

THE COMMERCIAL CONSIDERATIONS OF LNG BUNKERING



INTRODUCTION

- 18 months ago Bunkernet spoke at the Poseidon Med Stake Holders Conference
- “The Commercial considerations of LNG Bunkering”
- Examined LNG distribution considerations from a Bunker Trader’s point of view
- Developments in the last 18 months:
 1. We have moved closer to 2020 none the wiser. Increased confusion about which available option to adopt
 2. The number of Ports that LNG Bunkering is available in has increased. More LNG friendly ports
 3. The New International Standard ISO 20519 - Specification for Bunkering of LNG Fueled Vessels has been released
 4. Today we have practical experience on standard LNG delivery best practice

In today’s presentation I will briefly discuss each of these 4 areas:

2020 CAP

- On April 6th 2017 Bunker Conference organised in Limassol, Cyprus. Statistics from industry consultant Robin Meech indicate that:
- ECA area 16 million tons affected & 0.14 million mts extracted from 1% to 0.10%
- Global Cap 130 million tons affected & 2.7 million mts extracted from 2.6% to 0.50%
- Represented were Bunker Buyers (owners, charters), Advocates for Distillates & Blends, Advocates for Scrubbers & Advocates for LNG
- An interesting position was that of Exxon who are vastly pro LNG and are investing in that direction
- Although we are moving closer to 2020 most decision makers are sitting on the fence

THE INTERNATIONAL LNG BUNKERING LANDSCAPE

- Bunkernet is a stake holder in Poseidon Med. Limassol. Cyprus
- Core Business: trader of conventional Bunker Fuel Worldwide
- We are part of one of the largest Bunker Fuel trading organisations. Trading and physically delivering over 22 Million MT of Bunkers annually
- As an organisation we have seen the need to be actively engaged in preparing for the “LNG Bunkering Age”



DRIVEN BY GLOBAL & LOCAL ENVIRONMENT



HEAVY FUEL OIL
3.5% Sulphur



MARINE GAS OIL
0.1% Sulphur

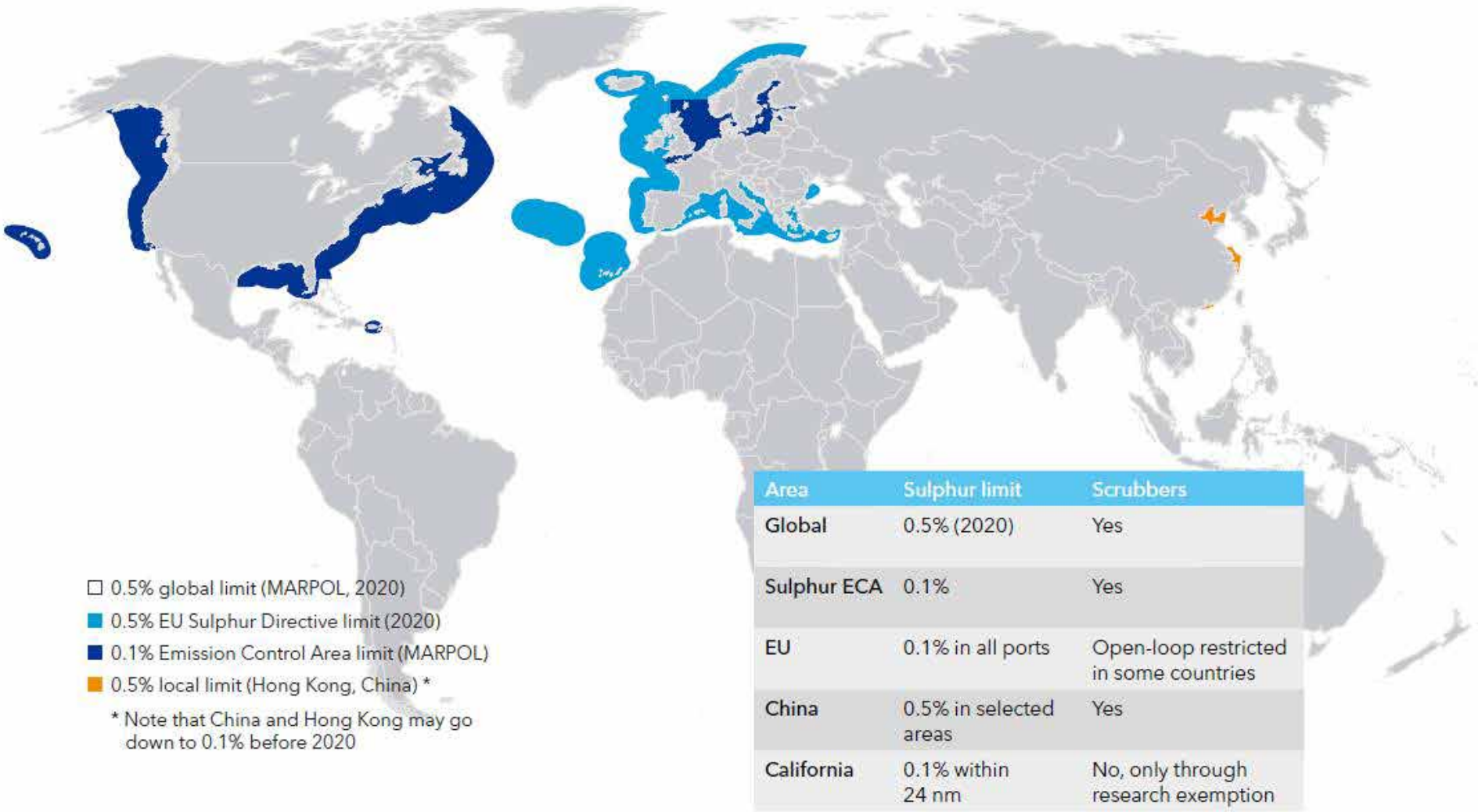


LNG

- 0% Sulphur
- Negligible Particulate Matter
- Up to 90% less NOx
- Up to 25% less CO2

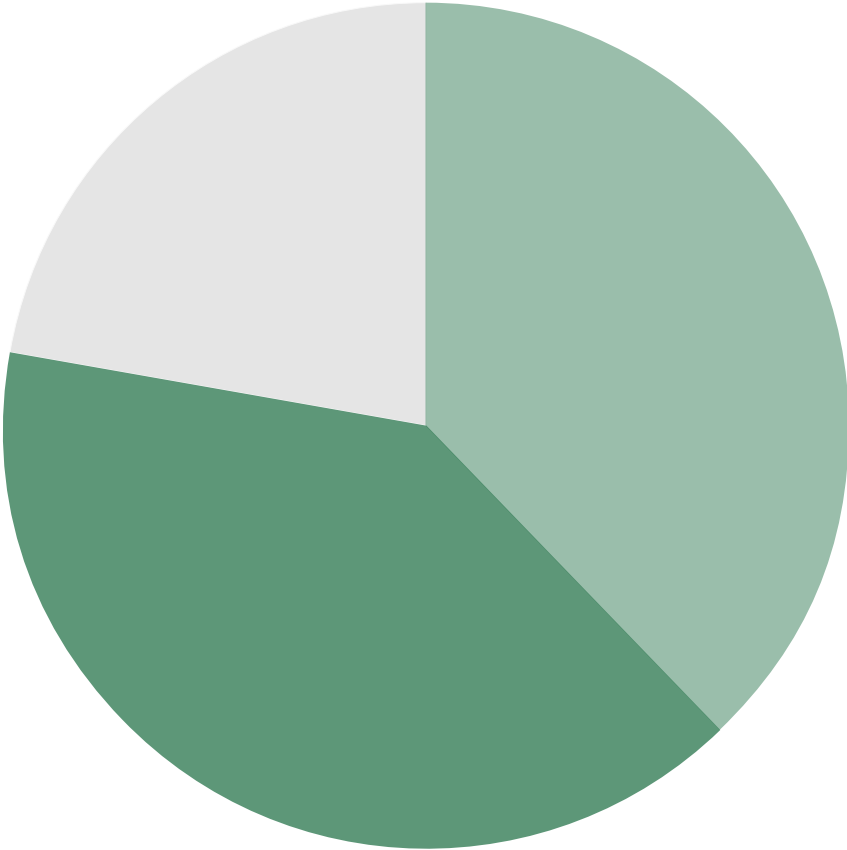
[European Commission SWD 2013 4]

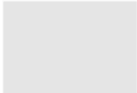


- Less Noise

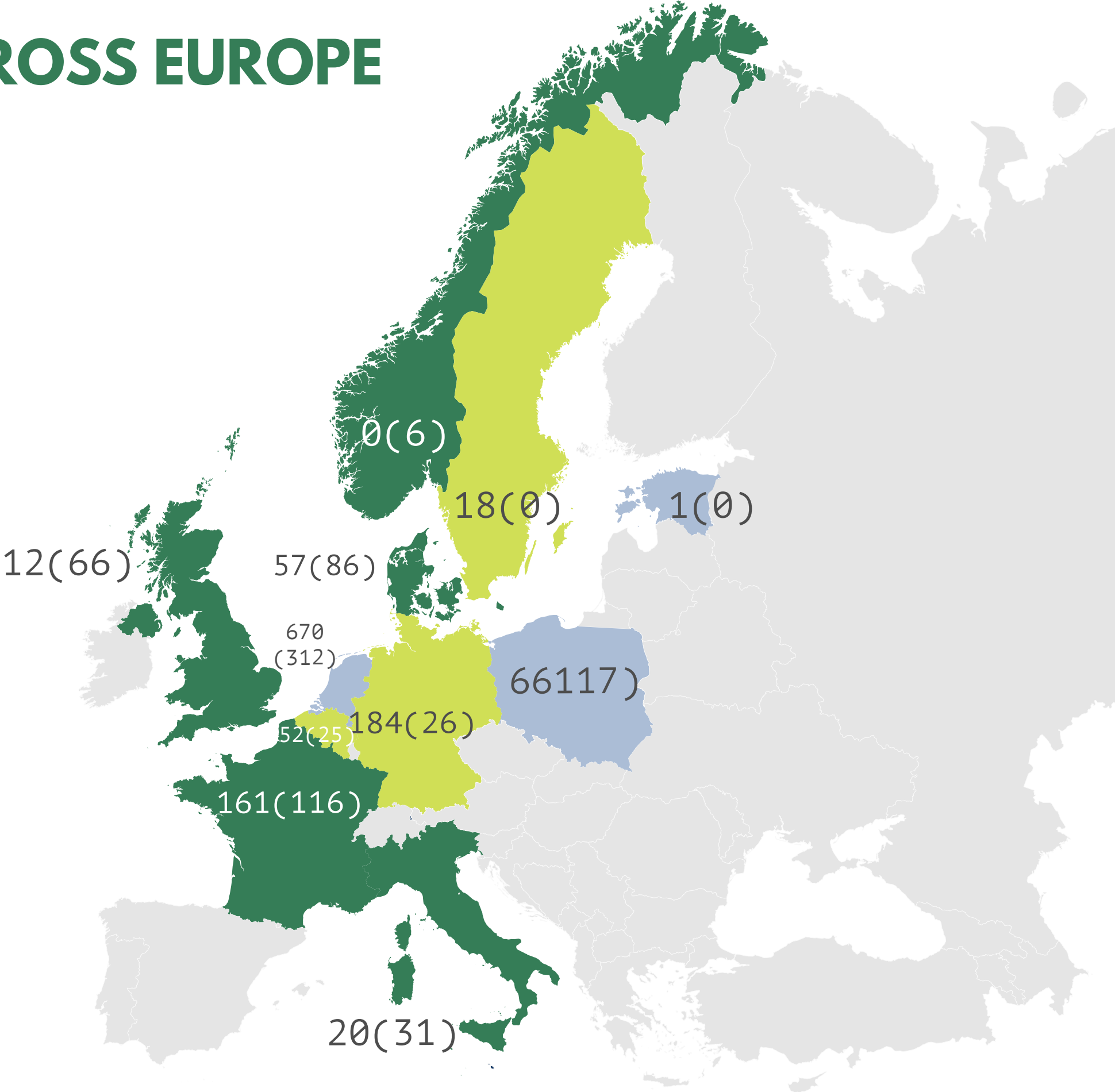


TRUCK DESTINATIONS ACROSS EUROPE

2016 (2015)*



-  BUNKERING 22%
-  AUTOMOTIVE 40%
-  INDUSTRIAL 38%



THE EUROPEAN LNG BUNKERING LANDSCAPE

European SSLNG installations per type

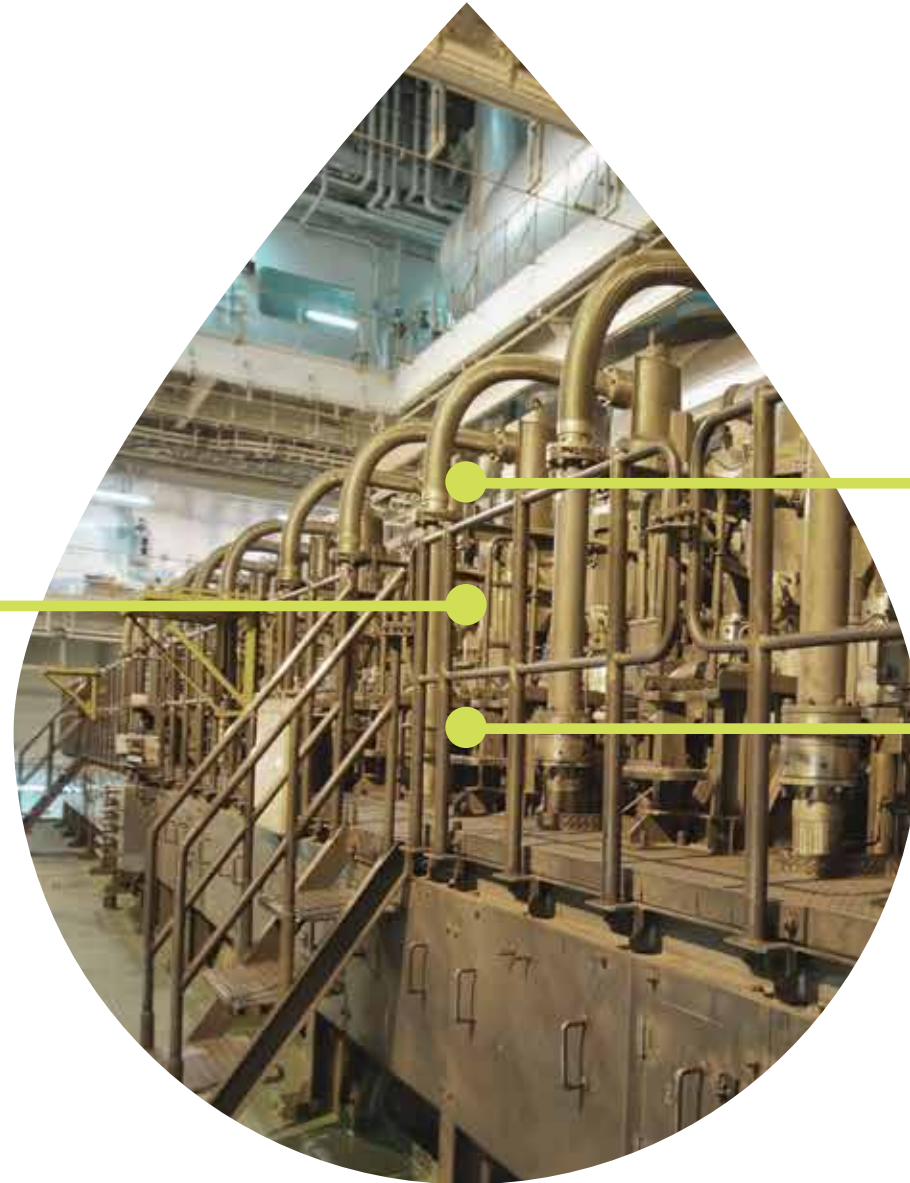
Most of the European LNG import terminals already offer truck loading and the availability of loading bunkering ships is increasing as well

	Status		
	operational	under construction	planned
LNG terminals (large + small):			
Reloading	15	2	12
Transshipment	3	2	4
Bunkership loading	9	7	11
Truck loading	19	8	5
Rail loading	-	-	4
Liquefaction plants	22	n.a.	2
Bunkering facilities for vessels	26	5	22
Bunker ships	5	4	6
Refuelling stations for trucks	70	14	19
Satellite Storages	>1000	n.a.	n.a.

Source: GIE SSLNG Map, May 2015

ISO 20519 – BUNKERING OF LNG

Facility requirements



Vessel Requirements

Personnel Training

QUESTIONS ANSWERED AFTER 18 MONTHS

🔹 Sourcing

Q: Where will the LNG Product be sourced?

A: GATE Terminal -Rotterdam

🔹 Quoting

Q: Will LNG Bunkers be quoted in MTS or Energy Equivalent?

A: Continues to be a challenge with traders forced to covert using a conversion factor between 14.9 to 15.22.

e.g. EUR21/MWh x 15.22 = EUR 319/MTS

🔹 Financing

Q: New credit lines with new physical suppliers.
Can the LNG Industry work on 30 day terms?

A: Product is being sourced on CIA but already we have some commercially workable payment terms filtering through.

Gate terminal Maasvlakteweg 991, 3199 LZ Maasvlakte Tel: +31 181 79 90 00		Slot start date-time: 2016-11-30 21:00 Slot end date-time: 2016-11-30 23:00	Slot ID number/ Slot ID number: PRI_1002522 PRI_1002522	Weegbrug volgnummer/ Weighbridge sequence number: 2022
LNG leverancier/Klant/Customer's LNG Supplier: OMV GAS Marketing & Trading GmbH ARES Tower Donau-City-Strasse 11 1020 Wien/Vienna Austria		Container ID (if applicable, e.g. HOYU 434433 3): Not Applicable		
Klant/Customer:		Ticket Datum/Ticket Date: 2016-11-30		Ticket Tijd/Ticket Time: 22:12:53
Kenteken Truck/License plate truck: 38-BFF-7		Compositie/Composition (Mol %): Methane 91.951 mol % Ethane 6.269 mol % Propane 1.238 mol % i-Butane 0.254 mol % n-Butane 0.125 mol % n-Pentane 0.003 mol % i-Pentane 0.014 mol % neo-Pentane 0.000 mol % C6+ 0.000 mol % Nitrogen 0.147 mol % CO2 0.000 mol %		
Kenteken trailer/ License plate trailer: ON-54-JH		GCV (MJ/Kg): 54.751		WI (MJ/Nm3): 55.020
Aflever adres/Delivery address 1: bunkeren van SIEM THIIMA (IMO of ENI nummer: 9727235), Afrikahaven Amsterdam		Dens. (Kg/m3): 446.8		Temp. LNG (°C): 159.2
Aflever adres/Delivery address 2:		Totaal energie geladen/Total energy loaded (MWh): 326.984		
Product: UN1972 Aardgas, Sterk Gekoeld, Vloeibaar, 2.1, (B/D) Natural Gas, Refrigerated Liquid, 2.1, (B/D)		Gewicht VOOR laden/Weight BEFORE Loading: 21:12:49 4463 22140 kg		
Naam & handtekening Chauffeur/Driver name & signature: Eelco van de Hoef <i>Eelco van de Hoef</i>		Gewicht NA laden/Weight AFTER Loading: 22:12:26 4464 43640 kg		
Naam & handtekening Operator/Operator name & signature:		Netto gewicht geladen/Nett weight loaded: 21500 kg		
Commentaar/Comments: *: Please accept that these figures are indicative and sans prejudice.				

QUESTIONS ANSWERED AFTER 18 MONTHS

🔹 Delivery Options

Q: Is there similar flexibility as in conventional fuel supply. Barge, Truck and Pipe?

A: With LNG predominantly truck delivery (Loading & Discharging Logistics). Some barge deliveries.

🔹 Quality & Quantity

Q: Currently there is a robust testing/measuring method for Quality and Quantity?

A: Product is homogenous and parameters are intrinsically different to the Fuel Oil Product.

🔹 Safety

Q: Are there safety concerns that are not evident in conventional Bunker Supply?

A: Product is cleaner, more stable and safer than conventional fuel. One example we have are some comments from a Danish Fire Department.

automatisch bedrukte afleveringsbon
imprimé automatiquement

SCHENK
TANKTRANSPORT
Tel: +31 (0)78 - 644 2144

Wagennummer 1789	Algeleverd aan Siem Tuma Oceaanweg		
Datum 02-12-16	1047 HM Amsterdam		
Tankgr.	Diameter	Voorpeiling	Waterpeiling

Afleveringsbon Nr. 262067

DELIVERY TICKET

Date : 02.12.16 Time : 11:24 - 12:55
Vehicle No : 0
Transaction No : 329
Medium : LNG
Total Net : 21501 kg

Data from calibrated metering systems are enclosed in *

HANDTEKENING VOOR ONTVANGST
WAYNE HANSON c/fay.
NAAM IN BLOKLETTERS
W. Hanson

NA 3-2006
DEZE KANT IN DE METER MET ACHTERZIJDE BOVEN

SAFETY – FIRE DEPARTMENT

- Bunkering takes place at the berth 118
- 5 meter area around tanker and hose guide Electrical installations are designed to meet the requirements of zone 2 areas. In addition, there must be no drainage for surface water.
- An additional area of 20 meters (total 5 + 20 meters) from tanker must be exempted from traffic (including parking of waiting tankers). Static electricity is compensated. So sparks do not occur.
- Ensure that the excessive cooling does not damage manifold and hoses.
- The location of the tanker must allow immediate exit. Also clear visual review the entire area of hose and manifold.
- Flexible hose used must be max. 25 meters.
- Connection of both tanker and ship must be done via breakaway coupling.
- There must be a Danish-speaking person who is aware of alarms in the event of an accident.

QUESTIONS ANSWERED AFTER 18 MONTHS

Terms & Conditions

Q: Are there current relevant industry terms that can be used ?

A: Solution is BIMCO for now. We have used them quite effectively.

3 Exemplaire pour transporteur / Exemplaar voor vervoerder / Frachtbrief / Frachtführer		LETITRE DE VOITURE - DOCUMENT DE TRANSPORT / FRACHTBRIEF - VERVOERDOCUMENT / FRACHTBRIEF - TRANSPORTDOKUMENT		CMR	25 Code transporteur / Vervoerscode / Code Frachtführer	No 02894
1 Expéditeur (nom, adresse, pays) / Afzender (naam, adres, land) / Absender (Name, Anschrift, Land)		Indien de oevergelegen plaats van bestemming en van aflevering van de zaken zijn gelegen in twee verschillende landen is het CMR-Verdrag afgeleid en aanneming daaronder de Algemene Vervoerscondities 2007, laatste versie, van toepassing.		NL 12656299		
2 Destinataire (nom, adresse, pays) / Geadresseerde (naam, adres, land) / Empfänger (Name, Anschrift, Land)		Indien de oevergelegen plaats van oorsprong/verpakking en van aflevering van de zaken zijn gelegen in Nederland zijn de Algemene Vervoerscondities 2007, laatste versie, van toepassing. De Algemene Vervoerscondities 2007, laatste versie, gedeponeerd ten gunste van de arrondissementsrechtbank te Amsterdam en Rotterdam.		16 Transporteur (nom, adresse, pays) / Vervoerder (naam, adres, land) / Frachtführer (Name, Anschrift, Land)		
Siam Thijma Oceaanweg Groene Kadi Paal 2 - 10 1047 HM Amsterdam NL				Schenk Papendrecht B.V. Burgemeester Keijzerweg 6 3352 AR Papendrecht - Holland Tel: 078 - 64 42 150 Fax: 078 - 61 52 078		
3 Lieu prévu pour la livraison de la marchandise (nom, pays) / Plaats (betreft) voor de aflevering der goederen (plaats, land) / Abhieferungsort des Gutes (Ort, Land)		17 Wagennummer : 1616-15801		17 Transporteur successie (nom, adresse, pays) / Opvolgende vervoerder (naam, adres, land) / Nachfolgende Frachtführer (Name, Anschrift, Land)		
Amsterdam NL				Wagennummer : 1616-15801		
4 Lieu et date de la prise en charge de la marchandise (nom, pays, date) / Plaats en dat. v. inontvangstneming der goederen (plaats, land, datum) / Ort und Tag der Übernahme des Gutes (Ort, Land, Datum)		18 Aankomst laadadres : 2100 Aanvang laden : 2100 Vertrek laadadres : 2250 Aankomst losadres : Aanvang lossen : 2100 Vertrek losadres :		18 Aankomst laadadres : 2100 Aanvang laden : 2100 Vertrek laadadres : 2250 Aankomst losadres : Aanvang lossen : 2100 Vertrek losadres :		
5 Documents annexes / Bijgevoegde documenten / Begleitende Dokumente		Laadbonnen / bons de chargement				
6 Noms et numéros des véhicules / Namen en nummers der voertuigen / Namen und Nummern der Fahrzeuge		8 État de charge / Lading / Zustand des Gutes		10 Nature et poids des marchandises / Beschaffenheit und Gewicht der Waren		
		1 tankwagen 600L, product: LNG		Kg 21500 Ltr		
		UN 1972 AARDGAS STERK GEKOELD, VLOEIBAAR, met hoog methaangehalte, 2.1 (B/D) UN 1972 NATURAL GAS, REFRIGERATED LIQUID with high methane content, 2.1 (B/D)				
Nabestellen: www.cmrcurrent.nl Tel. 085 - 27 34 999				DELIVER TICKET Date : 02.12.16 Time : 11:24 - 12:50 Vehicle No : Transaction No : 319 Medium : LIG		
13 Instructions de l'expéditeur / Instructies afzender / Anweisungen des Absenders		19 Conventions particulières / Speciale overeenkomsten / Besondere Vereinbarungen		20 Adresse de chargement / Laadadres / Ladendresse		
Instructie aan de chauffeur tbv ADR transport: Indien ADR product geladen is dan vak 6 van de CMR invullen (2 talen bij int. vervoer). Overige vakken compleet en volledig invullen. Resthoeveelheden: indien van toepassing exact vermelden op de CMR. Indien leeg: juiste leegverklaring opmaken.		Dit document is tevens Data from calibrated meters systems and Dunker verification				
14 Préférences d'affranchissement / Frankeringsvoorkeuren / Frachtkostenvereinbarungen		15 Reimbursement / Remboursement / Rückerstattung		21 Adresse de chargement / Laadadres / Ladendresse		
Franco / Frei Non franco / Niet franco / Untren						
21 Table à l'oppoort / Tabelle an der Auslieferung		23 Schenk Papendrecht B.V. 3352 AR Papendrecht 02-505 01-51-11		24 Marchandises reçues / Goederen ontvangen / Gut empfangen		
Laadplaats: Maasvlakte datum: 30.11.16				le / de am		
Signature et timbre de l'expéditeur / Handtekening en stempel van de afzender / Unterschrift und Stempel des Absenders		Signature et timbre du transporteur / Handtekening en stempel van de vervoerder / Unterschrift und Stempel des Frachtführers		Signature et timbre du destinataire / Handtekening en stempel van de geadresseerde / Unterschrift und Stempel des Empfängers		

THANK YOU

