
ADVANCING LNG FOR CLEANER MARINE

MEDPORTSFORUM 2016 – MARSEILLE

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AGENDA

- 1 A few words on Gas4Sea
- 2 The growth of LNG as a marine fuel
- 3 Our perspectives for the near future

A FEW WORDS ON GAS4SEA

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Three major players in the energy and shipping sectors



- Global energy player
- In the LNG industry since 1965
- Mainly present in the Atlantic Basin
- 16.4 mtpa LNG portfolio, sourced from 6 countries
- Fleet of 13 LNG carriers (including 2 FSRU)
- 1st European LNG importer
- 2nd largest operator of LNG terminals in Europe



- Global integrated business enterprise
- In the LNG industry since 1969
- Mainly present in Asia
- 7.4 mtpa LNG portfolio, sourced from 6 countries
- Fleet of 24 LNG carriers
- 1st LNG importer in Japan



- Global logistic and shipping company
- Entered the LNG transport in 1983
- Fleet of around 900 ships
- One of the biggest owners of LNG fleet with 69 LNG tankers (including joint owning)

... joined strengths to globally develop LNG as Marine Fuel

A partnership for the development of LNG as a Marine Fuel



LBV under construction in HHIC (Korea)

June 2014: Order of the first purpose built LNG Bunkering Vessel (LBV) of 5,000cm capacity with Hanjin Heavy Industries & Construction Co. Ltd. (Korea)

As of 2017: ship to ship operations in and from the port of Zeebrugge (Belgium)

End of 2016: Delivery of our first LNG Bunkering Vessel

October 2015: Fluxys acquires 25% in our first LNG Bunkering Vessel

2014: Signature of a “Framework Agreement” between ENGIE, Mitsubishi Corporation and NYK Line for LNG Bunker Supply Business Development

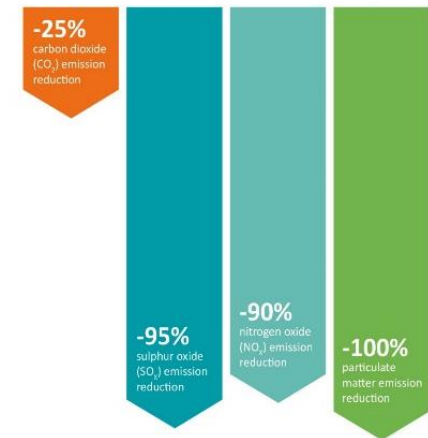
LNG AS MARINE FUEL

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LNG, the alternative to regular oil-based marine fuels

Even if LNG is considered as the most credible alternative to drive decarbonization of the shipping sector, ...

- environmental benefits : emission reduction for SO_x, NO_x, particulate matters and CO₂
- natural gas is highly available and LNG market is in an era of abundance
- technology is proven and gas has been used as a marine fuel for decades



Engine emissions for LNG compared to diesel
Source: LNG Masterplan for Rhine-Main-Danube

... its development highly depends on three major factors :

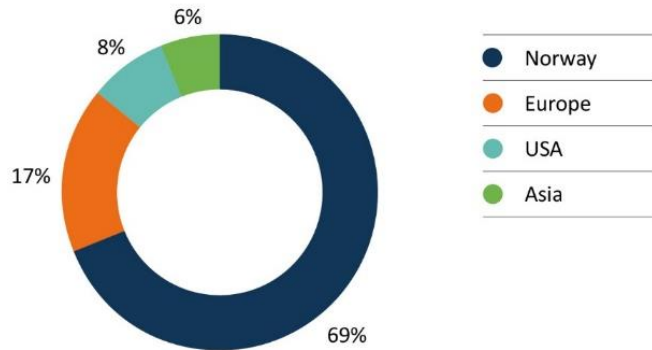
- regulations and standards of emissions limits for marine vessels on the national and international level
- availability of the necessary infrastructure (security of supply) and technologies
- competitiveness of LNG prices (together with the infrastructure costs)

Where we are today with LNG as a marine fuel

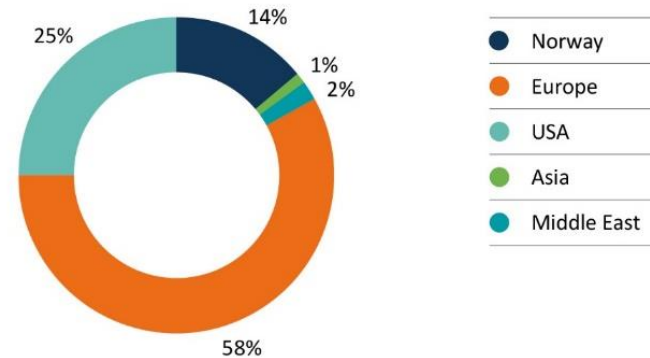


- 86 LNG-fuelled vessels in operation and 87 on order⁽¹⁾
- 3 bunkering vessels under construction for Northern Europe
- all kind of ships are being ordered
- IMO member states to implement global sulfur cap of 0.5% for all ships by 2020

LNG fuelled vessels in operation



Confirmed Order



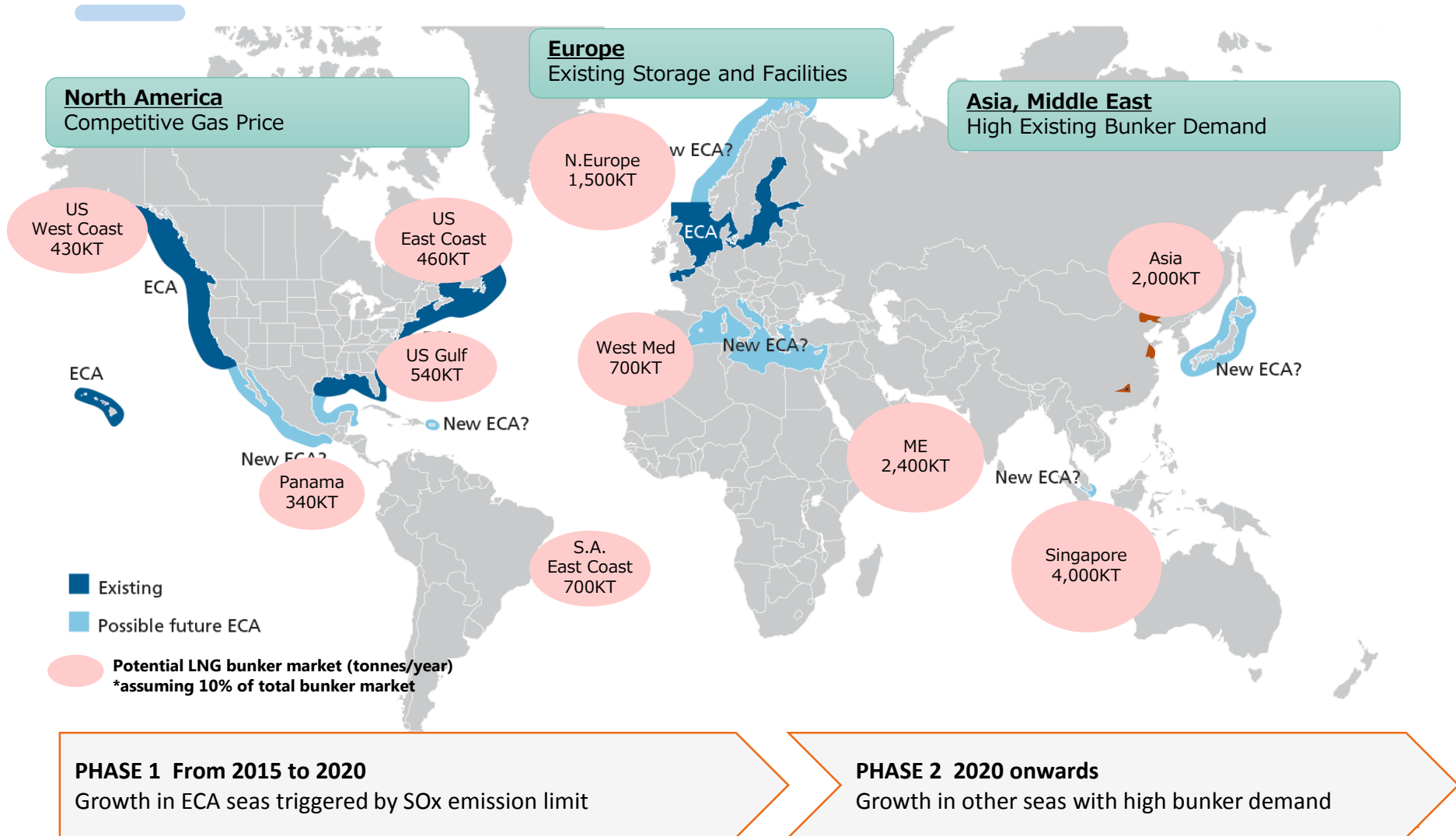
(1) Source: DNV-GL March 16, excl. LNG carriers and inland waterway vessels

Currently, most of LNG fuelled ships are located in Norway, the tendency being a strong rebalance towards the rest of Europe and North America

OUR PERSPECTIVES FOR THE NEAR FUTURE

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A global market with different drivers



Mediterranean is identified as a high potential of development in the near future...

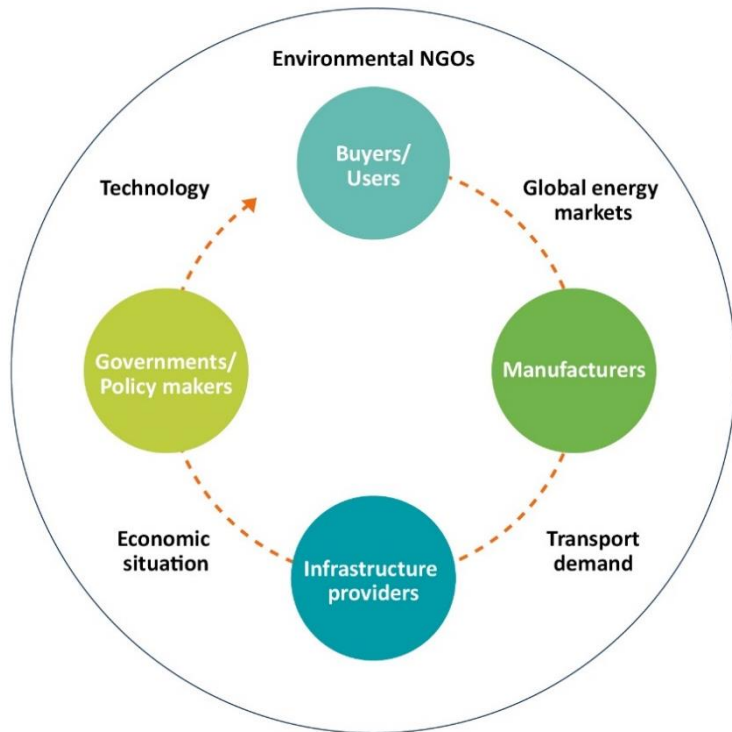
Mediterranean is ready to become an important LNG bunkering in a very short time :

- Mediterranean could become an ECA in the near future (in any case, 2020 will be an important milestone with the implementation of the global sulfur cap)
- experience gained by LNG suppliers and manufacturers in the North of Europe will help decision process for new project
- LNG is widely available

Valenciaport Foundation expects at least 73 LNG powered ships in operation in the Mediterranean by 2020.



...but will need all stakeholders around the table to make it work



THANK YOU

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