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Sailing on the LNG Era

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ΔΕΠΑ

Key LNG Figures in 2015

Global **LNG Imports** increased by **2,5%** reaching their highest level ever!

Globalization of LNG is growing at a steady pace **34 countries** are now **importers** compared to 15 in 2005 and 19 exporters.

68.4 million tons traded on a **spot** or short term basis , **28%** of total trade

41% of Global LNG Volumes supplied from **Asia Pacific**

72% of global LNG demand in **Asia**

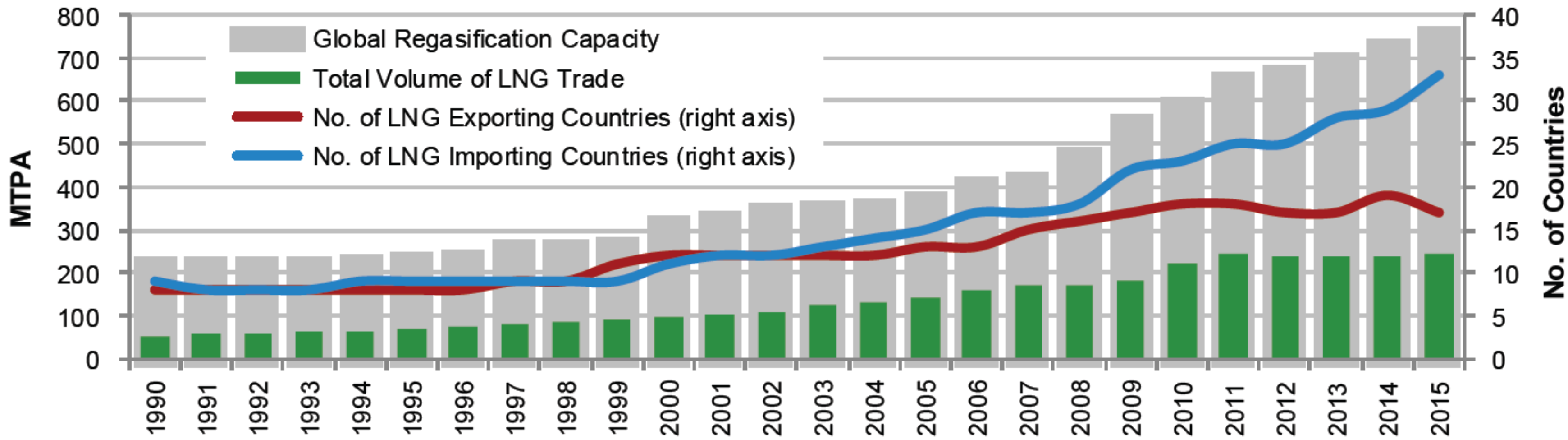
Qatar remains leading supplier , **32%** of Global Trade

LNG imports cover **~ 10 %** of total global gas demand

Europe consumed **16%** **more volumes** than in the previous year

LNG fleet (449 vessels) increased by **7%** in one year

LNG Trade Volumes 1990-2015



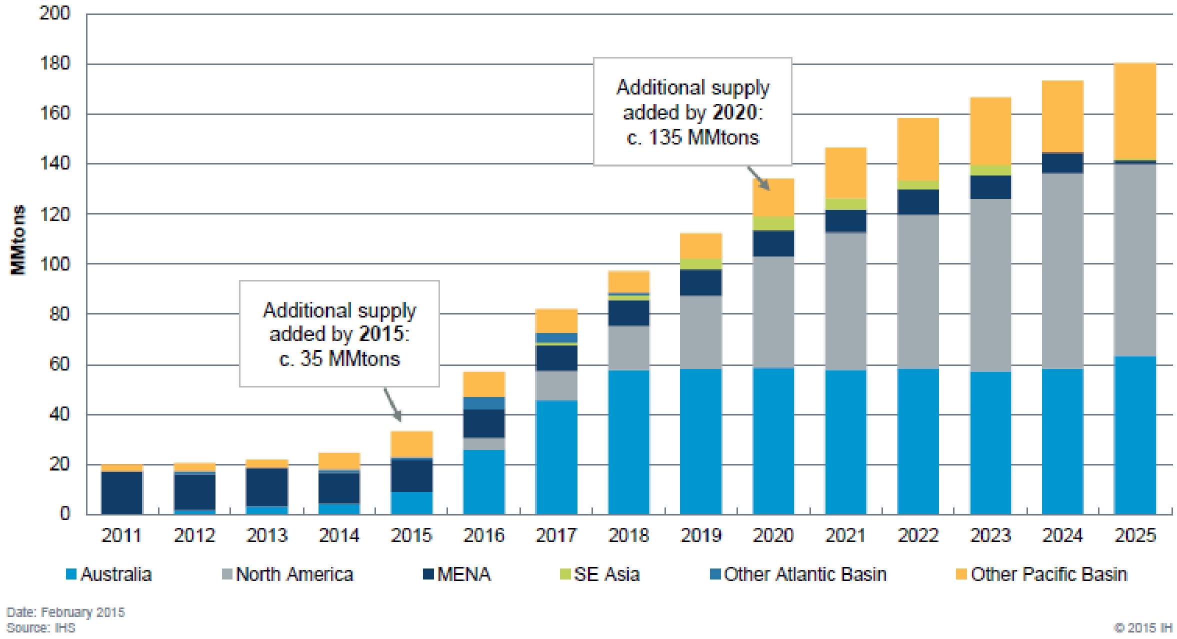
Source: IHS, IEA, IGU

A lot of regasification capacity remains available: More LNG trade may take place without infrastructure addition

LNG volumes remain stable for the last 5 years: Traditional uses show little promise

Importing countries increase while exporting decrease → **More LNG delivery points**

Incremental global LNG Supply relative to 2010



The global LNG market in 2015 was dominated by the acceleration of the market loosening in NE Asia, leaving more volumes to find markets in Northwest Europe, but also in South America, India and the Middle East.

Europe remains dependent on Russian gas, but LNG imports are expected to play an increasing role, prices permitting

Lower LNG prices unlock demand based on different demand drivers, such as coal displacement in power, indigenous supply, diversification from pipeline imports

Trade Dynamics

Liquefaction capacity is coming online in Asia in 2016

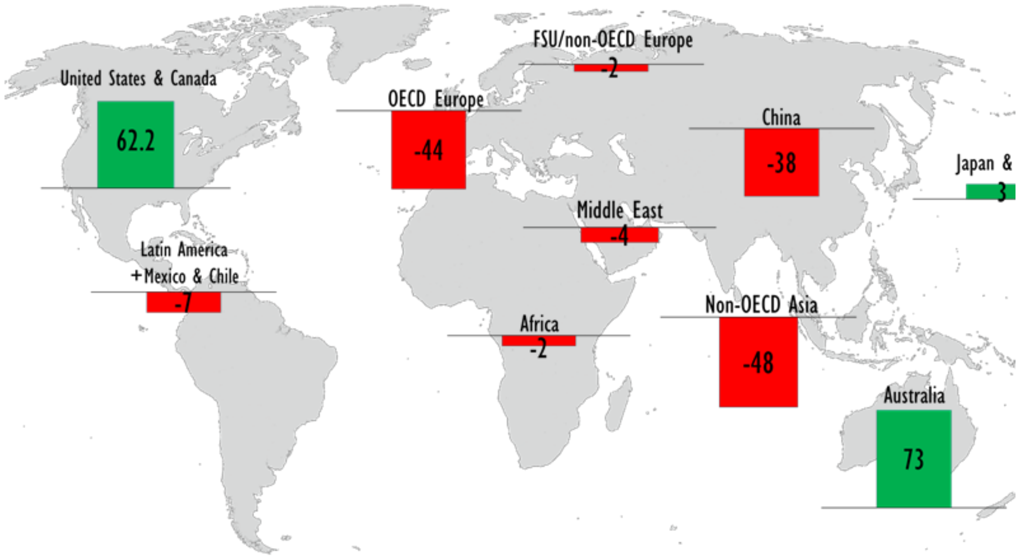
Asian consumers will be able to balance easier their needs

The resulting surplus puts pressure on Asian portfolio traders

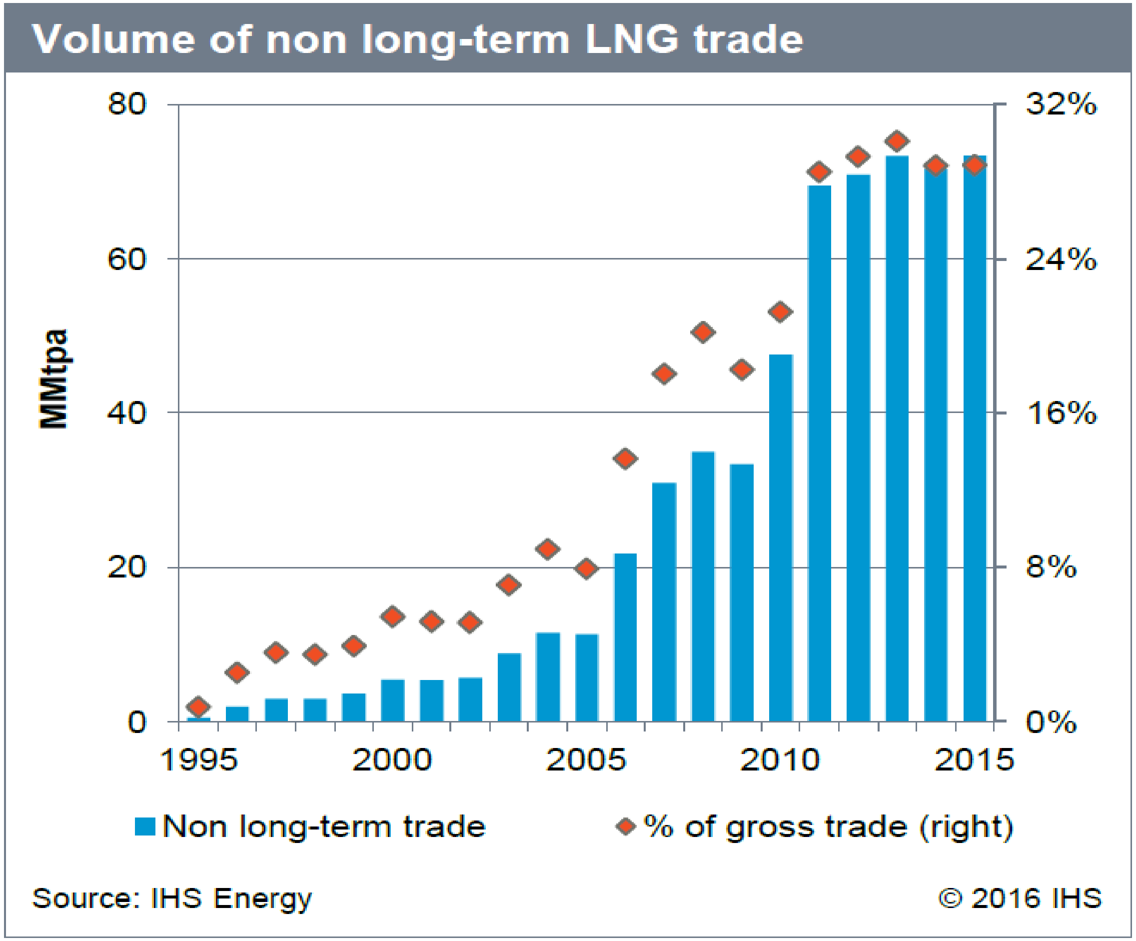
Global surplus will be available for Europe to absorb, displacing pipe gas

Flexible US LNG cargoes are expected to target Europe among others

LNG Net Trade 2014-2020 (bcm)



Spot & Short term



Tendency towards shorter length contracts

In the direction of established oil bunkers practice

Low Prices of Oil and their impact

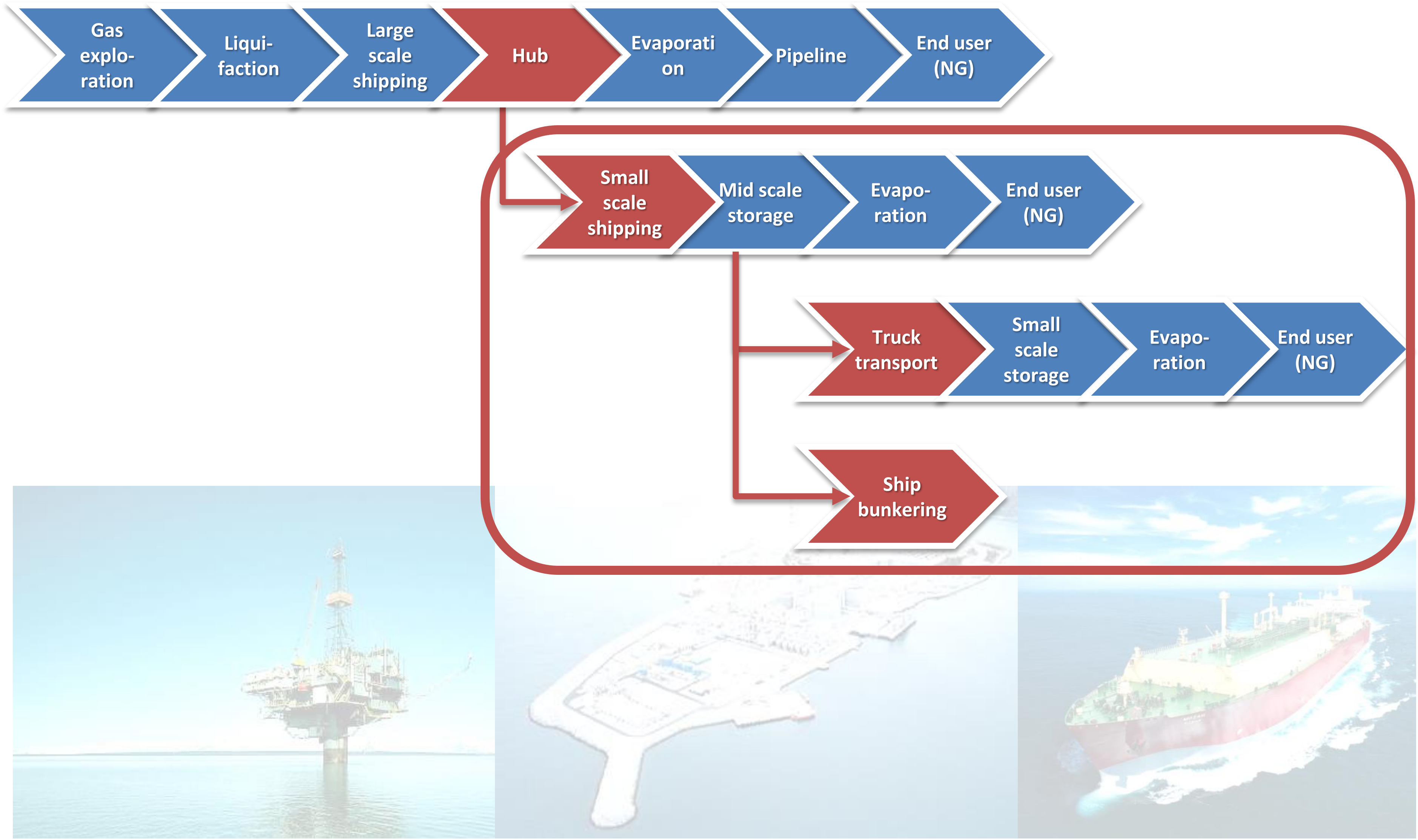
Due to lower prices and sluggish economic growth the LNG industry is holding its breath for impact of an export wave from the US...and AU

Greenfield investment decisions expected in Africa and Canada have been deferred, however 5 Final Investment Decisions have been taken in 2015

The drop in oil prices and a looser supply market led to a ~50% decline in Northeast Asian spot prices in 2015, falling from an average $15/MMBtu in 2014 to below $8

Another key determinant of buyers' response to low gas prices is inter-fuel competition with coal, and to some extent oil. Low oil prices have resulted in low oil-linked LNG contract prices.

The increasing role of small scale LNG



Source: Wartsila

Key markets for small scale LNG

Marine Fuel

The historically high price differential between natural gas/LNG and low emissions oil products necessary to meet the growing restrictions on ship emissions, are key drivers for using LNG as Marine fuel.

Road Transport Fuel

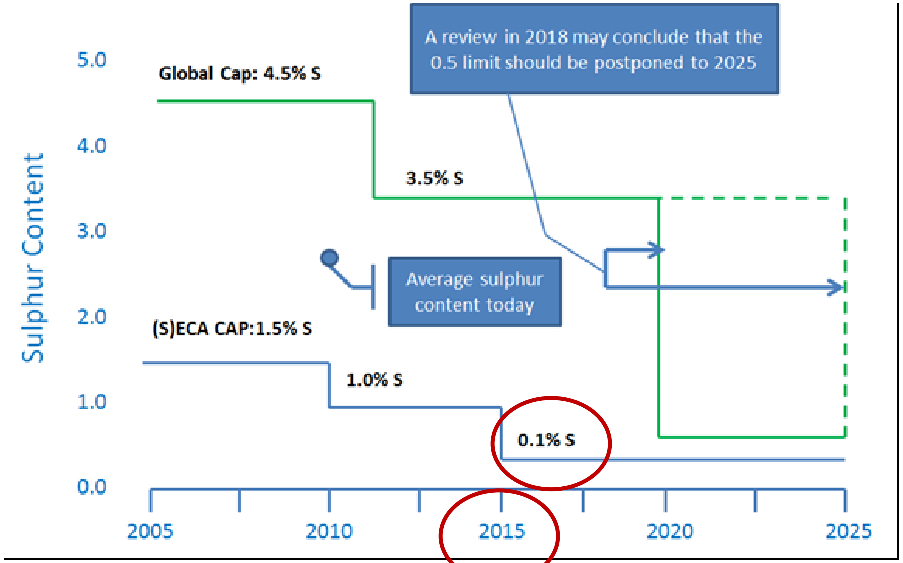
LNG is increasingly becoming the most economical, cost-effective, and environmentally friendly alternative to conventional transportation fuels for heavy-duty trucks and fleets.

Off-grid customers

LNG can compete favorably in the heating, commercial, and industrial sectors with conventional fuels such as diesel and propane in areas not currently served by regional pipeline gas infrastructure.

International regulation on the emission control

(Emission Control Areas) ECA

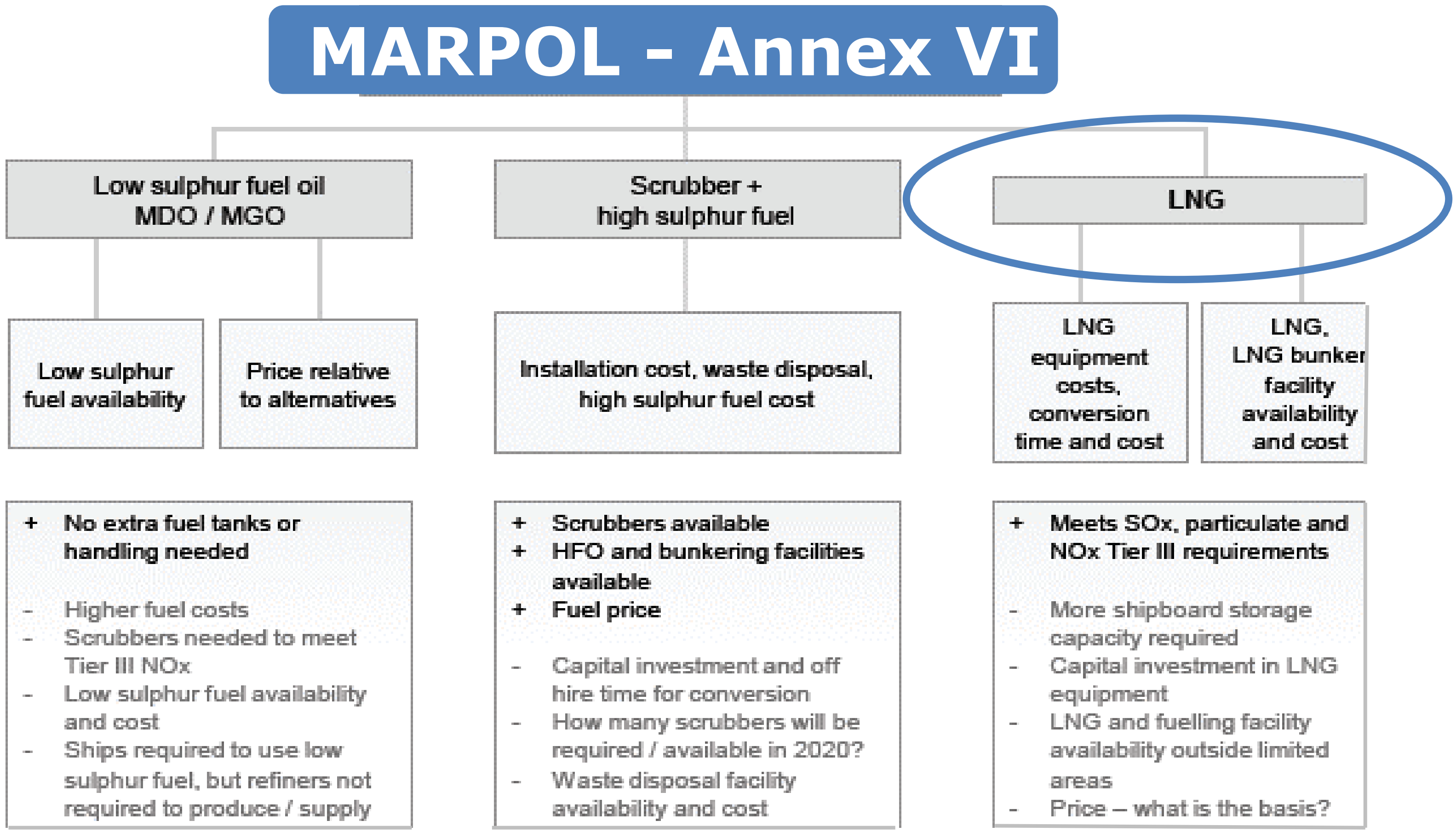


ECAs→ 0.1% S from 1 January 2015

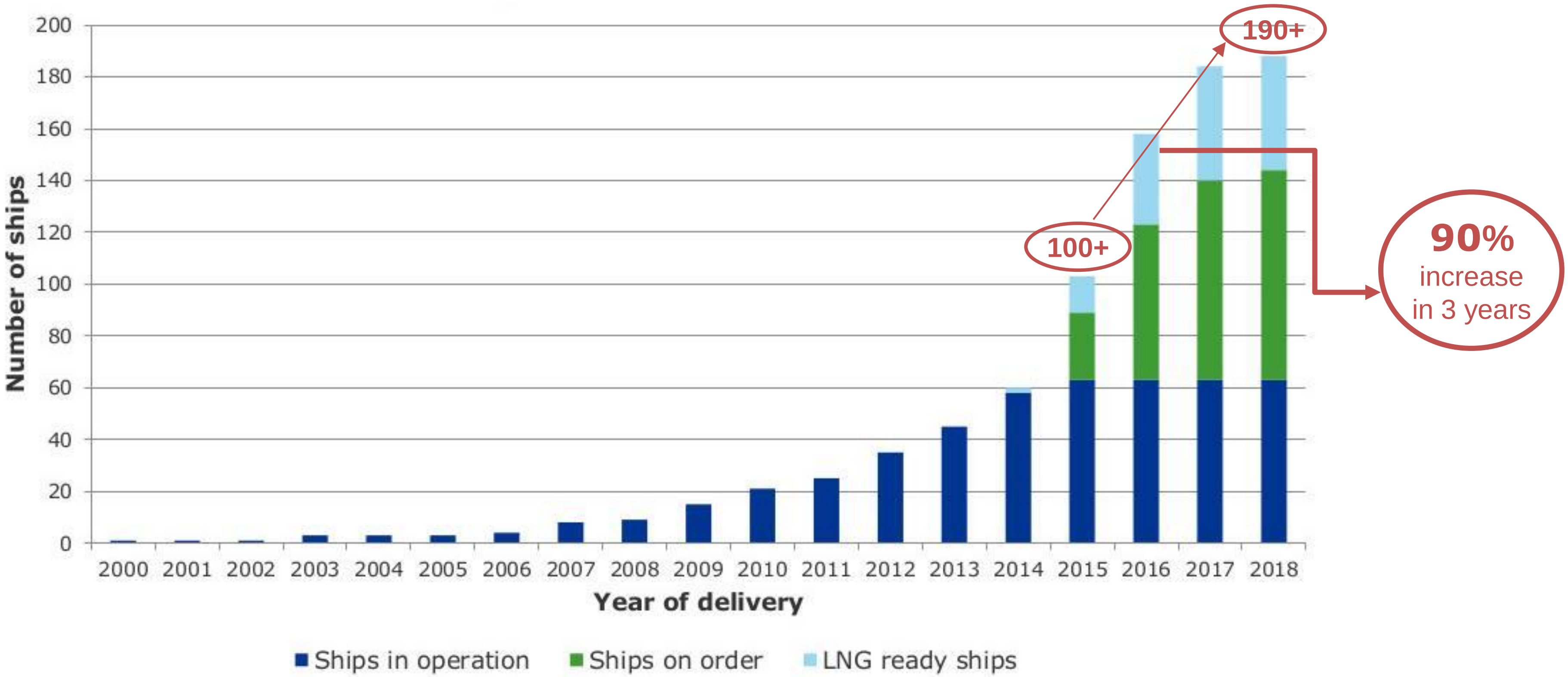
Outside ECAs→ 0.5% S from 1 January 2020 or 2025

New SOx ECAs are expected

Alternatives based on MARPOL Annex VI

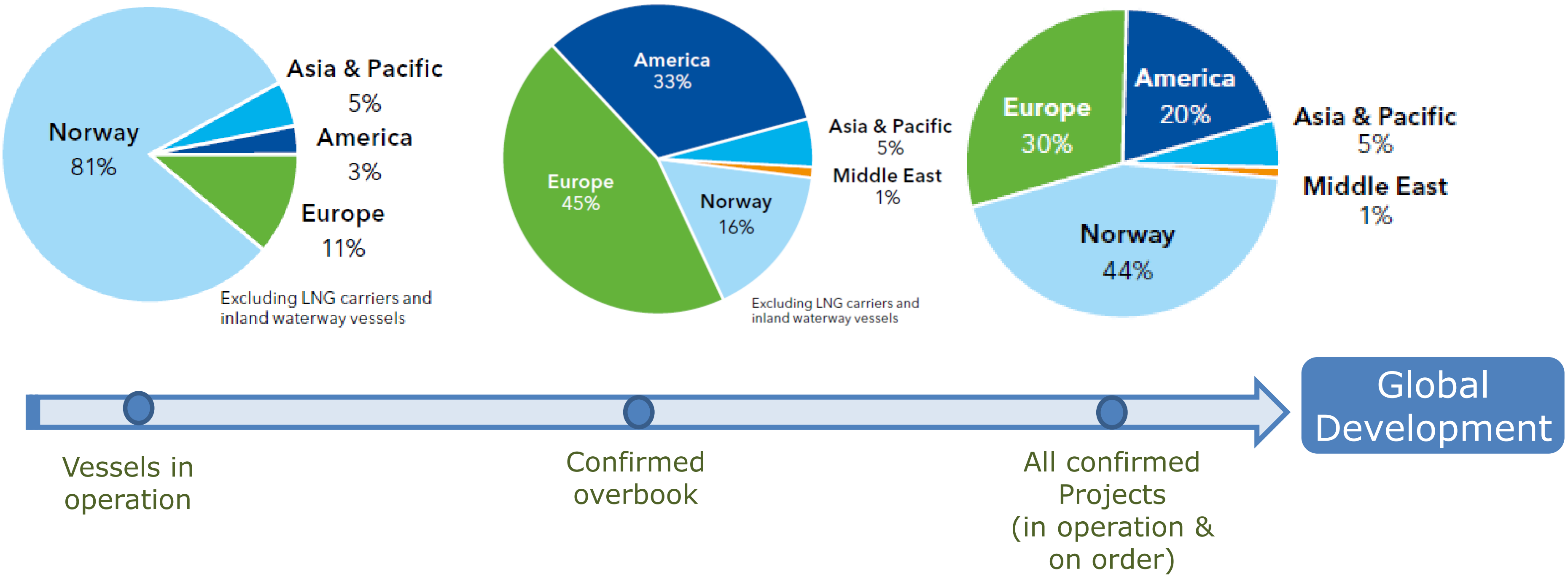


Development of LNG Fueled fleet



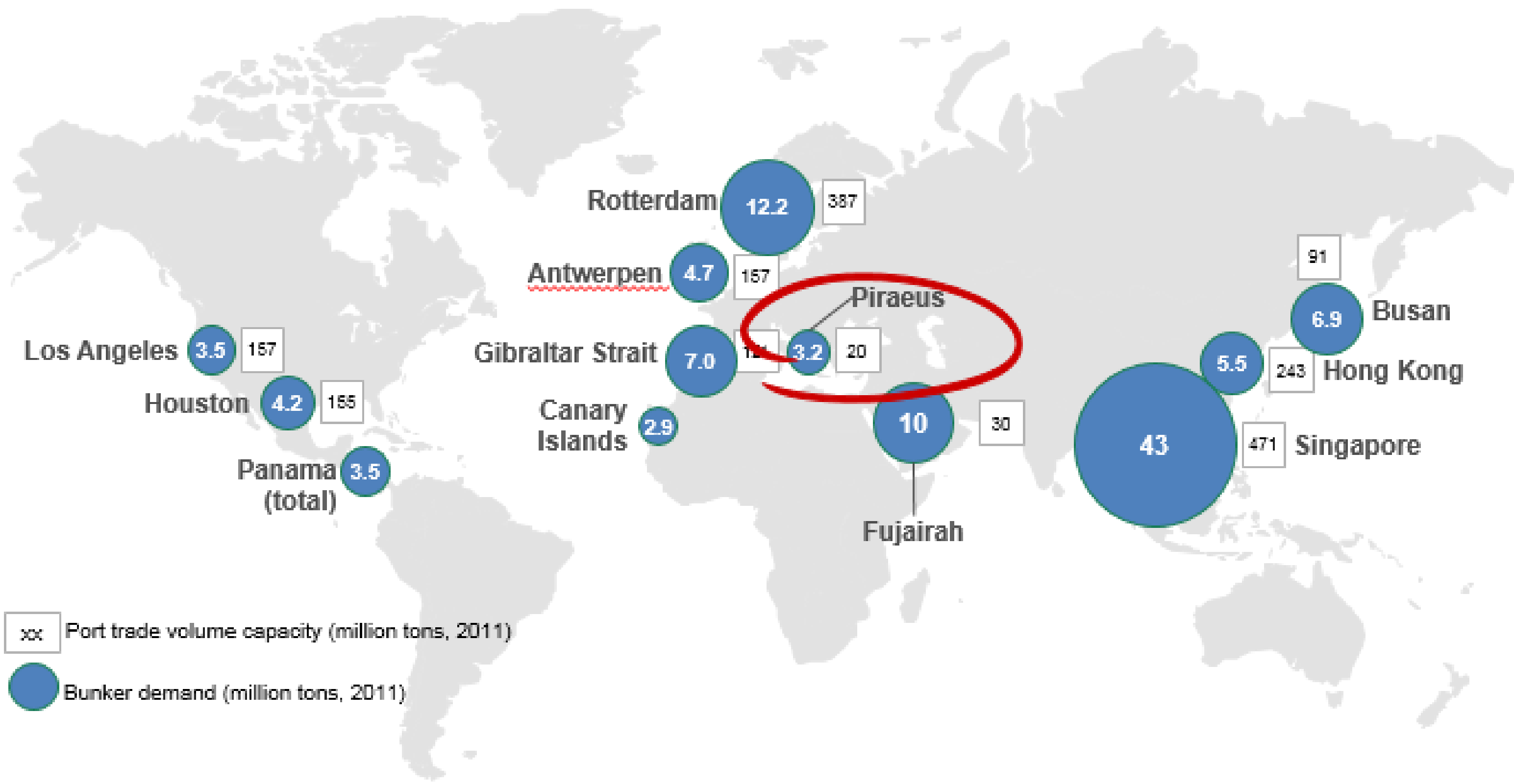
**Source: DNV –GL, 2015*

LNG Fueled Fleet Trend



**Source: DNV –GL, 2015*

Piraeus on a Global Map



Source: BCG

Piraeus is a key port in Global Bunkering

Pre – Conditions for effective LNG Bunkering

Retrofit of Vessels & New builts
(Funding & Financial Tools)

Competitive LNG Pricing

Demand **Supply**

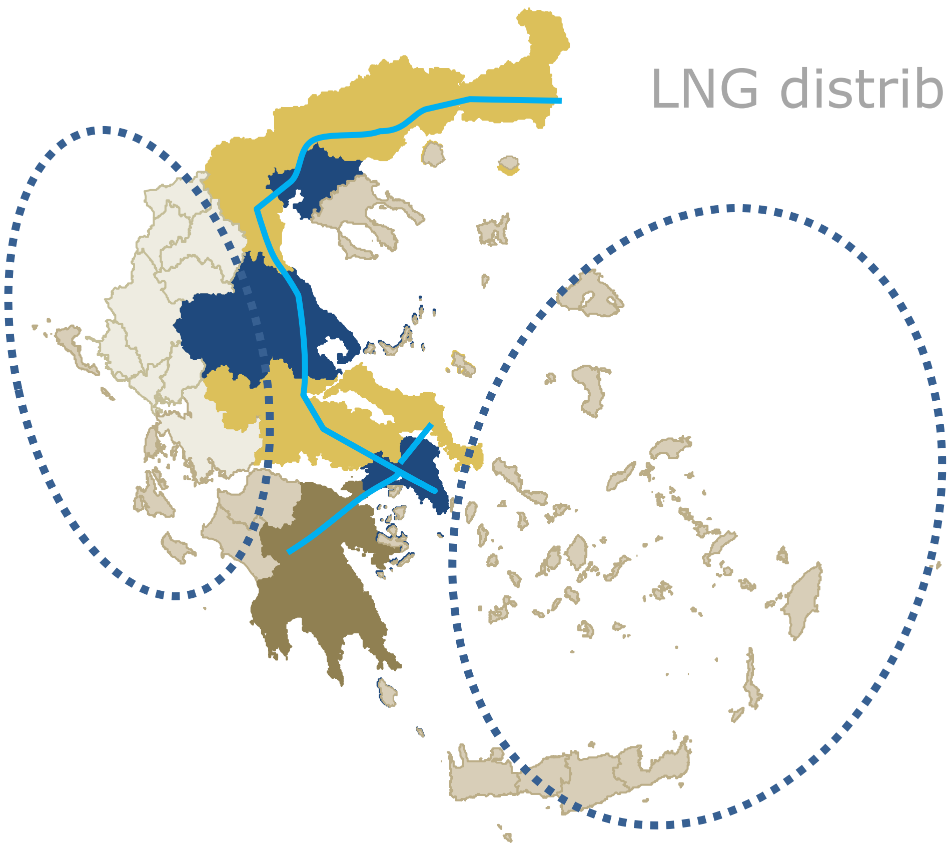
LNG Security of Supply

Well Designed Supply Chain

Cooperation between all involved Stakeholders

Face the Chicken-Egg problem!

Small Scale LNG in Greece



LNG distribution in small scale to serve:

High density residential areas & large industrial & commercial customers in Western Greece and the islands

Non interconnected power generation plants

Existing Network

Network under Development

New Regions

Main HP System

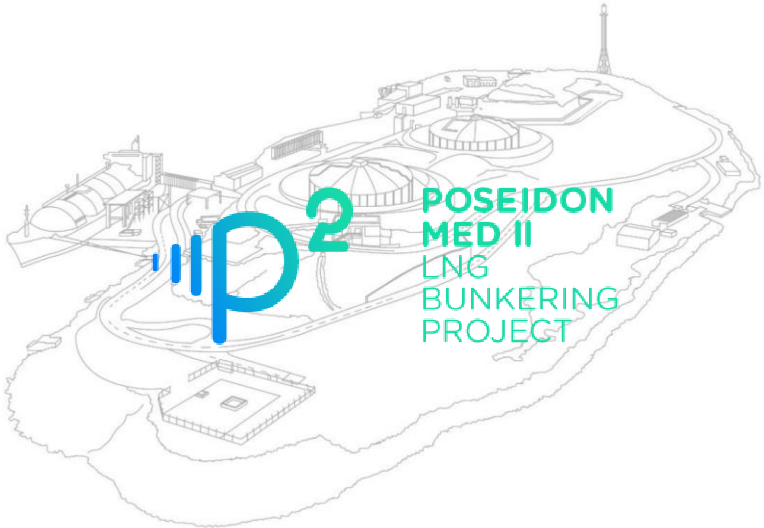
Poseidon Med II - LNG Bunkering Project

Facilitate all preparatory actions to achieve maturity

Build strong cooperation among stakeholders/partners

Explore synergies

An important step to face the Chicken-Egg problem for developing LNG Bunkering



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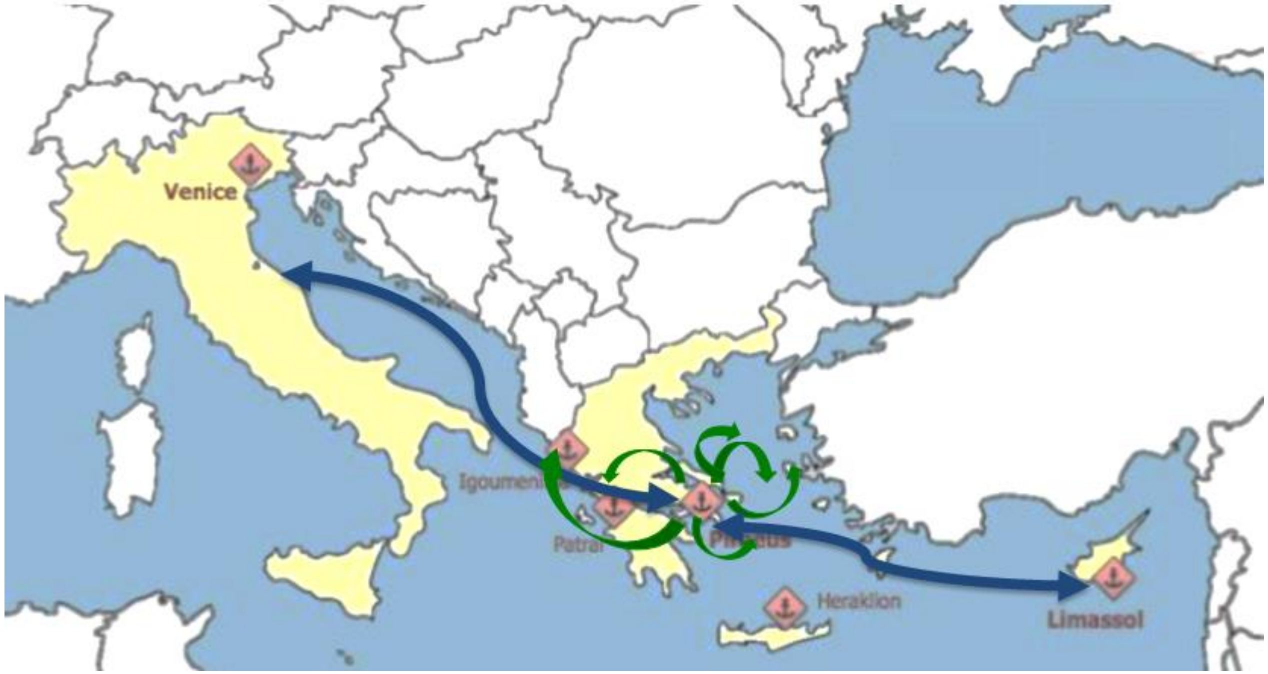
Poseidon Med II - Region of Action

3 Countries

- Greece
- Cyprus
- Italy

6 Ports

- Piraeus
- Patra
- Heraklion
- Igoumenitsa
- Limassol
- Venice



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Activities of Poseidon Med II

Project Organization	Activ. 1-3	Coordination – Management – Dissemination – Social/Public Consultation – Awareness
Ports – LNG Terminal Infrastructure	Activ. 6-12	Environmental/Safety/Site Studies – Ports Master Plans updating – Supporting/Preliminary/Detailed Design Studies – Tender documents
Vessels Infrastructure	Activ. 14	Technical studies for selected vessels
Pilot case (Venize)	Activ. 15	Executive Design and Construction of an Innovative LNG Vessel
Financial aspects	Activ. 4-5	Installations Financial Assessment - Financial Instruments for the Global Projects Investments
Regulatory framework	Activ. 13	Adaptation of the Regulatory Framework
Sustainability-Synergies	Activ. 16-17	Assessment of Efficient Supply Chain/Synergies – Sustainable LNG Pricing Patterns

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Thank you for your attention!

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