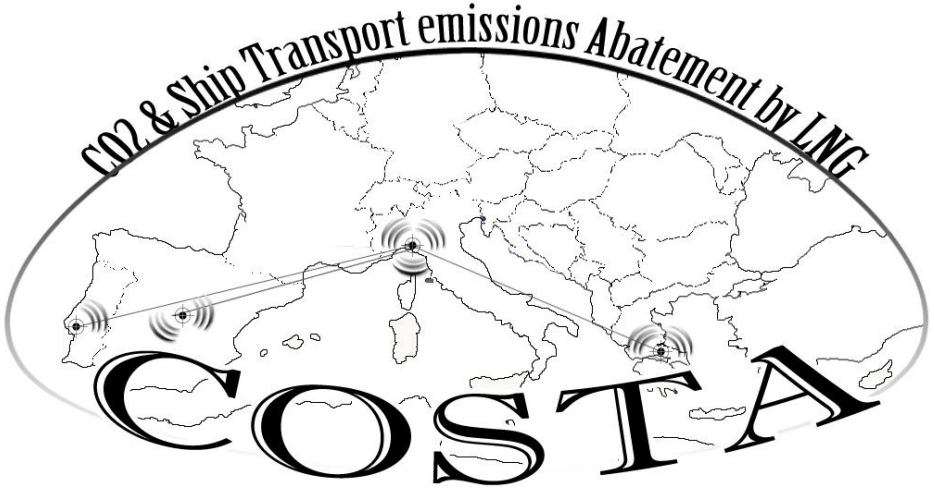
European Commission




2011-EU-21007-S

# *LNG as fuel for Shortsea Shipping – Status and Outlook*

*M. Dogliani – Coordinator COSTA Project*

TEN-T Executive Agency

Co-financed by the European Union
Trans-European Transport Network (TEN-T)

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**– STG & EXG process and next steps**

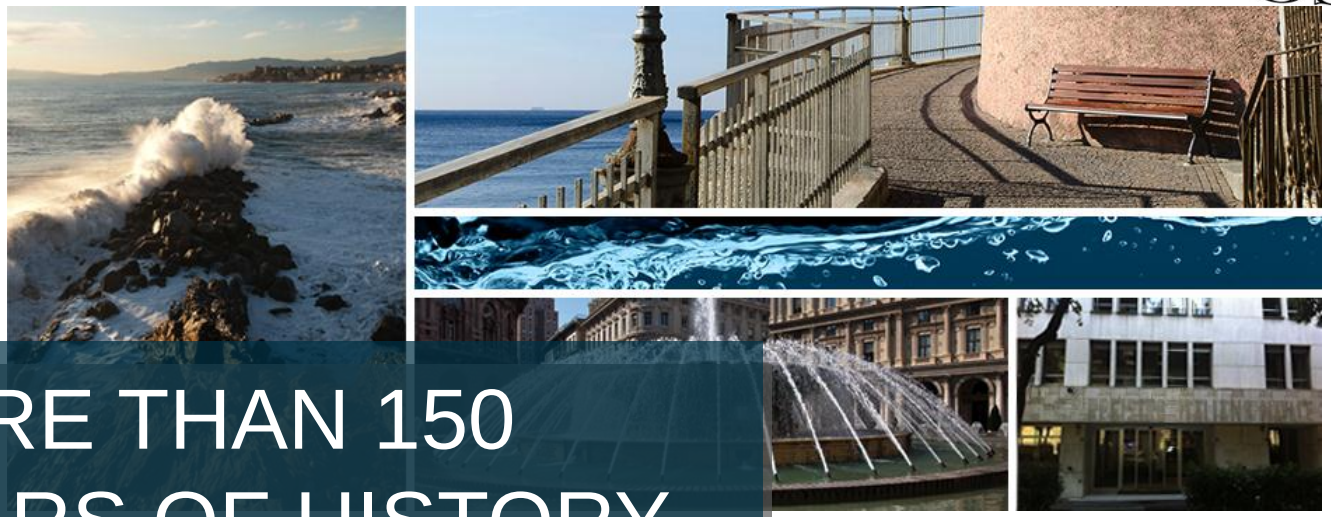
**- Interim results**

***COMMONALITIS SSS-INLAND NAVIGATION?***

# Who's RINA



# Who's RINA



## MORE THAN 150 YEARS OF HISTORY

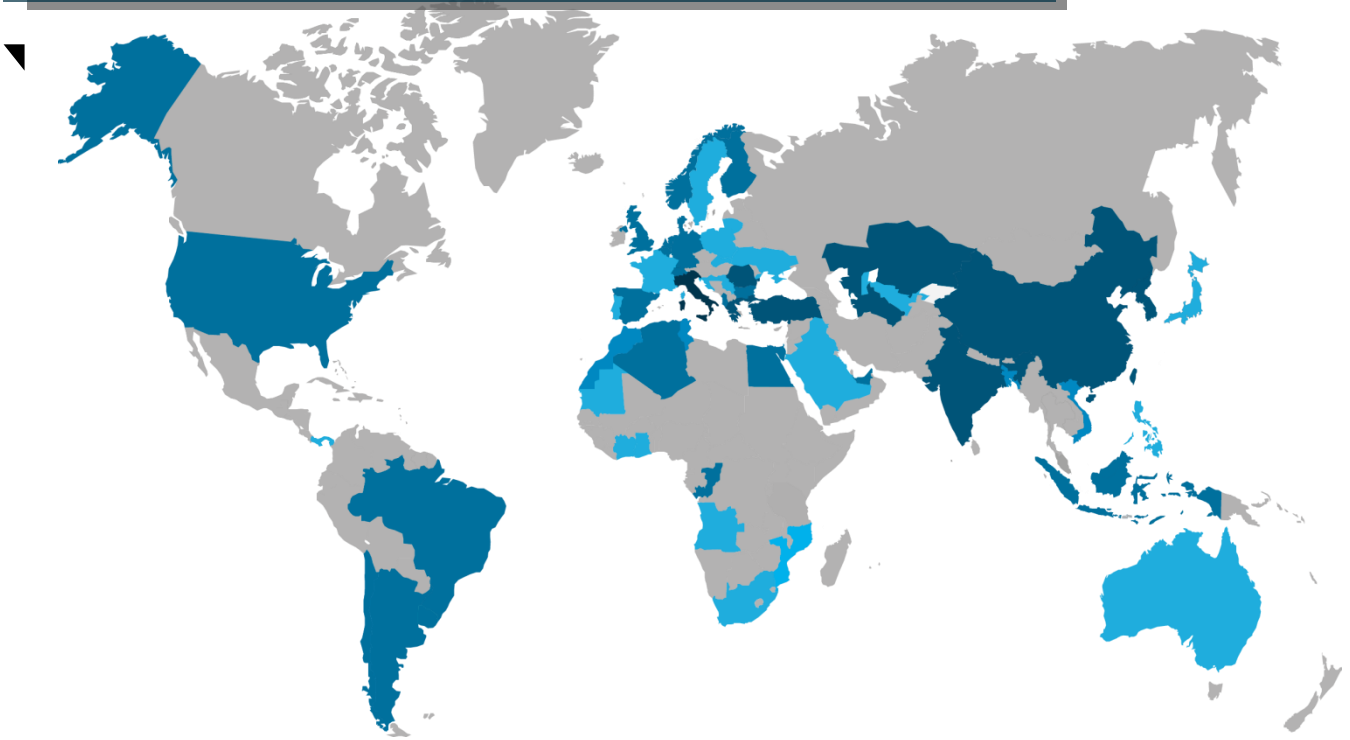
Established in 1861 to meet the needs of the shipping world.

One of the oldest classification societies.

The Group has developed the best competencies and combined them with its own values of integrity and responsibility, gained in over 150 years of experience, into a way of working that meets the highest expectations in the market.

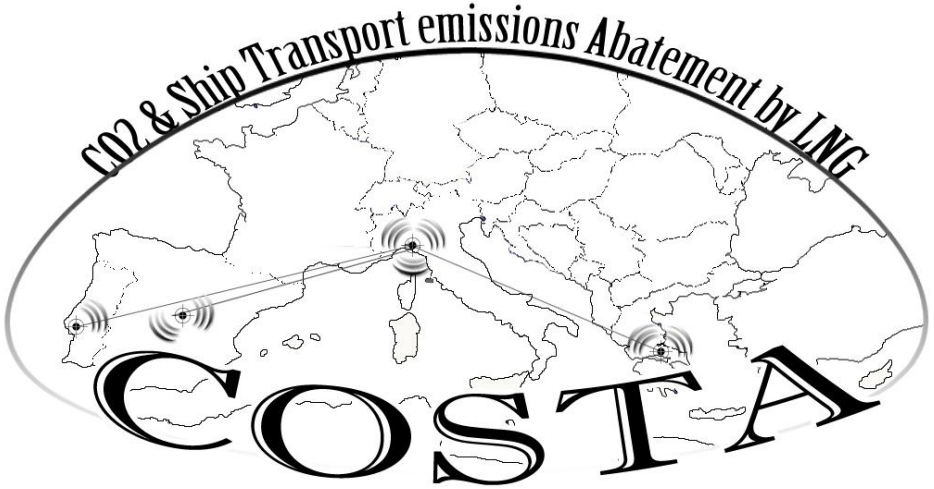
# Who's RINA

## INTERNATIONAL RINA NETWORK



Level of RINA presence

**Over 140 offices**
**49 countries**




2011-EU-21007-S

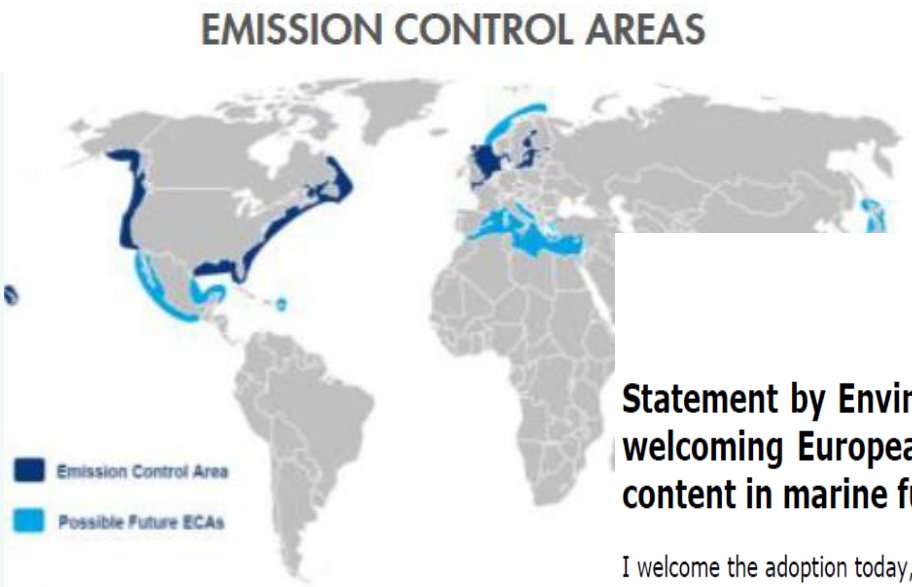
# The COSTA project

***The context and aims***

# The context at a glance

Effective from 2020 the so called “sulphur cap” (maximum allowed content of Sulphur in marine fuel) will be, worldwide, 0.5 % (today is 3.5%) with the exception of (few) localized geographical areas where it will be 0,1% (so called SECA areas).

Besides that, stricter NOx limits are also being applied worldwide, therefore 2020 is the deadline by which “low emission shipping” will be implemented.







Brussels, 11 September 2012

## Statement by Environment Commissioner Janez Potočnik welcoming European Parliament's agreement on sulphur content in marine fuels

I welcome the adoption today, by a very large majority of the European Parliament, of the amendment to Directive 1999/32 on sulphur content in marine liquid fuels. The multiple benefits are obvious: improved air quality and cleaner seas, a greener shipping industry and compliance with international standards.

This amendment aligns the EU legislation with the stricter standards for sulphur content in marine fuels agreed in 2008 at the International Maritime Organisation. Under the Directive, the maximum permissible sulphur content of maritime fuels used in sensitive areas such as the Baltic Sea, the North Sea and the English Channel will fall from the previous level of 1.5 % to 0.1 %, as of 1 January 2015. Other areas are to achieve an even bigger cut, from 4.5 % down to 0.5 % by 1 January 2020.

# COSTA Background

- *In the **Baltic area***
  - *(and in other SECA Areas) sulphur cap = 0.1% from 2015;*
  - *most of the traffic is based on regular service on "short" routes*
  - *geographical area is "small" and "basically" EU*

«compulsory»

- *In **all EU (except Baltic):***
  - *sulphur cap = 0.5% from 2020;*
  - *significant part of the traffic is of the "long range" type*
  - *wide geographical area and third Countries (e.g. North Africa)*
  - *Inland navigation*

«voluntary»

# COSTA overall aim

**Co-financed by the EU Commission under the TEN-T programme,** COSTA is a "study taking the form of a Pilot Action addressing wide benefit issues". In other words, COSTA **is not an R&D project**, it is rather a pre-deployment , demonstration project.

It aims developing framework conditions for the use of LNG for ships in the Mediterranean, Atlantic Ocean and Black Sea areas. It will result in preparing an LNG Masterplan for short sea shipping between the Mediterranean Sea and the northern part of the Atlantic Ocean as well as the deep sea cruising in the northern part of the Atlantic Ocean towards the Azores and the Madeira Island.

The feasibility study results will promote Motorways of the Sea sustainability, contributing to the common effort addressing climate change, in particular in view of the forthcoming requirements with respect to the implementation of Annex VI of the MARPOL Convention. Furthermore the Action will contribute to use of new technologies and systems to increase MoS efficiency and effectiveness

The LNG Master Plan will clearly identify what is necessary to be done, when it is to be done, by whom and which are the necessary investments in order to be able to use LNG as fuel for shipping in the Mediterranean, Black Sea and Atlantic Ocean basins, including the sea-river connections and deep sea cruising in the North Atlantic Ocean, from 2020 onwards. In doing that, advantage will be taken from the achievements of the LNG North Sea and Baltic project in particular on safety issues as well as, giving due regards to the above mentioned differences between Baltic and other areas, on technical issues.

More specifically, two scenarios will be analysed:

a) medium term (2020), considering a sulphur limit of 0.5% with a sensitivity analysis on a limit of 0.1%

b) long term (2030), considering a sulphur limit of 0.1%

PREPAREDNESS

COMMISSIONE EUROPEA

Bruxelles, 8.10.2012
C(2012) 7017 final

**DECISIONE DELLA COMMISSIONE**

**del 8.10.2012**

**riguardante la concessione di un contributo finanziario dell'Unione a favore di progetti di interesse comune "COSTA" — 2011-EU-21007-S nel settore delle reti transeuropee dei trasporti (TEN-T)**

# Issues to be addressed

Greening maritime transport is an important part of EU transport policy and presents a number of «issues» (technical, financial, regulatory, ecc). These have to be addressed jointly by Administrations and industry. The Masterplan is a tool to facilitate such a common assessment

The specific objectives of the project are the following:
- to identify, for medium (2020) and long-term (2030) scenarios, the obstacles (technical, logistic/social and sustainability) which may prevent/limit the use of LNG for shipping in the above areas;
- to work out solutions and recommendation which enable LNG to be an option in each of the two scenarios considered;
- to draw the LNG Masterplan respectively for each of the analysed scenarios.

Both ship-related (construction and conversion to LNG fuel) and logistic (LNG security of supply, receiving terminals and distribution network) issues will be considered taking advantage of mature technologies and the experience available from the Baltic and North Seas.

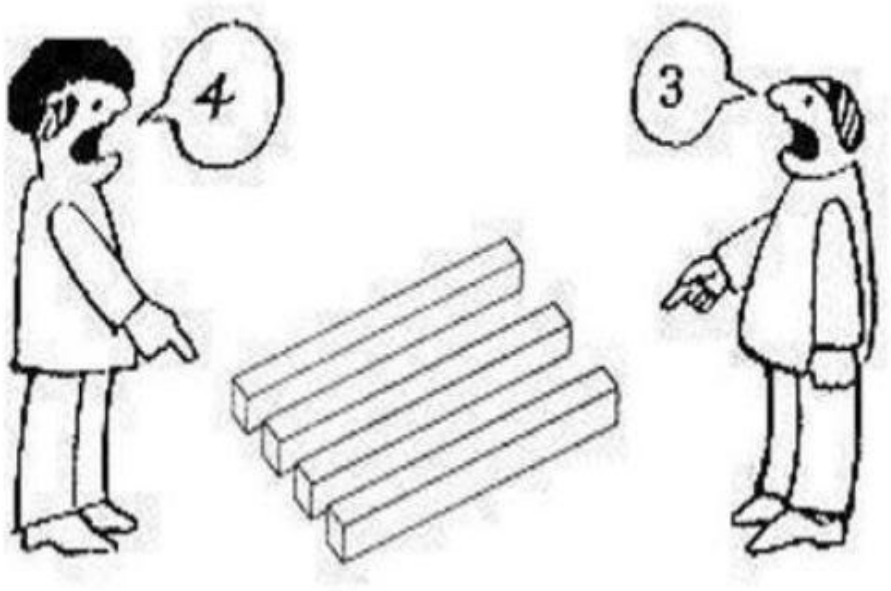


**LNG Masterplan**

- Technical
- Financial/cost
- Rules/Regulatory
- Social
- Logistic
- Environmental

# Technical Status – the Masterplan

## a common strategy



# Partners

**Partnership's profile:**
- **Administrations**
- **Technical**
- **Operators/ports**
- **Financial**
- **Classification Society (standard setting)**

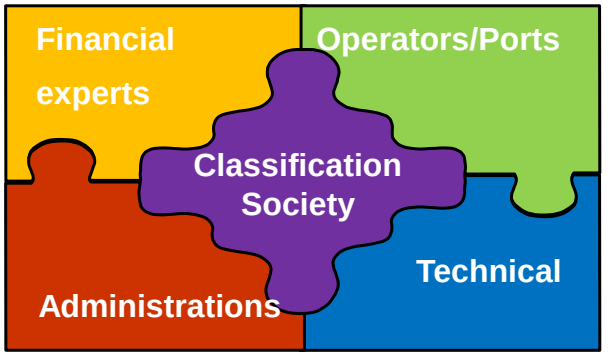
**External Consultation**

Validation of COSTA's interim and final results is made through a large consultation exercise (Sub-activity 2.2) with an active involvement of:

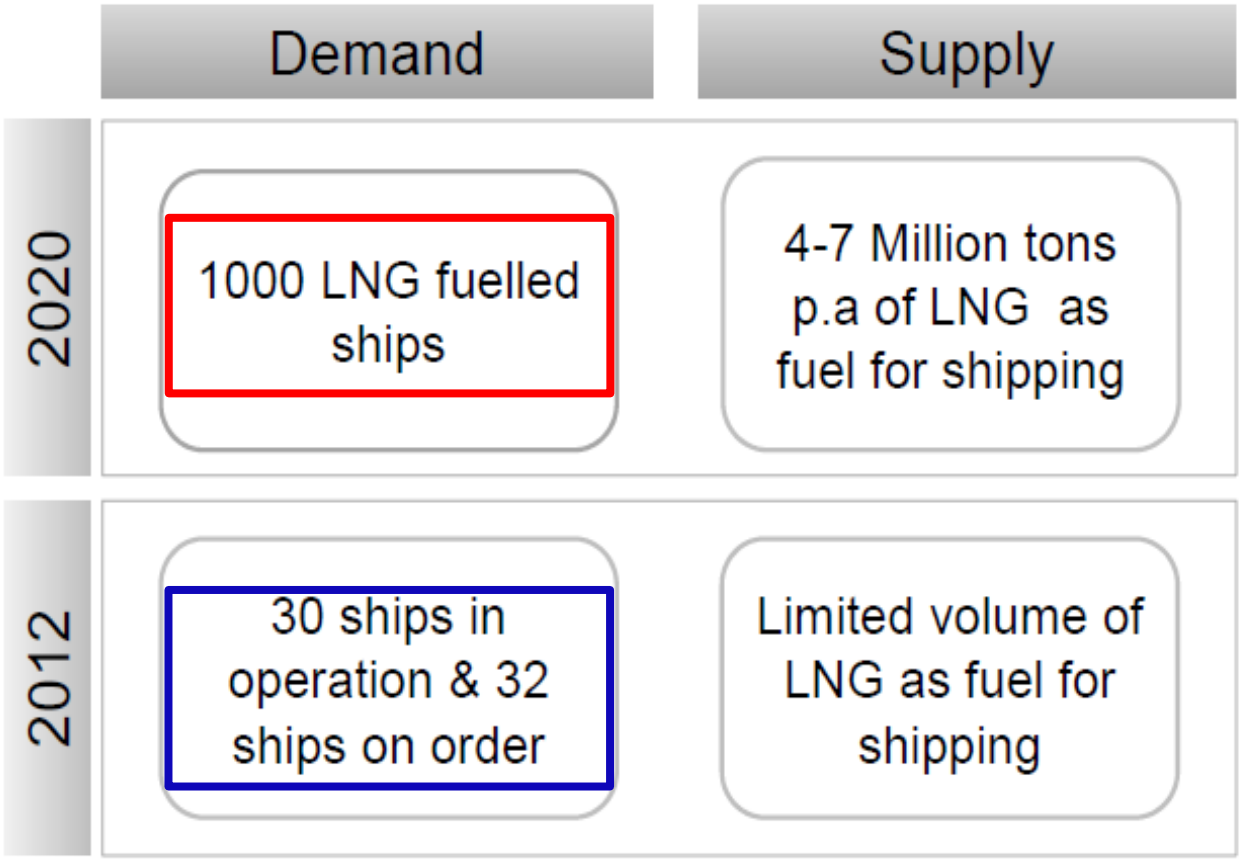
- Administrations, including EMSA, and Port Authorities, members of the **STG (Stakeholders Group)**;
- leading industrial experts, members of the **EXG (Experts Group)** having an interest in either the use or the development of LNG for shipping, including:
  - Ship-owners
  - Ship brokers
  - Gas Terminal Operators
  - LNG producer/trader
  - LNG brokers
  - Other interested parties

| ITALY | GREECE | SPAIN | PORTUGAL |
|---|---|---|---|
| Main Beneficiary: Italian Ministry of Transport - MIT | Ocean Finance | Almazan Engenieros | Instituto Portuario e dos Transportes Maritimos – IPTM |
| Coordinator (on behalf of MIT) RINA | | Fondacion Valencia Port | Port Authority Madeira |
| Grimaldi Napoli - GRIMALDI | | | Port Authority Azores |
| Grandi Navi Veloci | | | |
| Liguria Region | | | |



# Scenario 2020 (DNV Study)



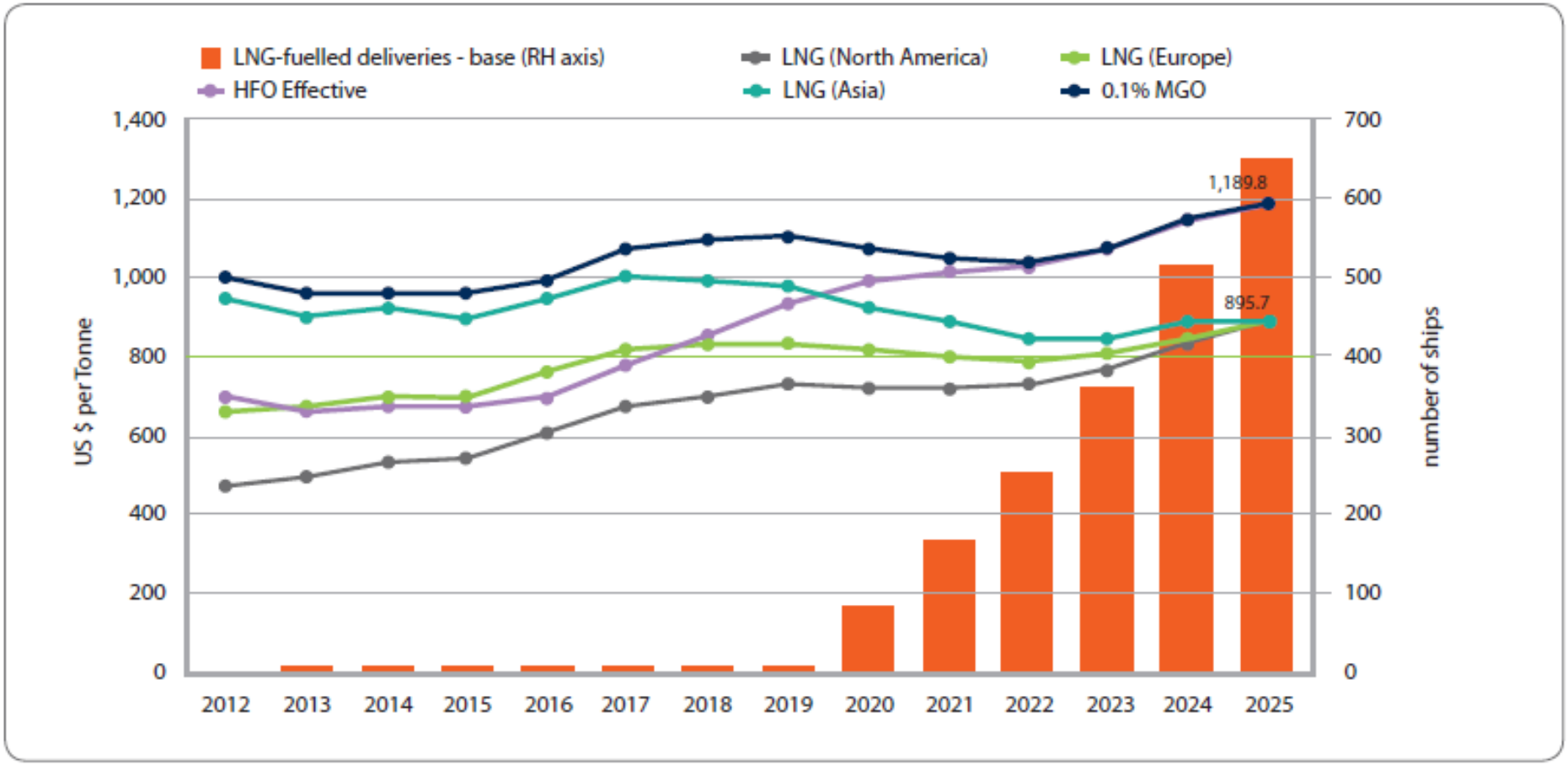


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MANAGING RISK DNV

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# LNG vs HFO cost (LR Study – base case)



# Scenario 2025 (LR Study)

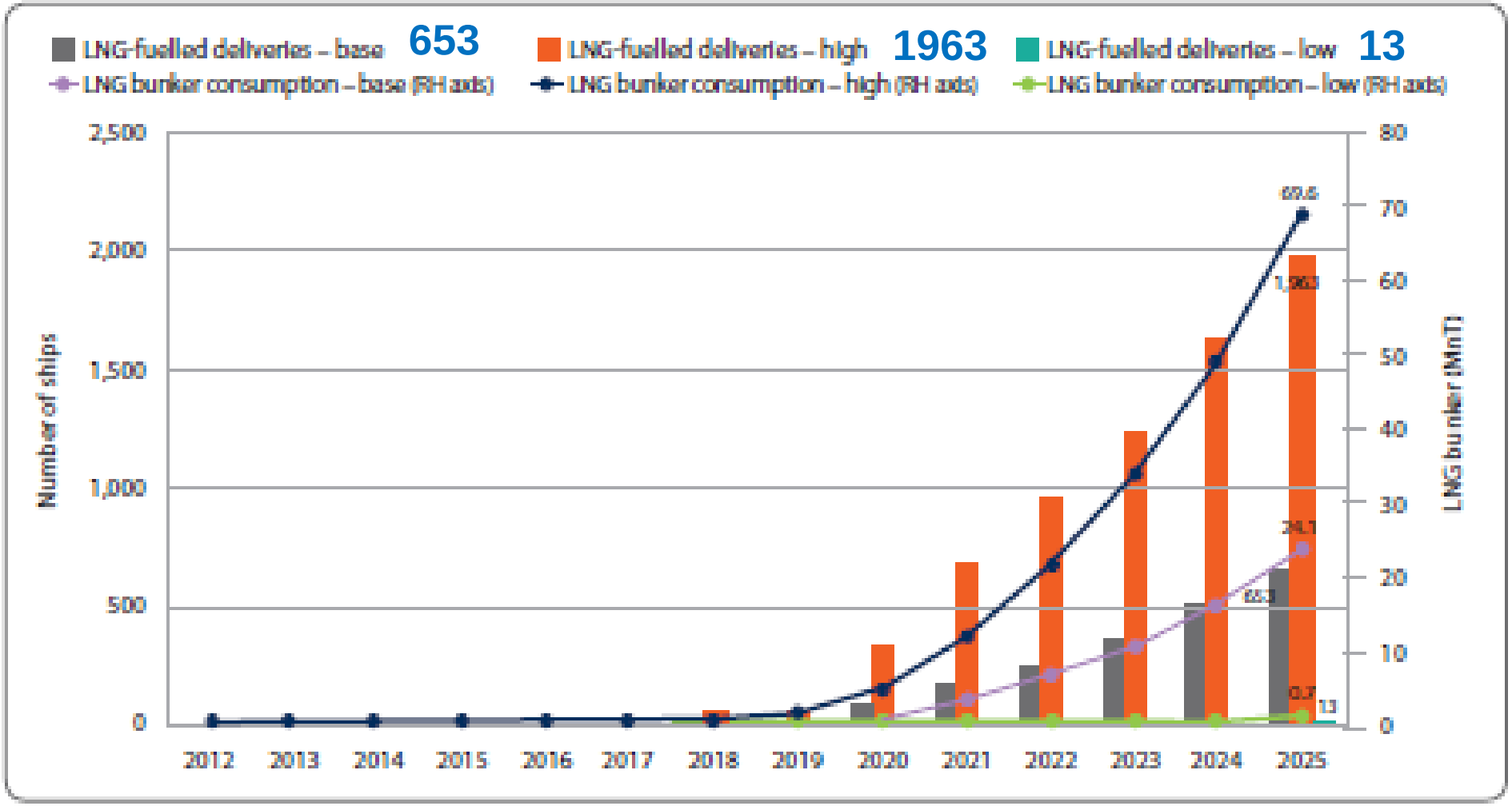
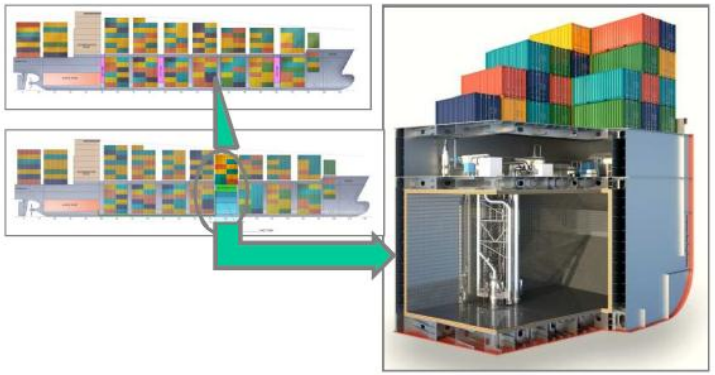



Figure 1: Cumulative global LNG fuelled newbuilds and LNG bunker consumption (base, high and low cases)

# Technical Issues (2020)

| TECHNICAL | Assessment | | | |
|---|---|---|---|---|
| | Likeli-hood | Conse. quence | Mana-geble | Impor-tamce |
| **Engine retrofitting packs not available** | L | H | H | 9 |
| **Trained crew unavailability** | M | M | H | 12 |
| **«Standard» pack/experience unavailable** | L | H | H | 27 |

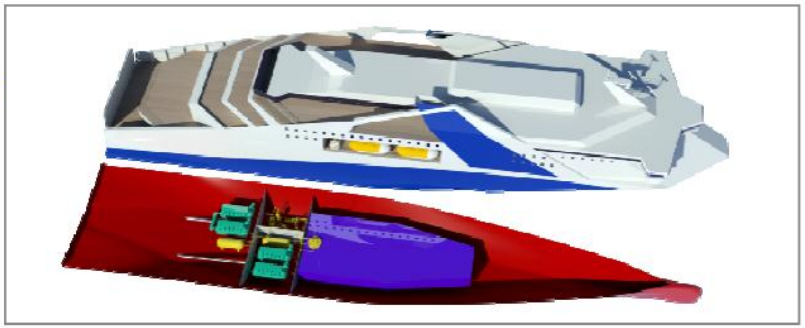


**Retrofit of a Container vessel :**

New section includes:
- a 5000 m3 LNG tank,
- a gas preparation room and
- additional 100 TEU

**Newbuild Ropax vessel:**

- 1700 m3 LNG tank
- Gas preparation room



# Regulatory Issues (2020)

| REGULATORY | Assessment | | | |
|---|---|---|---|---|
| | Likeli-hood | Conse. quence | Mana-geble | Impor-tamce |
| Use “containerized” LNG | M | H | H | 18 |
| Robust risk assessment procedures (permits) | M | H | H | 18 |
| Robust risk assessment procedures (terminal) | M | H | H | 18 |
| Robust risk assessment procedures (other) | M | L | H | 6 |

ISO TC67 WG10
International Standardization for LNG equipment and installations

## APPENDIX 7 GAS FUELLED SHIPS

### 1 General

#### 1.1 Application

1.1.1 *(1/7/2011)*

The provisions of this Appendix apply to ships operating

Alternatively, the function of one of the valves in series and the ventilation valve can be incorporated into one valve body, so arranged that the flow to the gas utilisation unit will be blocked and the ventilation opened.

1.4.6 **Dual fuel engines** *(1/7/2011)*

Dual fuel engines means engines that use gas as fuel (with

# Financial

30%

?

# Social – Issues

**Social**

- o Impact on society
- o Social acceptance
- o ....



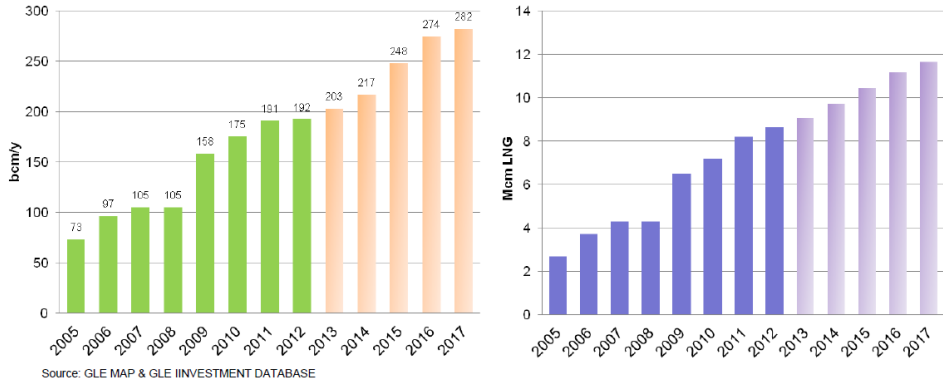
# Logistics – Issues

**Logistic**

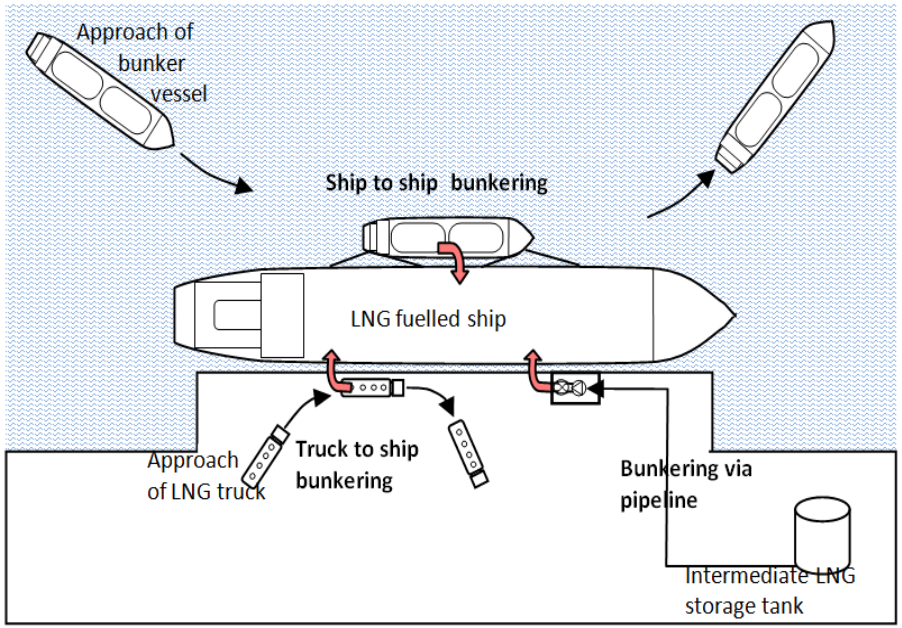
- o LNG production, distribution and supply networks
- o Availability of on-shore and off-shore infrastructures restrictions
- o Fleet and shipyard capacity limitations

**USE OF LIQUEFIED NATURAL GAS (LNG) WITH DIFFERENT BUNKERING ALTERNATIVES: PIPE-VESSEL, VESSEL (BARGES)-VESSEL AND TRUCK-VESSEL**

## LNG terminals in Europe: Development of capacity




LNG volumes to EU are increasing (2008/2011: +50%) representing more than 20% of EU gas imports in 2011



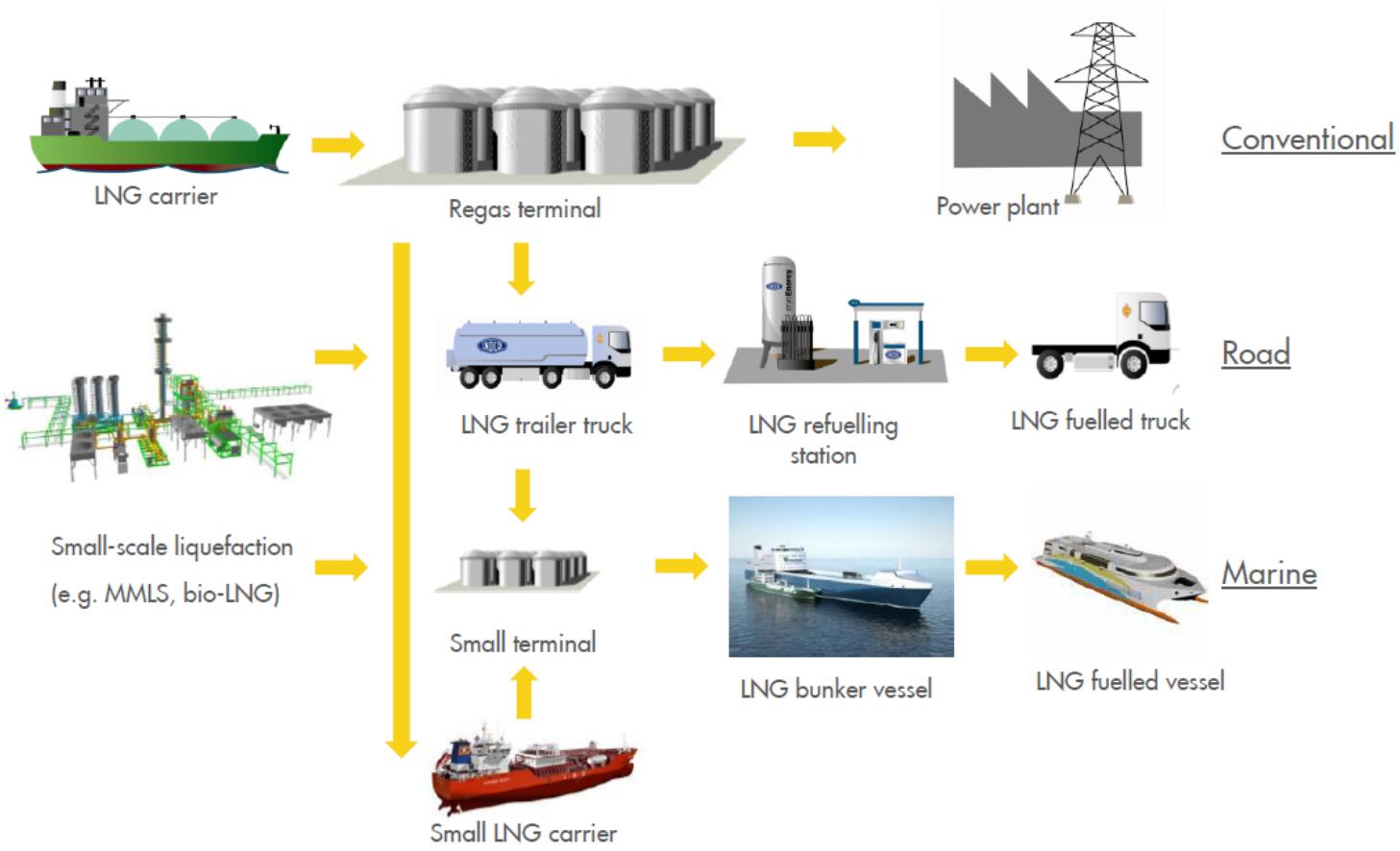

The Baltic Study (DMA)


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# LNG FOR TRANSPORT: MARINE AND ROAD

## THERE ARE MORE TRANSPORT APPLICATIONS, SUCH AS RAIL, MINING, ETC.



# Environmental – Issues

| ENVIROMENTAL | Assessment | | | |
|---|---|---|---|---|
| | Likeli-hood | Conse. quence | Mana-geble | Impor-tamce |
| Energy efficiency means un-deployable | M | H | H | 18 |
| Other fuel types un-deployable | H | L | M | 6 |
| Abatment technology un-deployable | L | H | H | 9 |
| Standard «cocktail» packs unavailable | H | H | H | 27 |

- BIO LNG
- Scrubber
- Energy efficiency
- ....



# Issues – overall

Confidence (as of 31/12/2012)




Solved also withouth Masterplan

Masterplan will facilitate/speed up

Masterplan is needed

# 1st COSTA WORKSHOP 20/1/2013

Costa.action@rina.org




Co-financed by the European Union Trans-European Transport Networks (TEN-T)

The COSTA Action aims at developing framework conditions for

TEN-T Executive Agency

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Trans-European Transport Network (TEN-T)

LNG High-Level Seminar Constanta