



MTCC AFRICA
Maritime Technology Cooperation Centre



CAPACITY BUILDING FOR CLIMATE CHANGE MITIGATION IN THE MARITIME SHIPPING INDUSTRY

Need for Fuel Consumption Data Collection in Maritime Shipping Industry

Madagascar National Workshop | 16 – 17 May 2018 | Toamasina

Presented by Eng. Michael Muchiri | michaelmuchiri360@gmail.com

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The views expressed in this presentation can in no way be taken to reflect the views of the European Union



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**Too much smoke?
Just enough pollution?
Acceptable emission levels?**



Without emissions data, you cannot answer that question

Maritime data sources – Automatic versus Manual



International Maritime Organization

European Union Regulation 2015/757

- GHG emissions from Aviation and Maritime Shipping were excluded by the Kyoto Protocol (1997) under Art. 2.2 which instead required ICAO and the IMO to “...pursue limitation or reduction of greenhouse gases...”
- The Paris Agreement also did not directly address aviation and maritime shipping, the text having been omitted just before signature by Parties.
- Question: Who then should conduct MRV of data from international sailing ships? - The ship owner, or the flag state, or the port of call, all of which will routinely be of different nationalities / jurisdictions?
- To assist in the collection of emission data, the EU has taken a **regional approach** with the adoption of Regulation 2015/757/EU intended to monitor, report and verify (MRV) the emissions from ships (5,000 gross tonnes and above), calling at EU ports by assessing their energy efficiency.

International Maritime Organization

European Union Regulation 2015/757

- Verification of CO₂ emissions involves assessing different parameters from the point of view of the *ship's functioning*, date and port of departure, arrival at destination of journey, time spent on the sea (including the time in motion and at berth), fuel consumed, emissions consequently produced, nature of the cargo transported, etc.
- Where there is compliance, the verifier issues a “***document of compliance***” that will have to be surrendered when calling at EU Ports.
- The “***document of compliance***” will be mandatory after 30 June 2019 especially when sailing in Maritime Sensitive Environmental Zones.

Maritime Data MRV Deadlines

| | |
|------------------|--|
| 1 January 2013 | Mandatory requirement to carry on board a Ship Energy Efficiency Management Plan (SEEMP) |
| 31 August 2017 | Deadline for the submission of ship Monitoring Plan to your Verifier |
| 31 December 2017 | Deadline for the successful assessment of the ship Monitoring Plan by your Verifier |
| 1 January 2018 | Start of first Monitoring Period |
| 31 December 2018 | End of first Monitoring Period |
| 30 April 2019 | Deadline to provide a final verified emissions report to the European Union Commission |
| 30 June 2019 | Need to carry “ Document of Compliance ” on board each ship |

Sample Data Collection Sheet - 1

→ ☆

General Vessel Information

| | | | | | |
|--|---|---|---|--|--|
| Vessel Name | Year Built | IMO Number | Ship Builder | Ship Type | Hull Number |
| <input type="text" value="Enter Vessel Name"/> | <input type="text" value="mm/dd/yyyy"/> | <input type="text" value="Enter IMO Number"/> | <input type="text" value="Enter Ship Builder"/> | <input type="text" value="Ship Type"/> | <input type="text" value="Enter Hull Number"/> |

Vessel Particulars

| | | | | |
|---|---|--|--|--|
| Overall Length | Length Between Perpendiculars | Breadth Moulded | Deadweight at Summer Line Draught | Depth Moulded |
| <input type="text" value="Enter Overall Length"/> | <input type="text" value="Length Btwn Perpendiculars"/> | <input type="text" value="Enter Breadth Moulded"/> | <input type="text" value="Deadweight at Summer Line"/> | <input type="text" value="Enter Depth Moulded"/> |

Summer Load Line Draught Moulded **Vref - Ship speed in deep water at summer load line draught @75% MCR**

| | |
|---|---|
| <input type="text" value="Summer Load Line Draught"/> | <input type="text" value="Ship Speed"/> |
|---|---|

Propulsion System

| | | | | |
|---|--|--|---|--|
| Main Engine Type | Maximum Continuous Rating(kW) | Engine Manufacturer | SFC (g/kWh)@75%MCR | #Main Engine set(s) |
| <input type="text" value="Enter Main Engine Type"/> | <input type="text" value="Maximum Continuous Rating"/> | <input type="text" value="Engine Manufacturer"/> | <input type="text" value="SFC (g/kWh)@75%MCR"/> | <input type="text" value="Enter #Main Engine set(s)"/> |

| | | | | |
|--|---|---|--|--|
| Fuel Type | Propeller Type | Propeller Diameter & Pitch | #Propeller set(s) | #Propeller Blades (per set) |
| <input type="text" value="Enter Fuel Type"/> | <input type="text" value="Enter Propeller Type"/> | <input type="text" value="Propeller Diameter & Pitch"/> | <input type="text" value="#Propeller set(s)"/> | <input type="text" value="#Propeller Blades (per set)"/> |

Sample Data Collection Sheet - 2

mtcc.jkuat.ac.ke/web.form/

Electric Power Supply

| | | | | | |
|----------------------------|-------------------------|-------------------------------|--------------------|----------------------------|------------------|
| Engine Manufacturer | Aux. Engine Type | Auxiliary Engine Power | SFC (g/kWh) | #Aux. Engine set(s) | Fuel Type |
| Enter Engine Manufacturer | Enter Aux. Engine Type | Auxiliary Engine Power | Enter SFC (g/kWh) | #Aux. Engine set(s) | Enter Fuel Type |
| Rated Output Power | Voltage | | | | |
| Rated Output Power | Enter Voltage | | | | |

Energy Saving Technology

| | | | | | |
|----------------------------|---------------------------------|----------------------------------|---------------------------------------|-------------------------------|---------------------|
| Waste Heat Recovery | M/E Shaft Generator (kW) | Propeller Boss Cap Fins | Vessel Trim/Draft Optimisation | Lighting System | |
| Waste Heat Recovery | M/E Shaft Generator (kW) | Propeller Boss Cap Fins | Vessel Trim/Draft Optimisatic | Lighting System | |
| Weather Routing | Voyage Execution | Contra Rotating Propeller | Air Activity Lubrication | Hull Coating Condition | Solar Panels |
| Weather Routing | Voyage Execution | Contra Rotating Propeller | Air Activity Lubrication | Hull Coating Condition | Enter Solar Panels |
| Kite | Rudder Fins | Frequency Converters | | | |
| Enter Kite | Enter Rudder Fins | Frequency Converters | | | |

Sample Data Collection Sheet - 3

mtcc.jkuat.ac.ke/web.form/

Auxiliary Boiler

| | | | | |
|--|--|---|---|--|
| Boiler Manufacturer Enter Boiler Manufacturer | Boiler Type mm/dd/yyyy | Boiler Pressure Enter Boiler Pressure | Fuel Consumption/hour Enter Fuel Consumption/hou | Fuel Type Enter Fuel Type |
| Average Running Hours/month Enter Avg Running Hrs/mnth | | | Fuel Consumption Data | |
| | | | Departure Port Enter Departure Port | Arrival Port Enter Arrival Port |
| Date/Time Enter Departure Date/Time | Date/Time Enter Arrival Date/Time | Departure Bunker Tank Total (HFO) Departure Bunker Tank Total | Departure Service Tank Total (HFO) Departure Service Tank Tota | Departure Settling Tank Total (HFO) Departure Settling Tank Tota |
| Departure Bunker Tank Total (DFO) Departure Bunker Tank Total | Departure Service Tank Total (DFO) Departure Service Tank Tota | Departure Settling Tank Total (DFO) Departure Settling Tank Total | Departure Gas Fuel Total Departure Gas Fuel Total | |
| Departure Vessel Displacement Tonnage Departure Vessel Displacem | Arrival Bunker Tank Total (HFO) Arrival Bunker Tank Total (Hi | Arrival Service Tank Total (HFO) Arrival Service Tank Total (H | Arrival Settling Tank Total (HFO) Arrival Settling Tank Total (Hi | |
| Arrival Bunker Tank Total (DFO) Arrival Bunker Tank Total (DF | Arrival Service Tank Total (DFO) Arrival Service Tank Total (D | Arrival Settling Tank Total (DFO) Arrival Settling Tank Total (D | Arrival Gas Fuel Total Arrival Gas Fuel Total | |

Voyage Data

Sample Data Collection Sheet - 4

Arrival Vessel Displacement Tonnage

Voyage#

Date/Time

Departure Port

Arrival Port

Enter Arrival Vessel Displacement

Enter Voyage#

mm/dd/yyyy

Enter Departure Port

Enter Arrival Port

Representative Sea
Conditions

Voyage Distance

Voyage Time

Enter Voyage Distance

Enter Voyage Time

Beaufort Scale#

Mean Wind Speed (m/s)

Mean Wind Direction (deg)

Significant Wave Height (m)

Mean Wave Period (s)

Enter Beaufort Scale#

mm/dd/yyyy

Enter Mean Wind Direction (deg)

Enter Significant Wave Height (m)

Enter Mean Wave Period (s)

Mean Wave Direction (deg)

Enter Mean Wave Direction (deg)

submit

Maritime Relevant Data Source - APMF

- Agence Portuaire Maritime et Fluviale (APMF)
 - APMF as the **“EU/IMO Accredited MRV Verifier”** for emissions from ships
 - APF will therefore be receiving data on GHG emissions from ships (5,000 gross tonnes and above) mooring or docking
 - This excludes innocent passage ships.

Maritime Relevant Data Source - Others

- Energy Regulatory Commission
- National Bureau of Statistics
- National Environment Management Authority
 - National Implementing Entity for climate change programs on behalf of the State
 - Will implement the Adaptation Fund Programme
 - Accredited to have direct access to Green Climate Fund (GCF)

**Business AS Usual
(BAS)**



**Global
Ambition**



Co-benefits of Emissions Reduction

- The need to reduce emissions will influence Legislation (laws and Regulations)
- Air quality will improve, and hence reduce health associated problems caused by air pollution
- Low-carbon economic development initiatives
- New jobs (climate change adaptation / mitigation related) while implementing the action plan

Global Ambition



UN DESA @UNDESA · Sep 28

Over 80% of global trade is transported by  Let's make all shipping sustainable to
#SaveOurOcean! #WorldMaritimeDay #BlueEconomy



GMN | The Global
MTCC Network
A global network for energy-efficient shipping



THANK YOU!



This project is financed by the
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