Batteries
MTCC-Caribbean, 2nd Southern Sub-Regional Workshop
9 May 2019

Batteries and hybrid systems represent a new way of providing power and propulsion.

- Improved maneuverability
- Reduced emissions
- Lower noise levels
- Increased safety
- Reduced operational costs

All-electric and battery hybrid ships

Example of impact - replace one generator with a battery

Which segments have installed batteries?

17/04/2019
Maritime Technology Cooperation Centre Caribbean (MTCC Caribbean)

MTCC Caribbean’s 2nd Southern Sub-Regional Workshop – Completion Report
Presentation VII - Mr. Luis Moratalla, Digital Service Manager of ABB Inc. Marine & Ports: “Azipod® D – gearless thruster”
MTCC Caribbean’s 2nd Southern Sub-Regional Workshop – Completion Report
Maritime Technology Cooperation Centre Caribbean (MTCC Caribbean)

Presentation VIII - Mr. Falko Fritz, SkySails Group: “Towing Kite Technology”.

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MTCC Caribbean’s 2nd Southern Sub-Regional Workshop – Completion Report
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MTCC Caribbean’s 2nd Southern Sub-Regional Workshop – Completion Report
Maritime Technology Cooperation Centre Caribbean (MTCC Caribbean)

Presentation IX - Captain Sukhjit Singh, Deputy Director and Technical Head of MTCC Caribbean: “MTCC Caribbean’s Technology Needs Assessment (TNA)”.

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Maritime Technology Cooperation Centre Caribbean (MTCC Caribbean)

MTCC Caribbean’s 2nd Southern Sub-Regional Workshop – Completion Report

17/04/2019
Presentation X - Mr. Sham Parasram of BPTT: “Charting a course towards reducing Marine GHG”.

Contents

- BP’s Commitment to a low carbon future
- BPTT - Reducing our marine carbon footprint
- BPTT - Our journey from 2017 to present
- Our Contractors’ initiatives
- Closing
- Questions

A Shared Challenge

The experience and expertise we have acquired over decades inform our actions, our future plans and our belief that, to meet global climate goals, the world should prioritize:

1. Reducing emissions rather than promoting any one fuel as the answer: The world will need all forms of energy for a long time to come, so we need to make all fuels cleaner.
2. Improving energy efficiency, where the greatest reductions in emissions can be achieved. Advances in technology for everyone—from industry to individuals—are creating huge opportunities to achieve gains over the coming years.

BP’s Commitment to a low carbon future

Advancing low carbon – Our targets include:
1. Zero net growth in operational emissions from 2017 to 2025
2. A goal of 3.5 million tonnes of sustainable greenhouse gas emissions reduction in the timeframe
3. The aim of limiting methane 0.2%
Maritime Technology Cooperation Centre Caribbean (MTCC Caribbean)

MTCC Caribbean’s 2nd Southern Sub-Regional Workshop – Completion Report
Presentation XI - Mr. Stephan Nanan, GHG Adviser of MTCC Caribbean: “An Update of MTCC Caribbean’s Pilot Projects”
Pilot Project Outcomes

- Provide decision makers with a clear picture on adopting energy efficiency and abatement technologies and operational measures.
- Adoption of these technologies and measures, leading to a reduction of GHG emissions from ships trading in the region.
- Ready for the Maritime administrations and ships trading in the region to be in compliance with the new fuel corrosion tests reporting regulations of MARPOL Annex VI.
MTCC Caribbean’s 2nd Southern Sub-Regional Workshop – Completion Report
MTCC Caribbean’s 2nd Southern Sub-Regional Workshop – Completion Report
Presentation XII – Ms. Shaina McAllister, Senior Environmental Technician, Environmental Protection Department & Ms. Sophia Grimes, Senior Research Officer, Ministry of Maritime Affairs and the Blue Economy: Barbados country status report

17/04/2019
Maritime Technology Cooperation Centre Caribbean (MTCC Caribbean)

MTCC Caribbean’s 2nd Southern Sub-Regional Workshop – Completion Report

17/04/2019

INSTITUTIONAL

Enforcement

Functions
- Regulation of shipping
- Fumigation of legislation
- Casualty investigation
- Search and rescue
- Port state control
- Oversight of Barbados' ships registry

Recent changes in structure
- Shipping Section of
  International Transport Division
- Ministry of Maritime Affairs
  and the Blue Economy (MAAE)

Administration

IMO Member State Audit Scheme (IMSAS)
- + 1 January 2016
- maritime vision
- systemic
- strategic objective
- achieving deficiencies
- systematic
- sustainable
Maritime Technology Cooperation Centre Caribbean (MTCC Caribbean)

17/04/2019

Primary Agencies

International Maritime Law

Safety of Life at Sea (SOLAS), 1974 as amended
Convention on the International Regulations for Preventing Collisions at Sea (COLREGS) 1972
International Convention on Standards of Training, Certification and Watch-Seting for Seafarers (STCW) 1978 as amended
Convention on Maritime Search and Rescue (SAR) 1979 and 1988

Primary Agencies Resources

International Maritime Law

Convention on Facilitation of International Maritime Traffic (FAL) 1965
Lead Lines (LL 66 and its 1986 Protocol)
Tonnage Measurement of Ships (Tonnage 1969)
MARPOL Convention (all Annexes)

National Maritime Legislation

Shipping Act, Cap.296A as amended
Shipping (Oil Pollution) Act, Cap.296A as amended
Barbados Marine Pollution Control Act, 1996-60
Fisheries Act, Cap.391

LEGISLATIVE
Maritime Technology Cooperation Centre Caribbean (MTCC Caribbean)

17/04/2019

National Maritime Legislation
- Telecommunications Act, Cap.282B
- Harbor Regulations Cap.285 B
- Barbados Port, Inc. Act 2003-16
- Maritime Labour Convention Regulations

Monitoring and Enforcement
- Flagger to Barbados
- Visiting our Ports
- National legislation required
- Incorporation of Annex A, AAR standards, AARQ monitoring

Barbados' Current Status
- International conventions must be transformed into domestic legislation
- Implementation accorded to the MARPOL Convention Annex VI on April 5, 2004
- Enter into force on May 19, 2006
- Annex has not yet been incorporated into the national laws of Barbados

Monitoring and Enforcement AAR

Barriers and Limitations
- Human resources
  - Legal counsel
- Financial resources
  - Extremely limited
- Process length
  - 7 steps

Proposed Training
- [Diagram showing proposed training areas]

MTCC Caribbean’s 2nd Southern Sub-Regional Workshop – Completion Report
Maritime Technology Cooperation Centre Caribbean (MTCC Caribbean)

National initiatives

Near future

- port-based incentives for low emission ships
- data collection mechanism and reporting
- fuel consumption
- energy efficiency technology

Reporting system

- Cargo and container vessels
  - Regional Operations Department
  - Terminal Operations Department
  - Vessel designed unique number
  - Shipyard report
  - Discharging
  - Conversion certificate

Small vessels and fishing vessels

- Customs and Immigration Departments
- Personnel Information

Barriers

- Data sharing
- Authorization
- Training

Mitigation Strategies

- Public Awareness
- Technical Assistance
- Financial Support

National initiatives

- National Climate Change Committee
- National Marine Agreement
- National Marine Institute
- National Marine Authority

Regional Advisory and Evaluation System for Climate Change (RAM/CEC) and Climate Change Adaptation (CCCA) in the Caribbean Sector
OPPORTUNITIES FOR PARTNERSHIP

The way forward

Collaboration
Capacity building
Lessons learned

THANK YOU

Sophia Gomes
Strategic Officer
Presentation XIII – Mr. Keon Hestick, Pilot Trainee, Maritime Administration Department of Guyana: Guyana country status report

CONSTITUTION
The Harbour in Georgetown and the other harbours in Guyana and the approaches thereto are administered by the maritime administration department under the Transport and Harbours ordinance, 1931, ordinance and (Amendment) act 1977; the Guyana shipping act (no. 7 of 1998) and the Guyana shipping regulation.

Maritime And Shipping Acts and Regulations
Principal Acts:
- Chapter 15 – Maritime Drug Trafficking (Suppression) Act
- Chapter 109 – Fishing & Fancy Act
- Chapter 151 – Defence Act
- Chapter 205 – Environmental Protection Act
- Chapter 1101 – Shipping Act
- Chapter 1527 – Carriage Of Goods By Sea Act
- Chapter 1201 – Passenger Act
- Chapter 1202 – Transport & Passenger Act

Subsidiary Legislation made under the Shipping and River Navigation Acts:
- Guyana Shipping (Small Commercial Safety) Regulations
- Guyana Shipping (Ship and Port Security) Regulations
- Guyana Shipping (Registration of Ships) Regulations
- Guyana Shipping (Cargo Ships) Regulations
- North Western District Oil Launches Regulations
- Commerce River Oil Launches Regulations
- River Navigation Regulations

MTCC Caribbean’s 2nd Southern Sub-Regional Workshop – Completion Report
IMO Conventions Ratified by Guyana
- SOLAS Convention 1960
- SOLAS Convention 1974
- SOLAS Protocol 1978
- COLREG Convention 1972
- MARPOL Convention 1973
- MLC Convention 1978
- FACILITATION Convention 1965

<table>
<thead>
<tr>
<th>COUNTRY</th>
<th>TUGO</th>
<th>DURATION OF IMPLEMENTATION OF ITS IMPLEMENTATION</th>
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<td>Guyana</td>
<td>GLPOT 165</td>
<td>30 Apr-11 30 May-11</td>
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<td>30 Apr-11 31 May-11</td>
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<td>LC 165</td>
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<td>MARPOL PB 165 (Rev II)</td>
<td>30 Apr-11 31 May-11</td>
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<tr>
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<td>MBC 300</td>
<td>30 Apr-11 31 May-11</td>
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</table>

INSTITUTIONAL
- Institutions:
  - Maritime Administration Department
  - Port State Control

RESOURCES
- Human Resources:
  - We lack skilled and trained personnel to implement and administer MARPOL Annex VI.
- Financial
  - Financial constraints are prevalent in an ever-expanding and technologically advanced MARPOL implementation process.
- Technological
  - Based on our financial constraints, we lack equipment that would assist in monitoring and measuring the pollutants and entering data.
LEGISLATIVE

Given the unified MARPOL Annex VI.

BARRIERS AND LIMITATIONS

Apart from the need to have things in place which are not available to be satisfied, as well as limited financial, human, and infrastructural resources available to us, perhaps the single most significant challenge is the criminogenic nature of the transport generally a quicker way of life availability, or lack thereof of qualified and skilled staff servicing the Government's FlagDepartment. Even though there are other Government agencies, they probably have a limited grasp of legislative and administrative procedures.

This challenge is compounded by the difficulty of keeping up with development in the law. For some terminal port facilities, budget is second to only from immediate issues concerning, technical problems, and other threats whose legal harm can be found.

Another challenge is finding the people (Government officials) who understand the concept of a semi-businesslike operation that we are offering and how they can help us to meet the country's domestic and international obligations.

In addition to the organizational challenge, assuming there is a will to proceed, it is difficult to get much control from Cabinet to the legislature. Knowing that there will be little sympathy of the will put a lot of pressure on the number to get it right the first time.

TECHNOLOGICAL

Technical and Updates.

We have made major changes to the firm's ships with the return of a few losses. We have provided all the help for the firm and they formed it to ship its captain prior to testing. This is not a ready stage and we are making now an effective mode of distributing and monitoring data.

Hansion

Adopted personnel to our staff and have an effective reporting system from ships and an independent database to process the data collected.

MONITORING AND ENFORCEMENT (MARPOL ANNEX VI)

Basic on Flag State and Port State

Generally, Generic national flag state control bodies in person are assigned responsibility for giving the Generic flag state a means to ensure compliance with regulations. Similarly, the Government of Generic annual inspections are to ensure that ships are in compliance with applicable laws and regulations.

Ports to control inspection are also tasked with ensuring that ships are in a good state of repair and safety. Any vessel that is not in a good state of repair and safety, contained equipment are hereby detained and prohibited from operating.

<table>
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<th>Inspections</th>
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<tr>
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</table>

17/04/2019
### OPPORTUNITIES FOR PARTNERSHIP

Ogunna has made progress with the certification of MARPOL Annex VI and intends to have the continued support from MTCC through capacity building workshops and conferences to have the successful implementation of MARPOL Annex VI.

We have been able to guide the MTCC and have built a service relationship that we look forward to as we take steps to make the shipping industry safe, secure, environmentally sound, efficient and sustainable.

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### CONSTITUTION

The Constitution of the Maritime Technology Cooperation Centre Caribbean (MTCC Caribbean) is the legal document that establishes the framework for the organization's governance and operations. It outlines the principles, objectives, and rules that govern the MTCC's activities and decision-making processes.

The Constitution is structured to ensure that the MTCC operates in a manner that is transparent, accountable, and responsive to the needs of its stakeholders. It includes provisions for the organization's structure, governance, decision-making processes, and financial management.

The Constitution is periodically reviewed and updated to reflect changes in the organization's environment and to ensure its relevance and effectiveness. It serves as a foundational document that guides the MTCC in fulfilling its mission and achieving its goals.

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MTCC Caribbean’s 2nd Southern Sub-Regional Workshop – Completion Report
Presentation XIV – Ms. Claudine Krommie, Legal Officer 2nd, Maritime Authority of Suriname: Suriname country status report

**Maritime Authority Suriname (MAS)**

**Vision and Mission**

*Vision*
“TO BE A PROFESSIONAL, COMMERCIAL ORIENTED, INNOVATIVE AND LEADING ORGANISATION.”

*Mission*
“ASSURING SAFE, SECURE, ENVIRONMENTALLY SOUND, EFFICIENT AND SUSTAINABLE SHIPPING.”

**Outline**
- Objectives of the MAS
- Vision and Mission
- Institutions
- Resources
- Legal Framework
- Technology uptake
- Opportunities for partnership.

**Objectives MAS**
- Designated Authority and Maritime Administration
- Safe and efficient shipping
- Legal body with statutory duties:
  - Pilot Services
  - Hydrographic services
  - Aids to Navigation Services

**Institutions**
- MAS will be the entity that has direct responsibility for overseeing the implementation of MARPOL Annex VI in Suriname

**Institutions**
- Coordination environment at the cabinet of the president—National Institute for Environment and Development in Suriname (INARDES)
- MAS responsible for all port, coastal and port state activities and coordinates actions of other bodies involved
Resources:
- Limited financial resources.
- Insufficiently trained personnel to implement and enforce regulatory action.

Suriname Maritime Legislation:
- Act on the Authority Suriname 38 1959 no. 37
- Act on International Shipping Port Security 20 2804 80 60
- Various Shipping regulations
- Port Act 1981

Legal Framework: Status Maritime Conventions
Suriname ratified the following Conventions:
- MARPOL 73/78, Annex VI
- SOLAS Convention 74
- Load Line Convention 66
- London Convention 73
- London Protocol 96
- Convention on the Prevention of Pollution from Ships 82
- UNLOS 82
- STCW 70

Maritime Administration status on Fuel Data Collection 2018

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<tr>
<th>Month</th>
<th>April</th>
<th>May</th>
<th>June</th>
<th>July</th>
<th>August</th>
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Maritime Administration status on Fuel Data Collection 2019

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<th>Month</th>
<th>January</th>
<th>February</th>
<th>March</th>
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<td>1</td>
<td>1</td>
<td>11</td>
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</tbody>
</table>
Maritime Technology Cooperation Centre Caribbean (MTCC Caribbean)

Monitoring and enforcement measures
Suriname has not yet ratified MARPOL Annex VI, so at the moment no Monitoring and Enforcement system is in place. In the draft Maritime Act for Suriname, MARPOL Annex VI is implemented. When this act is in place monitoring and enforcement will be as follows:
- Suriname will request the neededinfo from the ships calling Suriname ports
- Port State Control officers will implement and enforce this
- Penalties for violators

Current national initiatives on Greenhouse Gas emissions (MARPOL Annex VI)
- Stated: Suriname restricts fuel oil with a Ultra Low Sulfur content. This high quality fuel oil is available for the Maritime Transport Sector.

Reporting System for Vessel arrivals and Departures
- All ships prior to arrival/arriving Suriname need to submit documents via the following:
  - Pre-arrival information and documents requested
  - Administration of security of international ships
  - Security plan
  - Vessel security plan
  - Weather forecast
  - Vessel security plan (VSP)
  - Passenger or crew name list
  - Passenger/crew security plan
  - Any urgent security and navigational matters: must submit a plot report form

Status of research and projects on Energy Efficiency Technology Uptake
- Currently, there are no projects or ongoing research in Suriname promoting Energy Efficiency Technology Uptake for maritime sector.
- Uncertified Suriname ships are not eligible for any projects promoting efficiency measures along the Suriname coast to protect the marine area.

Technical Assistance needed
- Technical assistance to the Suriname Maritime Institute (SMI): The SMI is the training institute in Suriname for mariners.
- Course in Marine safety Information training for Maritime Administration

Current and Anticipated Barriers
- Insufficient Technical Capacity at the Administration to implement and enforce.
- Absence of necessary laws and regulations to implement and enforce Annex VI.
- Lack of financial resources and manpower to implement and enforce.
- Insufficient data to implement new technology uptake.
Opportunities for partnership

- Cooperation with INECC (The National Institute for Environment and Development in Suriname)
- Cooperation with environmental action of cabinet president

Vision and Mission

Vision

"TO BE A PROFESSIONAL, COMMERCIAL ORIENTED, INNOVATIVE AND LEADING ORGANIZATION, I "

Missions and Facilitating Maritime Development

- "To promote safe, secure, environmentally sound, efficient and sustainable shipping"
Presentation XV – Mr. Richmond Bassant, Maritime Administrator – Pollution Prevention, Maritime Services Division: Trinidad and Tobago country status report

17/04/2019
Maritime Technology Cooperation Centre Caribbean (MTCC Caribbean)

17/04/2019

INTRODUCTION - ANNUAL PORT CALLS

The table below describes the number of calls made to several international seaports and the actual number of vessels serviced based on the calls for the period 2012 to 2018.

<table>
<thead>
<tr>
<th>Year</th>
<th>Calls</th>
<th>Vessels Serviced</th>
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<td>2012</td>
<td></td>
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<td>2013</td>
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<td>2017</td>
<td></td>
<td></td>
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<tr>
<td>2018</td>
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</tbody>
</table>

ACCUSSION

- Trinidad and Tobago has acceded to the International Convention for the Prevention of Pollution from Ships, 1973 as modified by the protocol of 1978, and as further amended by the Protocol of 1997 (MARPOL).

T&T Accessed to MARPOL Annex VI on September 9th, 2012

OTHER RELEVANT TERRITORY/POLICY

- United Nations Framework Convention on Climate Change, 1992 (UNFCCC) and Kyoto Protocol to the UNFCCC, 1997
- To stabilize greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system.
- Party to the Paris Agreement on Climate Change, 2015
- National Food policy Ministry of Planning and Development
- National Forest Policy 2011
- Transnational Tubo, as a unified approach to the UNFCCC and the Kyoto Protocol, in consultation with AIVAN and the UNFCCC in their areas. Promote and cooperate in the development, application, and diffusion, including transfer, of environmentally sound practices that control or prevent anthropogenic emissions of greenhouse gases in all relevant sectors, including the energy, transport, industry, agriculture, forestry, and waste management sectors.
- Transport comprises land, aviation, and maritime.

INSTITUTIONAL

- Maritime Administration made up of various agencies for Port, Port and Coastal State Implementation.
- Maritime Services Division leads implementation of all maritime conventions for the State in part.

LAWMAJOR ACTS

- As a party to the Convention, all relevant provisions and Guidelines are adhered to the fullest extent possible in the regulation of ship emissions.
- MARPOL provisions not yet incorporated into domestic legislation.
- Shipping (Marine Pollution) Bill drafted to give effect to all amendments of MARPOL and other shipping contaminations conventions.
- Currently, the Bill has been submitted to the Chief Parliamentary Council for further consideration and recommendation to the Parliament for enactment into law.

MTCC Caribbean’s 2nd Southern Sub-Regional Workshop – Completion Report
Monitoring and Enforcement

Training Requirements
- Annex VI: IMO, November 2014 (last renewal)
- MSO webinar: refer to IMO Workshops/Training on Annex VI and NOx Technical Code for MSO Officers, Port Authorities in order to balance GreEEn efforts
- Effective enforcement and compliance would require the training, sensitization, and cooperation of all industry players and service providers on traceability of the maritime industry (i.e., notify port state ship agent, ship owners, shipping association, chartering providers, etc.) and go operational.

Technological

Incentives and Facilities
- Setting up a Maritime incentive facilities
- Setting up facilities that reward the use of alternative fuels, promote environmental benefits
- Developing mechanisms to encourage the Ministry of Energy and Energy Utilities in the development of Low Sulphur Cap
- MSO, port authorities and other governments have to provide the necessary infrastructure for shipping, local and international framework
- Feasible to be granted by industry such as passenger ships, water taxi, cargo vessels, inland transport, and bordering infrastructure
- Development of Low Sulphur Fuel
- All applications for port structures to be provided
- The Ministry encourages developers to consider green port initiatives (e.g., land-based power supply systems for vessel support
- Incentives for Low Sulphur Fuel

Opportunities
- Partnership and support to MSO
- Participation at IMO MEPC Meetings – MSO informs the London High Commissioner about of technical requirements to provide in MSO
- Support by Ministry of Planning and Development (HDC, NAMA)
- Continued support for legislation with collaboration of industry players (shipping association, agents, owners, crude, regulatory)
- Establishment of a Green Shipping Assessment welcomes collaboration on way forward

MTCC Caribbean’s 2nd Southern Sub-Regional Workshop – Completion Report
CHALLENGES
BARRIERS
LIMITATIONS

TECHNOLOGICAL
Barriers and Limitations
- Cost to shipowners: retrofitting, availability of infrastructure.
- LSFOs, movement away from diesel oil.
- Measurement of GHG emissions from ships: No legal requirement for airborne measurement of ship emissions in port and measurement of fuel sulphur amount.
- In future-research, publish to determine suitable equipment/port-emission studies.

LEGISLATION
Barriers and Limitations
- The Government has identified the maritime sector as a priority sector for development and a national maritime policy (NMP) is currently being developed, National Transport Plan.
- Maritime legislation currently under reform - Shipping (Amendment) Bill 2018 and Shifting (Marine Pollution) Bill.
- Heavy workload of legal staffers compounded by complexity of technical provisions in recent VI.

INSTITUTIONAL
Human and financial resource constraints
- Transitioning to Maritime Authority
- Current human and financial constraints
- More autonomous Maritime Authority with greater levels of funding
- Limited availability and infrastructure for alternative fuels at competitive prices for local markets (technological).
- MOH welcomes synergy with MTCC Caribbean & industry partners for greater effort implementing Annex VI
- Continues to work with relevant stakeholders in moving MARPOL Annex VI forward.
<table>
<thead>
<tr>
<th>Instrumental</th>
<th>Maritime Administration needs to focus on:</th>
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</thead>
<tbody>
<tr>
<td>- unclear administration of various agencies for Plug, Port and Coastal States</td>
<td></td>
</tr>
<tr>
<td>- unclear implementation of all instruments</td>
<td></td>
</tr>
<tr>
<td>- unclear areas of priority to address and not limited to: MARINE, NAVAL, CIVILIAN, DIVE, ORGANIZATION, etc.</td>
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</tbody>
</table>
Presented by: Mrs. Rambarath-Parasram and Captain Sukhjit Singh

Summary of Outcomes and Next Steps

17/04/2019

OUTCOMES OF 1ST SUB-REGIONAL
Vivian Rambarath-Parasram & Capt. Sukhjit Singh

Outcomes & Next Steps

- Improved collaboration of the MSCC with stakeholders
- Increased awareness on maritime safety
- Enhanced communication among local authorities

Outcomes & Next Steps

- Improved communication among local authorities
- Increased awareness on maritime safety
- Enhanced collaboration of the MSCC with stakeholders

Discussion:

- Enhanced cooperation among countries
- Increased awareness on maritime safety
- Improved communication among local authorities

Outcomes & Next Steps

- Enhanced cooperation among countries
- Increased awareness on maritime safety
- Improved communication among local authorities

Outcomes & Next Steps

- Enhanced cooperation among countries
- Increased awareness on maritime safety
- Improved communication among local authorities

Outcomes & Next Steps

- Enhanced cooperation among countries
- Increased awareness on maritime safety
- Improved communication among local authorities
Appendix V – Sample of Certificate
## Appendix VI – 2nd Southern Sub-Regional Workshop Agenda

**Maritime Technology Cooperation Centre Caribbean**

The University of Trinidad and Tobago (UTT)
2nd Avenue North, Western Main Road, Chaguaramas,
Trinidad and Tobago, W.I

### 2nd Southern Sub-Regional Workshop March 18th -19th 2019

**DAY 1 – March 18th 2019**

**Capacity Building, Technology Uptake and Data Collection**

<table>
<thead>
<tr>
<th>Time</th>
<th>Session</th>
<th>Presenter / Co-ordinator</th>
</tr>
</thead>
<tbody>
<tr>
<td>0900 - 0930</td>
<td>Registration</td>
<td>MTCC Officers, MTCC Caribbean</td>
</tr>
<tr>
<td>0935 - 0945</td>
<td>Opening Remarks</td>
<td>Ms. Vivian Rambarath-Parasram, Director and Head, MTCC Caribbean</td>
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<td></td>
<td>- MTCC Caribbean</td>
<td></td>
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<tr>
<td>0945 - 1025</td>
<td>Greetings From</td>
<td>Professor Sarim N. Al-Zubaidy, President, UTT</td>
</tr>
<tr>
<td></td>
<td>- The University of Trinidad and Tobago (UTT)</td>
<td>Ambassador Aad Biesebrook, Head of Delegation Delegation of the European Union to Trinidad and Tobago</td>
</tr>
<tr>
<td></td>
<td>- European Union</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- International Maritime Organization (IMO)</td>
<td>Mr. Colin Young</td>
</tr>
<tr>
<td></td>
<td>- Maritime Service Division, Ministry of Works and Transport, Trinidad and Tobago</td>
<td>Lt. Cnrd. Ronald Alfred, Director Maritime Services Division</td>
</tr>
<tr>
<td>1025 - 1055</td>
<td>Coffee Break</td>
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<tr>
<td>1100 - 1130</td>
<td>Policy Considerations for Decarbonizing Maritime Operations in the Caribbean</td>
<td>Ms. Vivian Rambarath-Parasram, Director and Head, MTCC Caribbean.</td>
</tr>
<tr>
<td>1135 - 1205</td>
<td>Analysis of Fuel Alternatives in view of the International Maritime Organization’s (IMO) 2020 Sulphur Cap</td>
<td>Captain Sukhjit Singh, Deputy Director &amp; Technical Head MTCC Caribbean.</td>
</tr>
<tr>
<td>1210 - 1310</td>
<td>Lunch</td>
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<tr>
<td>Time</td>
<td>Activity</td>
<td>Presenter</td>
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<tr>
<td>1350 - 1420</td>
<td>Addressing Maritime GHG Emissions through Nationally Determined Contribution</td>
<td>Mr. Stephan Nanan, Greenhouse Gas Advisor, MTCC Caribbean.</td>
</tr>
<tr>
<td>1425 - 1445</td>
<td><strong>Coffee Break</strong></td>
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<tr>
<td>1450 - 1515</td>
<td>Results from the 1st Southern Sub-Regional Workshop</td>
<td>Mrs. Suzette Balkaran, MTCC Caribbean</td>
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<tr>
<td>1520 - 1610</td>
<td>Open Discussions &amp; Feedback Session</td>
<td>MTCC Caribbean &amp; Workshop Participants</td>
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</table>
### DAY 2 – March 19th 2019

**Service Providers/Legal and institutional framework for implementing MARPOL Annex VI**

<table>
<thead>
<tr>
<th>Time</th>
<th>Session</th>
<th>Presenter / Co-ordinator</th>
</tr>
</thead>
</table>
| 0900 - 0925 | DNV-GL Technologies  
Safer, Smarter, Greener                                                   | Mr. Tore Longva  
DNV-GL Representative                                                                 |
| 0930 - 0955 | Electrical, Digital, Connected.  
A Knowledge Powered Fleet                                                  | Mr. Luis Moratalla  
Digital Service Manager  
ABB Inc. Marine & Ports                                                          |
| 1000 - 1030 | **Coffee Break**                                                      |                                                                                         |
| 1035 - 1100 | SkySails Technology                                                    | Mr. Falko Fritz  
Team Leader Reporting Services  
SkySails Group                                                                     |
| 1105 - 1125 | Overview of Technology Needs Assessment                                | Captain Sukhjit Singh  
Deputy Director,  
MTCC Caribbean                                                                  |
| 1130 - 1155 | An update on MTCC Caribbean’s Pilot Projects:  
“Preliminary Results of Data Collection”                                  | Mr. Stephan Nanan  
Greenhouse Gas Advisor  
MTCC Caribbean                                                                  |
| 1200 - 1225 | Presentation by BP Trinidad and Tobago                                  | Mr. Sham Parasram  
Logistics and Infrastructure Marine Team Lead  
BP Trinidad and Tobago                                                             |
| 1230 - 1330 | **Lunch**                                                              |                                                                                         |
| 1335 - 1355 | Barbados - Report on MARPOL Annex VI Implementation and respective legal,  
Institutional and Technological Capacity                                    | Ms. Shaina McAllister  
Senior Environmental Technician,  
Environmental Protection Department &  
Ms. Sophia Grimes, Senior Research Officer, Ministry of Maritime Affairs and the Blue Economy |
| 1400 - 1420 | Guyana - Report on MARPOL Annex VI Implementation and respective legal,  
Institutional and Technological Capacity                                     | Mr. Romain Seurattan  
Pilot Trainee,  
Maritime Administration Department                                                 |
The Global MTCC Network (GMN) project is funded by the European Union and is implemented by International Maritime Organization (IMO).
Appendix VII – Participants’ Signature List

Day 1 – 17th March, 2019

<table>
<thead>
<tr>
<th>No.</th>
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<th>Organization</th>
<th>Signature</th>
</tr>
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<tbody>
<tr>
<td>1.</td>
<td>Professor Sarim N. Al-Zubaidy</td>
<td>The University of Trinidad and Tobago</td>
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<tr>
<td>2.</td>
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<td>European Union</td>
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<tr>
<td>5.</td>
<td>Mrs. Vivian Rambarath-Parasram</td>
<td>MTCC Caribbean</td>
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Day 1 Feature Speakers

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<tbody>
<tr>
<td>6.</td>
<td>Ms. Sophia Grimes</td>
<td>Ministry of Maritime Affairs and the Blue Economy</td>
<td></td>
</tr>
<tr>
<td>7.</td>
<td>Ms. Shaina McAllister</td>
<td>Environmental Protection Department</td>
<td></td>
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<tr>
<td>8.</td>
<td>Mr. Keon Hestick</td>
<td>Maritime Administration Department, Guyana</td>
<td></td>
</tr>
<tr>
<td>9.</td>
<td>Mr. Romain Seurattan</td>
<td>Maritime Administration Department, Guyana</td>
<td></td>
</tr>
<tr>
<td>10.</td>
<td>Mr. Raoel Coulor</td>
<td>Maritime Authority of Suriname</td>
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<tr>
<td>11.</td>
<td>Ms. Claudine Krommie</td>
<td>Maritime Authority of Suriname</td>
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Overseas Participants

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<tr>
<td>12.</td>
<td>Ms. Natalja Miolato</td>
<td>European Union</td>
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<tr>
<td>13.</td>
<td>Captain Tushar Potev</td>
<td>The University of Trinidad and Tobago</td>
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<td>14.</td>
<td>Captain Jaikar Sohal</td>
<td>The University of Trinidad and Tobago</td>
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<td>15.</td>
<td>Ms. Heather Griffith</td>
<td>The University of Trinidad and Tobago</td>
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Southern Sub-Region Workshop Participants
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<tr>
<th>No.</th>
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<tbody>
<tr>
<td>16</td>
<td>Mr. Richmond Basant</td>
<td>Maritime Services Division</td>
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<td>17</td>
<td>Mr. Nishkal Gosein</td>
<td>TTMOA</td>
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<td>Mr. K. Bajracharya</td>
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<td>The Shipping Association of Trinidad &amp; Tobago</td>
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<td>Julian Lewis</td>
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<td>51.</td>
<td>M. Marshall George</td>
<td>MIN of ENERGY</td>
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MTCC Caribbean is hosted by The University of Trinidad and Tobago.
### MTCC Caribbean Southern Sub-Regional Workshop

**18th – 19th March, 2019**

**Registration List & Signature**

**Day 2 – 19th March, 2019**

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**Southern Sub-Region Workshop Participants**

7. Professor Sarim N. Al-Zubaidy       The University of Trinidad and Tobago
8. Ambassador Aad Biesbroek            European Union
9. Mr. Colin Young                    International Maritime Organization
10. Lt. Cmdr. Ronald Alfred           Maritime Services Division
11. Ms. Natalja Miolato               European Union
12. Captain Tushar Potey              The University of Trinidad and Tobago
13. Captain Jaikar Sohal              The University of Trinidad and Tobago
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<td>51.</td>
<td>Mr. Maxine Green</td>
<td>MIN of ENERGY</td>
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This project is financed by the European Union and implemented by the International Maritime Organization. MTCC Caribbean is hosted by The University of Trinidad and Tobago.
Appendix VIII – Workshop Materials
Appendix IX – MTCC Caribbean’s Webpage
Appendix X – Sample Invitation Letter

Maritime Technology Cooperation Centre Caribbean
The University of Trinidad and Tobago (UTT)
2nd Avenue North, Western Main Road, Chaguaramas,
Trinidad and Tobago, W.I.
Telephone: (+1 868) 642-3888 Website: www.utt/mtcc-caribbean

23rd January, 2019
Ms. Claudette Rogers
Director
Maritime Administration Department
Ministry of Public Infrastructure
Transport & Harbors HQ,
Top Floor,
Battery Road & Fort Street,
Kingston, Georgetown,
Guyana, W.I.

Dear Ms. Rogers,

RE: Capacity Building for Climate Mitigation in the Maritime Shipping Industry

MTCC Caribbean appreciates the Maritime Administration Department of Guyana’s support and participation in our activities aimed at Climate Change Mitigation in the Maritime Shipping Industry in the region. Under the capacity building initiatives of this project we have commenced preparations for our 2nd Southern Sub-Regional workshop carded for March 18th and 19th, 2019. The workshop will be hosted at the Chaguaramas Campus of The University of Trinidad and Tobago. This workshop targets countries falling within the Southern Sub-Region, namely; Barbados; Guyana; Suriname; and Trinidad & Tobago.

As you will recall the Global MTCC Network (GMN) Project is a European Union funded four-year “Capacity Building for Climate Change Mitigation in the Maritime Shipping Industry” project which commenced in 2016 and will run until the end of 2019. Under the GMN project, MTCC Caribbean will work towards building regional capacity, facilitating the uptake of new sustainable technology and the setting up of a voluntary fuel reporting system. The specific objectives of the MTCC Caribbean are to:

- Provide a platform for partnerships aimed at reducing emissions and enhancing energy efficient methods in the Maritime domain at a global level and specifically in the Caribbean region;
- Identify environmentally friendly and sustainable technologies available to the Caribbean region;
- Enhance awareness and uptake of environmentally sound technologies and build expertise within the region;
- Provide advisory and market development services for technology adopters and suppliers; and
- Monitor regional energy efficiency needs and align training programmes to meet these needs.

At this Sub-Regional workshop we will discuss the recommendations for leveraging the existing legal and institutional baselines of each territory within the Southern Sub-Region. Results from our preliminary data gathering and the current status of the MTCC Caribbean Data Collection by the various Maritime Administrations will also be discussed. The workshop will also provide an update on the current state of national initiatives on GHG emissions, with special reference to MARPOL Annex VI in addition to designing interventions catering to the needs of each country.
In this regard, MTCC Caribbean wishes to extend an invitation to the Maritime Administration Department for the upcoming southern sub-regional workshop in Trinidad. MTCC Caribbean is pleased to advise that it will cover the cost of a total of 2 participants from your country, inclusive of the appointed Energy Efficiency Focal Point Person. The participants are required to be qualified under the following criteria:

- Suitably qualified to benefit from the workshop and provide MTCC Caribbean with up-to-date information relating to the current status of MARPOL Annex VI implementation inclusive of it supporting legal framework, the institutional foundation and monitoring and enforcement measures, among others.
- Ability to understand and communicate in the working language of the workshop, which will be English.
- Capable of engaging within stakeholder discussions and presentations.
- Provide a presentation on behalf of the Maritime Administration Department (see attached for presentation template).

Please find attached the nomination and acceptance forms for the workshop. We request that these forms be completed and submitted to MTCC Caribbean no later than Wednesday 13th February, 2019.

We look forward to your cooperation and participation as we undertake our capacity building initiatives across the region.

Sincerely,

Vivian Rambarath-Parasram
Director and Head
MTCC Caribbean
MTCC Caribbean’s
2nd Southern Sub-Regional Workshop

This workshop will bring together Maritime Stakeholders from Barbados, Guyana, Suriname and Trinidad and Tobago.

**Workshop Outcomes include:**

- Enhanced strategies for leveraging the existing legal and institutional framework to facilitate implementation of low carbon shipping initiatives.
- Review of international initiatives on GHG emissions from Ships.
- Update on State of data gathering for Pilot Projects in the Southern sub region.
- Targeted interventions at local, regional and sub regional levels.

**March 18th - 19th**

**University of Trinidad and Tobago**

**Chaguaramas Campus**

For more information:

MTCC Caribbean’s 2nd Southern Sub-Regional Workshop – Completion Report
Appendix XII – Workshop Layout Picture
Appendix XII – MTCC Caribbean Pop up banner
## Appendix XV – Feedback Form

<table>
<thead>
<tr>
<th>QUESTIONS</th>
<th>RESPONSES</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>MTCC Caribbean’s 2nd Southern Sub-Regional Workshop Feedback Form</strong></td>
<td>9</td>
</tr>
</tbody>
</table>

Your feedback is critical for MTCC Caribbean to ensure we are meeting the objectives of the project. We would appreciate if you could take a few minutes to share your opinions with us so we can further refine our approach to suit the needs of the Region.
<table>
<thead>
<tr>
<th>Statement</th>
<th>Strongly Agree</th>
<th>Agree</th>
<th>Neutral</th>
<th>Disagree</th>
<th>Strongly Disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td>The content of the presentations were relevant to the workshop objectives</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>The workshop improved my understanding of the Implementation of MARPOL Annex VI</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>The content was relevant to my current needs</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>The content met my expectations and needs</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>I am satisfied with the content</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>I will recommend participation in MTCC Caribbean activities to other stakeholders</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>The program was well paced within the allotted time</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Course presentations were clear and understandable</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>The material was presented in an organized manner</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>The speakers were knowledgeable on the topic</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>The activities of the course were interesting</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>I would be interested in attending a follow-up, more advanced workshop on this same subject</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Workshop Delivery *</td>
<td>Excellent</td>
<td>Very Good</td>
<td>Good</td>
<td>Fair</td>
<td>Poor</td>
</tr>
<tr>
<td>---------------------</td>
<td>-----------</td>
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<tr>
<td>Visuals</td>
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<tr>
<td>Acoustics</td>
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</tr>
<tr>
<td>Conference Area and Meeting Space</td>
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<tr>
<td>Handouts</td>
<td></td>
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<td></td>
<td></td>
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<tr>
<td>The programme overall</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Which part of the workshop was most beneficial to you? *

Your answer

Do you have any suggestions for the improvement of future workshops? *

Your answer

Please identify two topics that you would like to learn more about in future workshops: *

Your answer