GUIDANCE AND TECHNICAL OVERVIEW

PLEASE NOTE UPDATES WERE MADE TO THIS DOCUMENT ON 20th DECEMBER 2023. UPDATED TEXT IS HIGHLIGHTED IN YELLOW.

1. GUIDANCE ON THE SUBMISSION OF INFORMATION

On 21st July 2023, the IMO announced the Maritime Technology Global Challenge, which opened the door for technology and solution providers, across the world, to participate in the challenge by submitting information about their technology decarbonization solutions for ports and/or ships under 5,000 GT. This document provides practical guidance on the submission process and technical details of the target countries.

AIMS OF THE GLOBAL CHALLENGE

Support countries in Africa and Caribbean to identify market ready technology solutions that will help improve the efficiency of selected vessels and / or ports, reduce operational costs and GHG emissions.

THE TARGET COUNTRIES

- Namibia (Africa)
- St. Kitts & Nevis (Caribbean)
- Trinidad and Tobago (Caribbean)
- Mauritius (Africa)

SUBMISSION CHECKLIST AND OVERVIEW

Before Applying:

1. **Check Eligibility:**
   - Verify that your technology solution aligns with the challenge scope.
2. **Scope Alignment:**
   - Confirm that the cost for demonstrating your technology in a beneficiary country does not exceed $USD 500,000.
   - Ensure your technology is market-ready for installation and demonstration in 2024.
3. **Target Countries and Ports/Vessels:**
   - Verify the applicability of your technology solution to one or more of the identified ports and/or vessels in the target countries.
   - Ensure your solution directly addresses the aims of the Global Challenge.
4. **Submission Document Requirements:**
   - Prepare a concise submission document not exceeding 20 pages.
   - Clearly address key criteria, including technology introduction, GHG reduction impact, operational cost impact, installation feasibility, and potential for upscaling.
   - A copy of your company / organization's registration certificate: *This should be a clear scan of an official registration document provided by the relevant authorities in the country where the applicant organization is registered. Trust deeds will be accepted in lieu of a registration certificate.*

When the original registration certificates are not in English, shortlisted applicants may be asked to provide a certified translation.

**Please note that you may be asked to provide your company / organization's audited accounts or a copy of its most recent annual accounts.*

Submission Process:

1. **Submission Portal:**
    - Submit your papers through the IMO CARES website portal.
    - Verify the submission timeframe on the CARES website and adhere to it.
2. **Confirmation Email:**
    - After submission, expect a confirmation email.

After Submission:

1. **Review Process:**
    - Submissions will be reviewed by an expert panel.
    - Top-scoring submissions will proceed to the next stage.
2. **Funding Consideration:**
    - Be aware that up to four technology providers may receive funding for technical proposals.
    - Be aware that additional funds for proposal implementation might be made available under the Global MTCC Network project.
3. **Post-Review Notification:**
    - Await notification from the CARES team regarding the success of your submission.
    - Note that no feedback will be provided for unsuccessful submissions.
4. **Future Involvement:**
    - Be aware that all submissions will be considered for involvement in future IMO CARES challenges and initiatives.

PROCEDURAL OVERVIEW AND CRITERIA IN-DEPTH: FROM ELIGIBILITY TO SUBMISSION

ELIGIBILITY

Any legally recognized company / organization of any size and based anywhere in the world can apply, but before proceeding, please check that your technology solution is applicable to the scope of the challenge (see below). Any applications out of scope will not be assessed. **Scope**

- The cost to demonstrate a technology solution in one of the beneficiary countries cannot exceed $USD 500,000.
- The technology solution must be market ready / available for installation and demonstration in 2024.
- The technology solution must be directly linked to the challenge aims (see above).
- The technology solution must be suitable for application in one target beneficiary country or multiple beneficiary countries.
- The technology solution must be applicable for either one or more of the identified ports and / or vessels.

KEY CRITERIA

Submissions will be judged on the following key criteria:

- Introduction of your technology solution and its applicability to the challenge aims.
- Estimated impact on GHG reduction.
- Estimated impact on vessel and / or port operational costs.
- Technology installation costs (approx.) and overall installation feasibility (taking into account country locations).
- The short term and long-term maintenance requirements of the technology (including related costs).
- The potential for application across a larger number of vessels and ports (potential upscaling).
- Information must be concise, easily understood and not exceeding 20 pages in total.

REVIEW OF SUBMISSION PAPERS

- Submissions will be reviewed by an expert panel.
- The expert panel will assess applications based on key criteria and will use a template marking scheme which is applicable to all submissions.
- The submission papers with the highest overall scores will be considered for the next stage in the challenge.
- The expert panel consists of the following organizations:

Royal Institution of Naval Architects (RINA)
International Windship Association (IWSA)
World Maritime University (WMU)
Maritime Technology Cooperation Centre for Africa (MTCC-Africa)
Maritime Technology Cooperation Centre for Asia (MTCC-Asia)
Maritime Technology Cooperation Centre for Caribbean (MTCC-Caribbean)
Maritime Technology Cooperation Centre for LA (MTCC-Latin America)

FUNDING

After assessment of the submissions, up to 4 technology providers will receive funding ranging from USD 15,000 to USD 30,000 to develop technical proposals. Each technical proposal, to be developed in coordination with the IMO CARES Team and local stakeholders, should provide a detailed plan of how the technology will be demonstrated in the target country/ies.

Additional funds of approximately USD 500,000 may be made available to implement the technical proposal/s in the target country/ies, under the IMO implemented Global MTCC Network (GMN) project, funded by the European Commission.

THE SUBMISSION OF PAPERS

- Papers should be submitted through the IMO CARES website portal:

  The Maritime Technology Global Challenge: IMO Cares

- After submission a confirmation email will be sent to you.
- Any papers submitted outside of the allotted timeframe will not be reviewed (see CARES website for details on the submission timeframe)

AFTER YOUR SUBMISSION

At the end of the review process the CARES team will notify you whether your submission has been successful or not.

The CARES team will not provide feedback for those submissions that were unsuccessful, however all submissions will be considered for involvement in future IMO CARES challenges and initiatives.

2. TECHNICAL OVERVIEW OF THE COUNTRY BENEFICIARIES

Working in partnership with Maritime Technology Cooperation Centres (MTCCs) in Africa and Caribbean, IMO CARES has identified beneficiary countries and conducted consultations with key stakeholders to identify suitable ships and/or ports for participation in the pilot project.

Beneficiary countries were selected through a transparent process, by which African and Caribbean countries were invited to submit letters of interest to participate in the pilot demonstration project.

This section provides a technical overview of the beneficiary countries.

2.1 AFRICA

1. Namibia

- **3 target Vessels**
- **1 target port:** Walvis Bay

2. Mauritius

- **2 target ports:** Port Louis Harbour and Port Mathurin

NAMIBIA

After reviewing responses to the MTCC Africa call for expressions of interest, the Republic of **Namibia** has been chosen as one of the designated beneficiary countries for the pilot demonstration initiative. Details of a second beneficiary country for Africa (with related vessels and port information) will be released soon.

➢ **Target vessels**

The Ministry of Fisheries and Marine Resources of Namibia is committed to the sustainable management of living aquatic resources. It operates four specialized vessels which have been identified to potentially participate; two for fisheries patrol and one for marine research. A summary of the vessel details is provided in the table below:

Table 1 – Proposed ships for demonstration pilot - Africa

SHIP PARTICULARS*	SHIP NAME		
	MV Nathaniel Maxuilili	*MV Anna Kakurukaze Mungunda*	*MV Mirabilus*
Gross Tonnage	1421	1431	2131
Length	57.6m	59m	63m
IMO Number	9244776	9285603	9619725
Port of Registry	Walvis Bay	Walvis Bay	Walvis Bay
Year Build	2002	2003	2012
Type of Ship	Fisheries Patrol Vessel	Fisheries Patrol Vessel	Marine Research Vessel
Owner Ship	Namibian Government	Namibian Government	Namibian Government

Hull Number	001-2002 WB	-	-
DWT	625t	-	-
Flag	Namibia	-	-
Breadth Moulded	12.50m	--	-
Depth Moulded	6.00m	-	-
Length Between Perpendiculars	51.00m	-	-
Summer Load Line Draught Moulded	1.61m	-	-
Main Engine Type	SBV8M628	-	-
Engine Manufacturer	DEUTZ	-	-
Maximum Continuous Rating	1500kw x2	-	-
Number of Main Engine Set(s)	2	-	-
Type(s) of Fuel used	Marine Diesel oil (50ppm)	-	-
Maximum capacity of fuel tanks (cu.m)	230 m3	-	-
Average fuel consumption (Daily)	5.0 m3	-	-
Propeller Type		-	-
Propeller Diameter and Pitch	ACG62/450,S350-1C	-	-
Number of Propeller Set(s)	2600mm	-	-
Number of Propeller Blades (per set)	2	-	-
Auxiliary Engine Type	KT19-D(M)	-	-
Auxiliary Engine Manufacturer	Cummins	-	-
Auxiliary Engine Power	403 kw x 3	-	-
Auxiliary Engine Fuel Type	Marine Diesel oil (50 ppm)	-	-
Type of service provided by the ship	N - EEZ Patrol and Inspecting fishing vessel	-	-
Average voyage information of the ship	+/- 6 per year	-	-
Average voyage distance before calling port	1500 Nm	-	-
Average ship speed when sailing	7.0 Knots	-	-

Average time spent alongside per calendar month	15 days	-	-
Power demand during sailing, waiting and at berth	N/A	-	-
Bunkering Frequency	Top up once per Quarter	-	-
Bunkering Fuel	Shore base fuel tank	-	-
Bunkering Quantity	+/- 100 t	-	-
Energy Saving Technology	none	-	-
Emission Control Measures	none	-	-
Emission Management or Monitoring System	none	-	-

*Additional technical and operational details will be shared soon.

- **Technology demonstration for Namibian ports**

The first target port confirmed to participate as part of the technology demonstration initiative is **Walvis Bay.** The second port will be the **Port of Luderitz**.

Walvis Bay is owned by the Namibia Ports Authority (NAMPORT) which is initiating collaborative efforts in several key areas:

1) **Hybridization of Tugboats:** NAMPORT reported its involvement in pilot projects, initiated in conjunction with the governments of Namibia and Germany. This collaboration aims to convert tugboats and port equipment to hydrogen dual-fuel technology, integrating both hydrogen and diesel. This initiative aims to assess the feasibility of larger, long-term projects. A key focus is establishing green hydrogen bunkering and refueling infrastructure at the port, along with developing safety protocols and operational procedures for hydrogen use in port operations. This project, still in its early stages, seeks to enhance the partnership between Germany and Namibia in green hydrogen production.

2) **Capacity Building:** NAMPORT has signed Memoranda of Understanding (MOUs) with several European ports, including Antwerp-Bruges, Rotterdam, and Dunkerque. These agreements focus on exchanging best practices for environmental sustainability, aiming to introduce eco-friendly practices in Namibian Ports.

3) **Renewable Energy Sources:** NAMPORT recently completed a feasibility study on adopting renewable energy sources for its facilities in Walvis Bay and Luderitz. The results of this study will inform future investment decisions to decarbonize port operations and determine the energy mix for these ports, with potential implications for broader application across African ports.

Table 2: Proposed ports for demonstration project - Namibia

Port Details	**Namibian Ports Authority (NAMPORT)**	
Port Name	***A: Port of Walvis Bay***	***B: Port of Lüderitz***
Port Ownership	Namibian State Owned	Namibian State Owned
Port Location	22°57'3.72"S 14°30'5.44"E The current Port Limit in the North is on the parallel of latitude 22° 51'.3 S. However the proposed new Port Limits will be as follows: Mid limits: Lat. 22° 51' 03.4"S - Long. 014° 26'01"E Southern limits: Lat. 22° 57' 06.6" S - Long. 014° 24' 04" E	26°38'37.84"S 15° 9'11.86"E
Year Built	Founded it in 1793. In 1910, Walvis Bay became part of the Union of South Africa. Walvis Bay finally became reintegrated into Namibia on 1 March 1994.	Was officially inaugurated on May 19, 1910. In Official transfer of the Port of Lüderitz and the lighthouse situated at Diaz Point to Namport in 1994.
Port Type	Commercial Port (Containers, Breakbulk)	Commercial and Fishing Port
Port Size	1500 Hectares 600 meters (berths 10/11) 1500 meters (berths 1-8)	25 Hectares 500 m quay
Cargo Traded	Salt, Charcoal, Fish & fish products Copper/ Lead and Concentrates, Petroleum, Vehicles, Fish and fish products, Wheat, Chemicals, Project Cargo	Manganese Ore, Zinc/ Zinc Concentrate/ Ore, Ice, Lead Concentrate, Petroleum, Wet fish Frozen Fish
No. of Berths	13 commercial berths including New Container Terminal & Tanker Jetty	2 Berths
Port Draught	Entrance Channel: Dredged depth 14.4m, Maximum Draught 14 meters. Along berths 1-2: 14 meters Berths 4-8: 10.6 meters Passenger Jetty: 11 meters Berths 10-11: 14 meters	Maximum depth alongside is 8.5 meters

Port Details	Namibian Ports Authority (NAMPORT)	
Port Name	***A: Port of Walvis Bay***	***B: Port of Lüderitz***
Berth Specifications	The distance between bollards 1-26 is 19m (i.e. berths 1-3), while from bollards no 27-86 is 15m. (berths 4-8) respectively. Portable Water, Fuel (Diesel), electricity and waste reception facilities are available at the berths. Berth 9: Passenger Vessels Berths 10-11: Container Vessels Berths 12-13: Oil Tankers	33 Bollards on a quay of 500 meters, which can accommodate 2 multi-cargo vessels Separate concrete quay for fishing vessels.
Terminal Facilities	Container storage (including reefers) Maintenance Workshops Bulk Terminals Bulk Liquids & Chemicals Dry Port Facilities Vehicle Storage Areas Oil & Gas Supply base Mud Plants Passenger Terminal (Jetty) Oil Tanker Jetty Warehousing facilities	Maintenance Workshops Oil & Gas Storage Facilities Bulk Commodities warehousing Bulk Fuel Storage Tanks Reefer Container Storage Areas
Handling Equipment and Machinery	Haulers X20 Forklifts X24 RTGs X6 Mobile Habour Cranes X6 Reach Stackers X13 STS Cranes X4 Hauler Trailers X36	BHT X4 Hauler X8 Kakala X1 Mobile Habour Crane X1 LDVs X2 Reach Stacker SMV X2 45T F/Lift X1 4T FORK/L X1 7T FORK/L X2 3T FORK Lift X1 4T Fork Liftb 29 X1 Trailers X8 Grove Cranes X3
Power Grid Type	Both AC (Alternating Current) Grid and DC (Direct Current) Grid	Both AC (Alternating Current) Grid and DC (Direct Current) Grid
Port Average Power Consumption	Annual Total Energy 4,774,930 kWh Approximate monthly use of 397,911 kWh	Annual Total Energy 890,706 kWh Approximate monthly use of 74,226 kWh

<table>
<tr><td>Port Details</td><td colspan="2">Namibian Ports Authority (NAMPORT)</td></tr>
<tr><td>Port Name</td><td>A: Port of Walvis Bay</td><td>B: Port of Lüderitz</td></tr>
<tr><td></td><td></td><td></td></tr>
<tr><td>Key Equipment and Power Source</td><td>Mobile Harbour Equipment (Reach Stackers, Forklifts, Haulers, RTGs, Mobile Harbour Cranes, Tug boats) – Use Diesel

Ship to Shore Cranes – Use Electricity

Whaft Cranes - Use Electricity

Vehicles – Use both Diesel and Petrol</td><td>Mobile Harbour Equipment (Reach Stackers, Forklifts, Haulers, RTGs, Mobile Harbour Cranes, Tug boats) – Use Diesel

Vehicles – Use both Diesel and Petrol</td></tr>
<tr><td>Type and Quantity of Fuel Used</td><td colspan="2">
<table>
<tr><th colspan="5">Port of Walvis Bay</th></tr>
<tr><th>Type of Fuel</th><th>2020</th><th>2021</th><th>2022</th><th>2023 (TYD – 6 months)</th></tr>
<tr><td>Diesel (Litres)</td><td>1,245,643</td><td>1,412,598</td><td>1,523,586</td><td>1,095,213</td></tr>
<tr><td>Petrol (Litres)</td><td>57,691</td><td>52,538</td><td>55,502</td><td>24,937.42</td></tr>
<tr><th colspan="5">Port of Luderitz</th></tr>
<tr><td>Diesel (Litres)</td><td>155,433</td><td>153,250</td><td>169,240</td><td>26,091</td></tr>
<tr><td>Petrol (Litres)</td><td>4,615</td><td>5,500</td><td>4,000</td><td>2,022.69</td></tr>
<tr><th colspan="5">TOTAL NAMPORT</th></tr>
<tr><td>Diesel (Litres)</td><td>1,401,076</td><td>1,565,848</td><td>169,2826</td><td>1,121,304</td></tr>
<tr><td>Petrol (Litres)</td><td>63,306</td><td>58,068</td><td>59,502</td><td>26,960.11</td></tr>
</table>
</td></tr>
<tr><td>Vessel Traffic

(per month)</td><td>2021: 866

2022: 899

2023 (TYD): 514</td><td>2021: 726

2022: 737

2023 (TYD): 482</td></tr>
<tr><td>Types of Vessels Handled</td><td>Dry bulk, break bulk (clean and dirty) and Ro-Ro, Containers (including reefers), Liquid bulk, Passengers</td><td>Dry bulk, break bulk (dirty), Liquid bulk, Passengers, fishing vessels</td></tr>
<tr><td>Berth Utilization & Availability</td><td>Berth Utilization: 94.5%

Berth Availability: 100%</td><td>Berth Utilization: 90%

Berth Availability: 100%</td></tr>
<tr><td>Certification and Accreditation</td><td>Namport is certified to the following standards:
ISO 14001:2015 (Environmental Management)
ISO 45001: 2015 (Occupational Health & Safety)
ISO 9001:2018 (Quality Management)</td><td>Namport is certified to the following standards:
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ISO 9001:2018 (Quality Management)</td></tr>
<tr><td>Environmental Regulations and Initiatives, including Decarbonization Strategies</td><td>Namibian Ports have maintained ISO 14001 certification for over a decade, underscoring a steadfast commitment to environmental standards. The port adheres to an approved Environmental Management Plan (EMP), endorsed by the Ministry of Environment, Forestry, and Tourism, exemplified by the issuance of a Clearance Certificate for its operational activities.</td><td>Namibian Ports have maintained ISO 14001 certification for over a decade, underscoring a steadfast commitment to environmental standards. The port adheres to an approved Environmental Management Plan (EMP), endorsed by the Ministry of Environment, Forestry, and Tourism, exemplified by the issuance of a Clearance Certificate for its operational activities.</td></tr>
</table>

Port Details	Namibian Ports Authority (NAMPORT)	
Port Name	***A: Port of Walvis Bay***	***B: Port of Lüderitz***
	Striving for full compliance with the Environmental Management Act, the port rigorously enforces environmental regulations not only within its own operations but extends this obligation to its tenants as well. This proactive approach underscores a dedication to environmental stewardship and sustainable practices. Moreover, the port has established a comprehensive ESG (Environmental, Social, and Governance) and Sustainability Policy, complemented by a strategic Action Plan. This initiative encompasses a spectrum of decarbonization efforts, including a completed feasibility study for alternative energy sources in port operations. The acquisition of new equipment is being approached with a focus on incorporating alternative fuel sources, particularly for port equipment and tugboats. In fostering broader awareness and community engagement, the port has introduced an Annual Maritime Week. This initiative aims at enhancing capacity and fostering maritime awareness among Namibian schools and communities. Simultaneously, an Annual Environmental Week has been instituted to address critical environmental issues within the port, coinciding with the global observance of World Environmental Day. These endeavors collectively demonstrate the port's multifaceted commitment to environmental responsibility, sustainability, and community education.	Striving for full compliance with the Environmental Management Act, the port rigorously enforces environmental regulations not only within its own operations but extends this obligation to its tenants as well. This proactive approach underscores a dedication to environmental stewardship and sustainable practices. Moreover, the port has established a comprehensive ESG (Environmental, Social, and Governance) and Sustainability Policy, complemented by a strategic Action Plan. This initiative encompasses a spectrum of decarbonization efforts, including a completed feasibility study for alternative energy sources in port operations. The acquisition of new equipment is being approached with a focus on incorporating alternative fuel sources, particularly for port equipment and tugboats. In fostering broader awareness and community engagement, the port has introduced an Annual Maritime Week. This initiative aims at enhancing capacity and fostering maritime awareness among Namibian schools and communities. Simultaneously, an Annual Environmental Week has been instituted to address critical environmental issues within the port, coinciding with the global observance of World Environmental Day. These endeavors collectively demonstrate the port's multifaceted commitment to environmental responsibility, sustainability, and community education.
Current initiatives and projects aimed at reducing carbon emissions	• Introduction of LED lights across Port Operations • Alternative Energy Sources being considered as part of the feasibility study completed for both Ports. Solar energy installation most feasible for the ports. • Alternative (dual fuel) fuel sources being considered for two new tugboats planned for acquisition in the next 2 years. • Feasibility study to be completed for cold ironing.	• Introduction of LED lights across Port Operations • Alternative Energy Sources being considered as part of the feasibility study completed for both Ports. Solar energy installation most feasible for the ports. • Alternative (dual fuel) fuel sources being considered for two new tugboats planned for acquisition in the next 2 years. • Feasibility study to be completed for cold ironing.

Port Details	Namibian Ports Authority (NAMPORT)	
Port Name	***A: Port of Walvis Bay***	***B: Port of Lüderitz***
Targets and goals for carbon reduction	Namport has made a commitment to reduce its carbon emission by 10% through the introduction of green energy sources by 2030.	Namport has made a commitment to reduce its carbon emission by 10% through introduction of green energy sources by 2030.
Adoption of alternative fuels or energy sources	This is currently in its infancy. We have completed a feasibility study in alternative energy sources for our Port Operations, including all cargo handling equipment. Solar energy installation across the port the deemed to be the most feasible at this stage.	This is currently in its infancy. We have completed a feasibility study in alternative energy sources for our Port Operations, including all cargo handling equipment. Solar energy installation across the port the deemed to be the most feasible at this stage.
Energy-efficient technologies and practices in place	Gradual replacement of high mast lights with LED's across the port. A tender is currently running to appoint a service provider for the initiative. In addition, a feasibility study was completed for the Port for the introduction of alternative energy sources.	Currently None. A feasibility study was completed for the Port for the introduction of alternative energy sources.
Any planned expansions, upgrades, or improvements or Future projects or developments in the pipeline	North Port Development with the following developments planned (> 5 years): • Renewal energy hub (manufacturing, distribution, export) • Oil & Gas Supply base • LNG Terminal • Bulk Oil Storage facilities • Dry Docking Facilities	Quay wall extension by 300 meters and associated land area for port terminal operations. New Port (Long term (> 5 years) at Angra Point (Lüderitz) with 886 hectares of additional land through private-public partnership to cater for the export of Green Hydrogen (Green Ammonia) and Bulk export of Manganese through the port of Luderitz.

Table 3: Proposed ports for demonstration project - Mauritius

Port Details		
Port Name	**Port Louis Harbour**	**Port Mathurin**
Port Ownership	Government	Government
Port Location	Capital city Port Louis (20.16 S and 57.50 E)	Port Mathurin (19.42 S and 63.25 E)
Year Built	1980	
Port Type	Seaport	Seaport
Port Size	About 329 hectares (port area MPA land)	About 2.5 hectares
Cargo Traded	Dry bulk cargo, liquid bulk cargo, containerised cargo, fish traffic	Containerised cargo.
No. of Berths	12-15	1
Port Draught	15.5 (MCT)	
Berth Specifications	Quay A – Length 210 m, Dredged depth 12.2 m. Quay D – Length 170 m, Dredged depth 12.2 m. Quay E – Length 135 m, Dredged depth 9 m. Quay 1 – Length 123 m, Dredged depth 13.5 m. Quay 2 – Length 180 m, Dredged depth 12.5 m. Quay 3 – Length 185 m, Dredged depth 12.5 m. Quay 4 – Length 185 m, Dredged depth 12.2 m. Bulk Sugar Terminal – Length 210 m, Dredged depth 12.5 m. Cruise Jetty – Length 124 m, Dredged depth 12.5 m. MCT 1-3 – Length 800 m, Dredged depth 16.5 m. Oil Jetty – Length 270 m, Dredged depth 16 m.	Dredged approach channel extending over 1,200 metre in length and 120 metre wide. A rectangular shaped turning basin of 210 metre diameter and a quay wall of 175 metre of which about only 130 metre providing sufficient water depth to berth cargo vessels calling from Mauritius.
Terminal Facilities	Terminal I – Handling of fuel oil, edible oil, general cargo, maize, wheat, passengers, inter island trade and fish. Terminal II – Handling of fuel oil, coal, white oil, cement, containers, general cargo, LPG, bitumen.	Basic supplies are conveyed mainly by inter-island cargo vessels sailing from Port Louis harbour on a regular schedule.

Port Details		
Port Name	**Port Louis Harbour**	**Port Mathurin**
	Terminal III – Handling of containers, storage area of 21 hectares, 576 reefers points and container scanning facility. Oil Jetty – Handling of white oil, fuel oil, liquefied petroleum gas and ethanol. Cruise Jetty – Berthing of cruise vessels. Bulk Sugar Terminal – Handling of bulk sugar and fuel oil.	175 terminal ground slots for container storage and some reefers plugs.
Handling Equipment and Machinery	2 Super Post Panamax Cranes 5 Post Panamax rail mounted gantry cranes 14 Rubber Tyre Gantry Cranes	Large fork lift trucks of 26 and 36 tonnes capacity equipped with spreaders.
Power Grid Type	Part of National Grid	Part of National Grid
Port Average Power Consumption	Not available	Not available
Key Equipment and Power Source	Port tugs	Port tugs
Type and Quantity of Fuel Used	Gasoil	Gasoil
Vessel Traffic **(per month)**	221	5
Types of Vessels Handled	Container vessel, General cargo, Bulk carriers, Oil/chemical tanker, LPG tanker, Vehicles carrier, Passenger ship, Reefer and Fishing vessel	General cargo
Berth Utilization & Availability	Depends on Terminal. Average berth occupancy is about 73 %.	Once per week
Certification and Accreditation	ISO 9001, ISO 14001	ISO 9001, ISO 14001
Environmental Regulations and Initiatives, including Decarbonization Strategies	Environmental Regulations in place: 1. Environment Protection Act EPA 2002 as amended, 2. Climate Change Act 2020 Green port initiative to ensure port sustainability and decrease in GHG emission.	Environmental Regulations in place: 1. Environment Protection Act EPA 2002 as amended, 2. Climate Change Act 2020 Green port initiative to ensure port sustainability and decrease in GHG emission.
Current initiatives and projects aimed at reducing carbon emissions	Pilot PV project initiated in 2015. Solar photo voltaic plant of 10 kWp capacity installed at Oil Jetty.	None

Port Details		
Port Name	**Port Louis Harbour**	**Port Mathurin**
	Study on shore power carried out.	
Targets and goals for carbon reduction		
Adoption of alternative fuels or energy sources	No such development so far.	None
Energy-efficient technologies and practices in place	Replacement of lighting systems with LEDs on going. Energy efficient air conditioning systems and lifts installed.	
Any planned expansions, upgrades, or improvements or **Future projects or developments in the pipeline**	Future projects include the installation of additional grid connected roof top solar photovoltaic system PV panels to generate electricity . Consideration being given to optimize waste management from ships and ports by considering reuse, recycling and waste to energy potentials.	-

2.2 CARIBBEAN

1. **Trinidad and Tobago**
   - 5 target vessels
   - 2 target ports: *Port of Galeota and Port of Point Lisas*
2. **St. Kitts & Nevis**
   - 1 target port: *Deep-water Port at Bird Rock*

After reviewing responses to the MTCC-Caribbean call for expressions of interest, **Trinidad and Tobago** and **St Kitts and Nevis** have been chosen as the designated beneficiary countries for the pilot demonstration initiative in the Caribbean.

TRINIDAD AND TOBAGO

- **Target vessels**

Within its fleet of eleven vessels, The National Energy Corporation of Trinidad and Tobago Limited (National Energy) has identified four specific ships that align with the required criteria for ship selection.

In addition, Delta Logistics (a locally owned and operated Marine Contracting and Consulting Company, which provides support to the offshore oil and gas industry in Trinidad, the Caribbean and South America) has identified a specific ship that aligns with the required criteria for ship selection.

Table 4 – Proposed ships for demonstration pilot - Caribbean

Vessel Details	National Energy				Delta
Ship Name	***NEC Empress***	***NEC Voyager***	***NEC Spirit***	***NEC Legacy***	***Delta Cardinal***
IMO Number	9276810	N/A	936639	9373694	9653111
Type	Tugboat	Passenger Launch	Tugboat	Tugboat	Offshore Supply
Year Built	2004	2013	2007	2005	2014
Hull Number	511504	532281	509616	503923	
Gross Tonnage	294 GT	100 GT	140 GT	100 GT	3,830 GT
DWT	149 DWT	24 DWT	56 DWT	83 DWT	3,521 DWT
Flag	Trinidad	Trinidad	Trinidad	Trinidad	St. Vincent & the Grenadines
Length Overall	29.0M	16.2M	22.6M	16.9M	80.10M
Breadth Moulded	10.0M	4.5M	7.8M	5.3M	16.20M
Depth Moulded	4.60M	1.85M	3.74M	2.51M	7.50M
Length Between Perpendiculars	25.8M	14.50M	19.5M	16.4M	74.75M
Summer Load Line Draught Moulded	3.6M	0.9M	2.9M	2.3M	6.15M
Main Engine Type	3516B TA	C18 TA B	3512B TA	3408 C TA/B	Diesel-Electric 690V, 60 Hz
Engine Manufacturer	Caterpillar	Caterpillar	Caterpillar	Caterpillar	Caterpillar

Vessel Details	National Energy				Delta
Ship Name	***NEC Empress***	***NEC Voyager***	***NEC Spirit***	***NEC Legacy***	***Delta Cardinal***
Maximum Continuous Rating	1771 kW	500 kW	1021 kW	350 kW	4,852 kW
Number of Main Engine Set(s)	2	2	2	2	4
Type(s) of Fuel used	Marine Diesel Oil	Marine Diesel Oil	Marine Diesel Oil	Marine Diesel Oil	Marine Diesel Oil
Maximum capacity of fuel tanks (cu.m)	96.9	2	36.8	13.7	450m^3
Average fuel consumption (Daily)	1.7m^3	0.45m^3	1.0m^3	0.25m^3	12.60m^3
Propeller Type	Fixed Pitch	Waterjet	Fixed Pitch	Fixed Pitch	TBD
Propeller Diameter and Pitch	2400 mm	N/A	2200 mm	1300 mm	TBD
Number of Propeller Set(s)	2	N/A	2	2	TBD
Number of Propeller Blades (per set)	3	N/A	3	3	TBD
Auxiliary Engine Type	3304	C 1.5	C 4.4	C 1.5	690 V, 440 V and 230 V – 60 Hz
Auxiliary Engine Manufacturer	Caterpillar	Caterpillar	Caterpillar	Caterpillar	Caterpillar
Auxiliary Engine Power	131	23	56	23	2x 1370 kW 2x 940 kW
Auxiliary Engine Fuel Type	Marine Diesel Oil	Marine Diesel Oil	Marine Diesel Oil	Marine Diesel Oil	Hybrid

Vessel Details	National Energy				Delta
Ship Name	***NEC Empress***	***NEC Voyager***	***NEC Spirit***	***NEC Legacy***	***Delta Cardinal***
Type of service provided by the ship	Harbour Towage / Rig Moves	Passenger Transfer	Harbour Towage / Tug & Barge Operations	Towage / Passenger Transfer	Offshore Supply
Average voyage information of the ship	Trinidad and Tobago Guyana, and Suriname	Pt. Lisas to vessels within Pt. Lisas Basin and shipping channel	Trinidad and Tobago Guyana, and Suriname	Trinidad and Tobago	Trinidad and Tobago
Average voyage distance before calling port	Coastal Waters – 15NM Caribbean – 510NM	Coastal Water – 6NM	Coastal Waters - 15NM Caribbean - 510NM	Coastal Waters - 15NM	Coastal Waters - 15NM
Average ship speed when sailing	8 knots	28 knots	8 knots	8 knots	12 knots
Average time spent alongside per calendar month	15 days	15 days	19 days	15 days	TBD
Power demand during sailing, waiting and at berth	Sailing - 52kW At berth – 25KW	Sailing – 10kWh Shorepower	Sailing - 38kW At berth – 25KW	Sailing – 10kW Shorepower	Sailing - 2x 1500 kW
Bunkering Frequency	Monthly	Twice weekly	Monthly	Monthly	TBD
Bunkering Fuel	Marine Diesel Oil	Marine Diesel Oil	Marine Diesel Oil	Marine Diesel Oil	Marine Diesel Oil
Bunkering Quantity	$40m^3$	$0.9m^3$	$20m^3$	$7m^3$	TBD
Energy Saving Technology	N/A	N/A	N/A	N/A	Waste Heat Recovery Shore Supply Connection (400 A)
Emission Control Measures	N/A	N/A	N/A	N/A	Exhaust Gas Cleaning System

Vessel Details	National Energy				Delta
Ship Name	***NEC Empress***	***NEC Voyager***	***NEC Spirit***	***NEC Legacy***	***Delta Cardinal***
Emission Management or Monitoring System	N/A	N/A	N/A	N/A	Yes

TECHNOLOGY DEMONSTRATION FOR CARIBBEAN PORTS

The St. Christopher Air and Sea Ports Authority (SCASPA) of St. Kitts and Nevis has indicated their interest to facilitate port technology demonstration under the IMO CARES project. SCASPA has identified their *Deep-Water Port at Bird Rock* as a targeted beneficiary port available for participation in the port focused technology demonstration pilot under the IMO CARES Project. In addition, both the Port of Galeota and Port of Point Lisas (National Energy - Trinidad and Tobago), have confirmed their interest to participate in the pilot demonstration initiative.

Table 5: Proposed ports for demonstration project - Caribbean

Port Details	National Energy		SCASPA
Port Name	***Port of Galeota***	***Port of Point Lisas***	***Deep-water Port at Bird Rock***
Port Ownership	National Energy Corporation	National Energy Corporation	SCASPA
Port Location	Isthmus Rd. Galeota Point, Trinidad	Gulf of Paria halfway down the west coast of Trinidad, 32 km South of Port of Spain, in position 10°24.2'N, 61°29.6'W	Bird Rock, Basseterre, St Kitts & Nevis
Year Built	Re-Built/opened October 2014	1966	1980
Port Type	Offshore Logistics Base/Energy Port	Multipurpose Petrochemicals, Iron & Steel, Tug Mooring Facility	Main Cargo Handling Facility
Port Size	7.0 Hectare	862.613 Hectare	

Port Details	National Energy		SCASPA
Port Name	***Port of Galeota***	***Port of Point Lisas***	***Deep-water Port at Bird Rock***
Cargo Traded	Oil & Gas Equipment and Logistics Cargo	Liquid Bulk – Primary Products - Iron Ore, Aggregates, Urea, Methanol, Direct Reduced Iron (DRI) and Urea Ammonium Nitrate (UAN)	TBD
No. of Berths	Five Commercial Berths/One Coast guard berth	SP1 S, SP2 S, SP2 N, SP 3, SP 4, ISCOTT Dock & Tug Mooring	TBD
Port Draught	7.6m	12.8 m	TBD
Berth Specifications	Berth 1/3 - 104m, Berth 2 - 148m, Berth 4 - 75m & Berth 5 - 55m	Savonetta Pier 1 South – 310m, Depth – 12.8m, Max Beam – 32m, Max Beam – 245m, Savonetta Pier 2 North – 223m, Depth – 12.8m, Max Beam – 32m, Max Beam – 245m Savonetta Pier 2 South – 312m, Depth – 12.8m, Max Beam – 32m, Max Beam – 245m Savonetta Pier 3 South – 500m, Depth – 12.8m, Max Beam – 32m, Max Beam – 245m Savonetta Pier 3 -500m, Depth – 12.8m, Max Beam – 32m, Max Beam – 245m Savonetta Pier 4 -380m, Depth – 12.8m, Max Beam – 32m, Max Beam – 245m ISCOTT Dock - 407m, Depth – 12.8m, Max Beam – 32m, Max Beam – 245m	TBD
Terminal Facilities	3.0 Ha Open Storage 2700 sqm Warehouse Storage	Petrochemical Terminal Facility including Tug Mooring Facility	TBD

Port Details	National Energy		SCASPA
Port Name	***Port of Galeota***	***Port of Point Lisas***	***Deep-water Port at Bird Rock***
Handling Equipment and Machinery	120 Ton Crane, 20 Ton Forklift, Labour Gang	TBD	TBD
Power Grid Type	480/277 V supply	National Grid Supply	TBD
Port Average Power Consumption	42,000KWH (annually)	TBD	TBD
Key Equipment and Power Source	300gal/min 1000CBM Potable Water Reservoir & Pumping System, 24/7 Generator, 5Ton Overhead Crane, 6 Quayside Potable Water hydrants	TBD	TBD
Type and Quantity of Fuel Used	Road Tank Wagon fueling Operations	TBD	TBD
Vessel Traffic (per month)	150-200 vessels call	Savonetta Pier 1S – 5.3 vessel calls Savonetta Pier 2N – 8.8 vessel calls Savonetta Pier 2S – 4.05 vessel calls Savonetta Pier 3 – 8.85 vessel calls Savonetta Pier 4 – 9.61 vessel calls ISCOTT Dock – 1.6 vessel calls	TBD
Types of Vessels Handled	Oil & Gas support vessels and Logistics Ships	Oil Tanker, Product Carrier, Gas Carrier, Chemical Tanker	TBD
Berth Utilization & Availability	50% Berth Occupancy	Utilization Savonetta Pier 1S – 47.4% Savonetta Pier 2N – 70.3% Savonetta Pier 2S – 36.9% Savonetta Pier 3 – 105.1%	TBD

Port Details	National Energy		SCASPA
Port Name	***Port of Galeota***	***Port of Point Lisas***	***Deep-water Port at Bird Rock***
		Savonetta Pier 4 - 65.6 % ISCOTT Dock – 23.2% Availability Savonetta Pier 1S – 52.6% Savonetta Pier 2N – 29.7% Savonetta Pier 2S – 63.1% Savonetta Pier 3 – 0% Savonetta Pier 4 – 34.5 % ISCOTT Dock – 76.8%	
Certification and Accreditation	ISPS Certified	ISPS certified Terminal Facility	TBD
Environmental Regulations and Initiatives, including Decarbonization Strategies	Environmental Clearance Certificate	CEC Monitoring Framework	TBD
Current initiatives and projects aimed at reducing carbon emissions	GHG Audit, Energy Efficiency, Renewable Energy Systems, Vessel Operations Management, Alternate Energy Fueling Systems, Infrastructure upgrades for operational efficiency.	Vessel Speed Monitoring for reduced emissions in port Solar Power Garbage Compactor, located at the Tug and Mooring Facility	TBD
Targets and goals for carbon reduction	30% GHG reduction by 2030 Net Zero by 2050	GHG Audit completed for National Energy Assets operations	TBD
Adoption of alternative fuels or energy sources	Methanol Bunkering due diligence initiatives. Shore Power Infrastructure planning	Urea additive use in Tug (Resilience) as NO_x and SO_x reducer	TBD

Port Details	National Energy		SCASPA
Port Name	***Port of Galeota***	***Port of Point Lisas***	***Deep-water Port at Bird Rock***
Energy-efficient technologies and practices in place	LED Lighting and Solar Powered applications	LED lighting and Solar Trash Compactor	TBD
Any planned expansions, upgrades, or improvements or Future projects or developments in the pipeline	Proposed Deep water port expansion project for support of Energy Transition Projects and Upstream Heavy Industrial Marine activity. Pursuit of Green Port designation by 2025. Alternate Energy and Energy efficiency initiatives including LED upgrades, Solar/Wind powered applications. Traffic Operation efficiency enhancements, currently under implementation. Scope 3 GHG Audit underway for completion December 2023	Maintenance Upgrade Works to Savonetta Piers and ISCOTT Dock	TBD

*Additional technical and operational details will be shared soon.