Ammonia Energy Association
Annual Conference, Atlanta 13th – 15th Nov 2023

Panel : Certification for Data not Labels

Maritime perspectives

14th Nov 16:00 to 17:30

Mentee question

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When it comes to development of data driven carbon intensity certification for maritime ammonia fuel, what is the single most pressing issue?

1/ Collaboration and alignment between : AEA (industry) expertise and relevant global/regional/national bodies who are developing certification structures for maritime fuel

2/ Collaboration and alignment with the incumbent ship fuel industry. Circa 250 M tonnes of fossil fuel ”bunkers” per year

3/ Collaboration and alignment with relevant non bunker industry maritime stakeholders to help drive data as the correct conceptual agenda

Relevant developments in the maritime space

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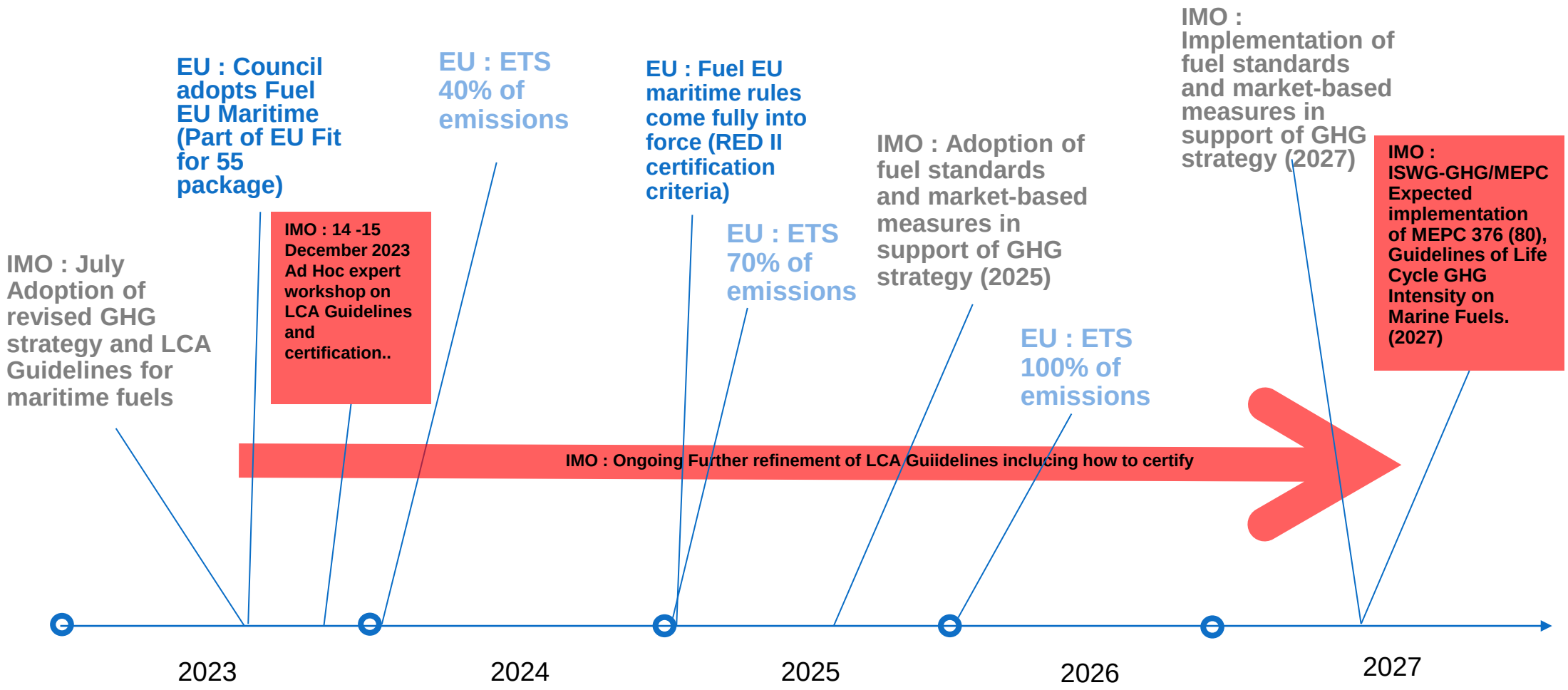

APPENDIX 1

FUEL LIST WITH FUEL PATHWAY CODES

Order	Group	Fuel type	Feedstock structure		Conversion/Production process		Fuel Pathway Code
			Feedstock Type	Nature/Carbon Source	Process Type	Energy used in the process	
1	HFO (VLSFO)	Heavy Fuel Oil (ISO 8217 Grades RME, RMG and RMK, 0.10 < S ≤ 0.50%)	Crude Oil	Fossil	Standard refinery process	Grid mix electricity	HFO(VLSFO)_f_SR_gm
2	HFO (HSHFO)	Heavy Fuel Oil (ISO 8217	Crude Oil	Fossil	Standard refinery process	Grid mix electricity	HFO(HSHFO)_f_SR_gm

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12 Ammonia Pathways (lines 112 – 115)

Order	Group	Fuel type	Feedstock structure		Conversion/Production process		Fuel Pathway Code
			Feedstock Type	Nature/Carbon Source	Process Type	Energy used in the process	
					other Electrolysis and liquefaction		
111	Hydrogen	Hydrogen	Water + Electricity	Fossil/Renewable	Electrolysis and liquefaction	Grid mix electricity	LH2_EL_gm_Liquefied
112	Hydrogen	Hydrogen	Water + Electricity	Nuclear	Thermochemical Cycles or Electrolysis and liquefaction	Nuclear	LH2_EL_n_Liquefied
113	Hydrogen	Hydrogen		Industrial by-product hydrogen		Grid mix electricity	LH2_ _ibp_gm _Liquefied
114	Ammonia	Ammonia	Natural Gas	Fossil	Methane Pyrolysis into pure carbon and hydrogen and Haber Bosch process	Grid mix electricity	NH3_f_MPO_HB_gm
115	Ammonia	Ammonia	Natural Gas	Fossil	Steam Methane Reformation of Natural Gas and Haber Bosch	Grid mix electricity	NH3_f_SMR_HB_gm

APPENDIX 2

INITIAL DEFAULT EMISSION FACTORS PER FUEL PATHWAY CODE

Order	Fuel type	Fuel Pathway Code	WtT GHG intensity (gCO_{2eq}/MJ)	LCV (MJ/g)	Energy Converter	C_f CO_2 (gCO_2/g fuel)	C_f CH_4 (gCH_4/g fuel)	C_f N_2O (gN_2O/g fuel)	C_{slip}/C_{fug} (mass %)	e_c gCO_{2eq}/g fuel	TtW GHG intensity (gCO_2eq/MJ)	NOTE
1	Heavy Fuel Oil (ISO 8217 Grades RME, RMG and RMK, 0.10 < S ≤ 0.50%)	HFO(VLSFO)_f_SR_gm	16.8	0.0402	ALL ICEs	3.114	0.00005	0.00018				Resolution MEPC.364(79) Fourth IMO GHG study
2	Heavy Fuel Oil (ISO 8217 Grades RME, RMG and RMK exceeding 0.50% S)	HFO(HSHFO)_f_SR_gm	14.9	0.0402	ALL ICEs	3.114	0.00005	0.00018				Resolution MEPC.364(79) Fourth IMO GHG study
3	Light Fuel Oil (ISO 8217 Grades RMA, RMB and RMD maximum 0.10% S)	LFO(ULSFO)_f_SR_gm		0.0412	ALL ICEs	3.151	0.00005	0.00018				Resolution MEPC.364(79) Fourth IMO GHG study
4	Light Fuel Oil (ISO 8217 Grades RMA, RMB and RMD, 0.10 < S ≤ 0.50%)	LFO(VLSFO)_f_SR_gm		0.0412	ALL ICEs	3.151	0.00005	0.00018				Resolution MEPC.364(79) Fourth IMO GHG study

Order	Fuel type	Fuel Pathway Code	WtT GHG intensity (gCO_{2eq}/MJ)	LCV (MJ/g)	Energy Converter	C_f CO_2 (gCO_2/g fuel)	C_f CH_4 (gCH_4/g fuel)	C_f N_2O (gN_2O/g fuel)	C_{slip}/C_{fug} (mass %)	e_c gCO_{2eq}/g fuel	TtW GHG intensity (gCO_2eq/MJ)	NOTE
105	Hydrogen	H2_f_SMR_CCS_gm		0.12	ALL ICEs Fuel cell	0						
121	Ammonia	NH3_rN2_fH2_HB_gm		0.0186	ALL ICEs Fuel cell	0						

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8 FUEL LIFECYCLE LABEL (FLL)

8.1 The FLL is a technical tool to collect and convey the information relevant for the life cycle assessment of marine fuels and energy carriers (e.g. electricity for shore power) used for ship propulsion and power generation onboard in the context of these guidelines.

8.2 The FLL consists of five main parts, as illustrated below:

Part A-1	Part A-2	Part A-3	Part A-4	Part A-5
Fuel type (blend)	Fuel Pathway Code	Lower Calorific Value (LCV, MJ/g)	share in fuel blend (%$MJ_{(LCV)}$ / $MJ_{(LCV)}$)	WtT GHG emission factor (GWP100, $gCO_{2eq}/MJ_{(LCV)}$)

+

Part B-1	(Part B-2)[15]
Emissions credits related to biogenic carbon source (e_c, in gCO_2/g fuel based on GWP100)	Emissions credits related to source of captured carbon (e_{ccu}, in gCO_2/g fuel based on GWP100)

+

Part C-1	Part C-2	Part C-3
Value 1 (carbon source NOT taken into account): TtW GHG emission factor (GWP100, $gCO_{2eq}/MJ_{(LCV)}$)	Value 2 (carbon source taken into account): TtW GHG emission factor (GWP100, $gCO_{2eq}/MJ_{(LCV)}$)	Energy Converter

+

Part D	Part E
WtW GHG emission factor (GWP100, $gCO_{2eq}/MJ_{(LCV)}$) Note: Part D = Part A-5 + Part C-2	Sustainability (Certification)[16]

8.3 Different parties (fuel suppliers, owners/operators, Administration/RO, etc.) may use different parts of the FLL for different purposes along the fuel pathway. As such, each interested party may use those parts of the FLL as relevant to their activities and purposes rather than the complete, integrated document.

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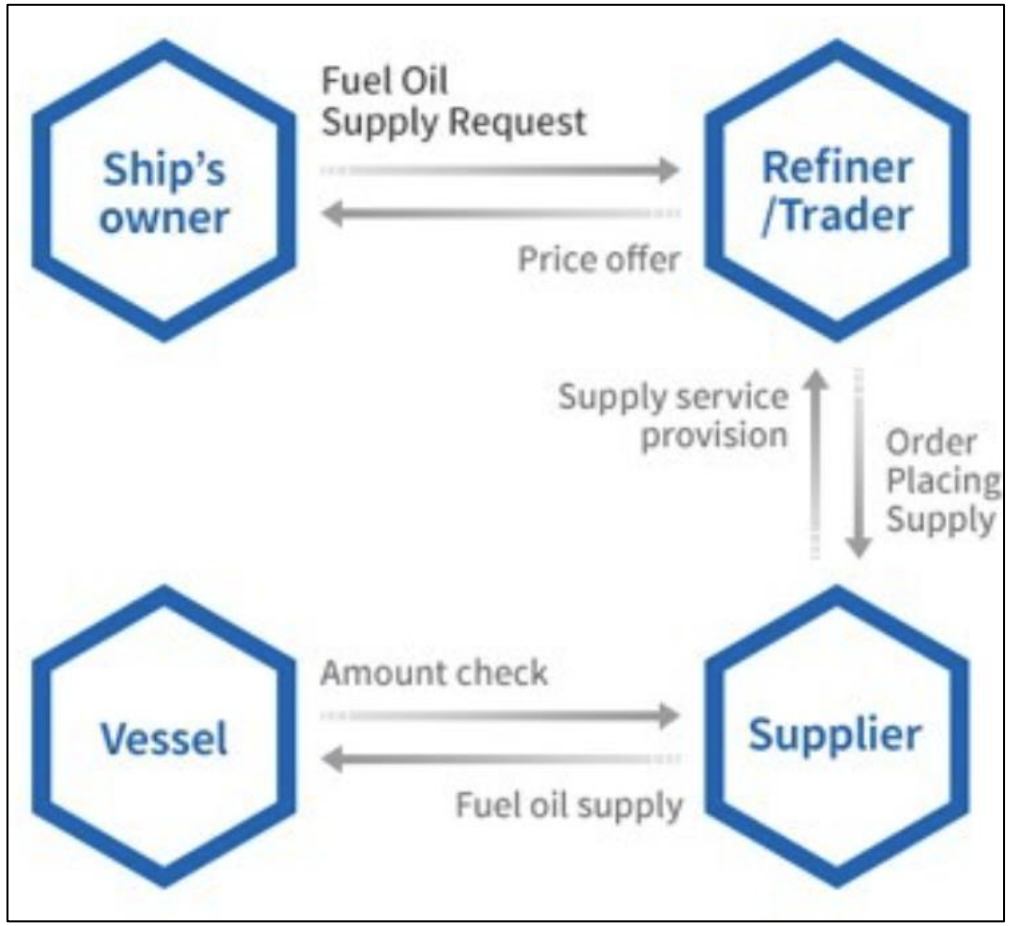
Existing FLL contents

The incumbent bunker market

Complex, Opaque, persistent and understandably uncertain



BDN – Bunker delivery note (digitisation starting)

FLL - Fuel lifecycle label (on the way)

Maritime stakeholder engagement

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- Stop talking “greens” and ”blues” and think levels
- Understand the importance of going beyond defaults to help relieve the impending economic squeeze
- Recognise the critical role of certification integrity and functionality
- Get involved in the conversations about data integrity and efficiency as the most pressing foundational issue to address
- Embrace these concepts as a critical part of their strategy

Certification based on data must be understood by the maritime industry as the key to unlock so many aspects of their transition for GHG abatement.

Spare slide - Fuel EU Maritime : Main provisions of the new regulation

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The new regulation contains the following main provisions:

- measures to ensure that the **greenhouse gas intensity** of fuels used by the shipping sector will gradually decrease over time, by **2% in 2025** to as much as **80% by 2050**
- a special incentive regime to support the uptake of the so-called **renewable fuels of non biological origin** (RFNBO) with a high decarbonisation potential
- an exclusion of **fossil fuels** from the regulation's certification process
- an obligation for passenger ships and containers to use **on-shore power supply** for all electricity needs while moored at the quayside in major EU ports as of 2030, with a view to mitigating air pollution in ports, which are often close to densely populated areas
- a voluntary **pooling mechanism**, under which ships will be allowed to pool their compliance balance with one or more other ships, with the pool – as a whole - having to meet the greenhouse gas intensity limits on average
- time limited **exceptions** for the specific treatment of the outermost regions, small islands, and areas economically highly dependent on their **connectivity**
- revenues generated from the regulation's implementation ('**FuelEU penalties'**) should be used for projects in support of the maritime sector's decarbonisation with an enhanced transparency mechanism
- **monitoring** of the regulation's implementation through the Commission's reporting and review process

See https://www.consilium.europa.eu/en/press/press-releases/2023/07/25/fueleu-maritime-initiative-council-adopts-new-law-to-decarbonise-the-maritime-sector/

The FuelEU maritime initiative is part of the Fit for 55 package. Presented by the European Commission on 14 July 2021, the package aims to enable the EU to reduce its net greenhouse gas emissions by at least 55% by 2030 compared to 1990 levels and to achieve climate neutrality in 2050.