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Expected demand for LNG as ship fuel in Northern Europe

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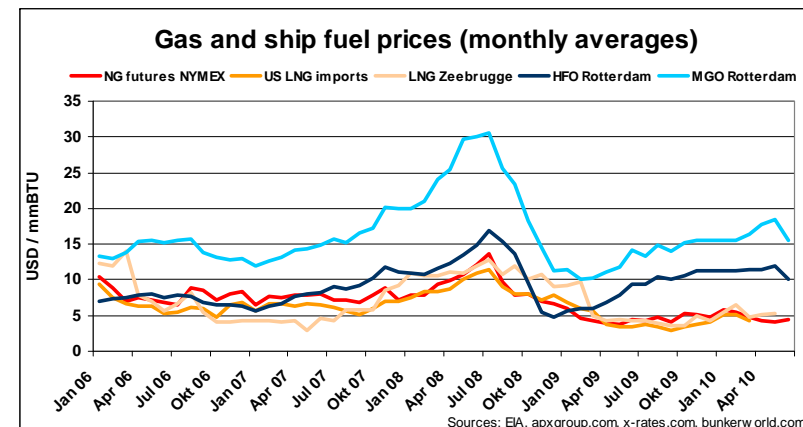
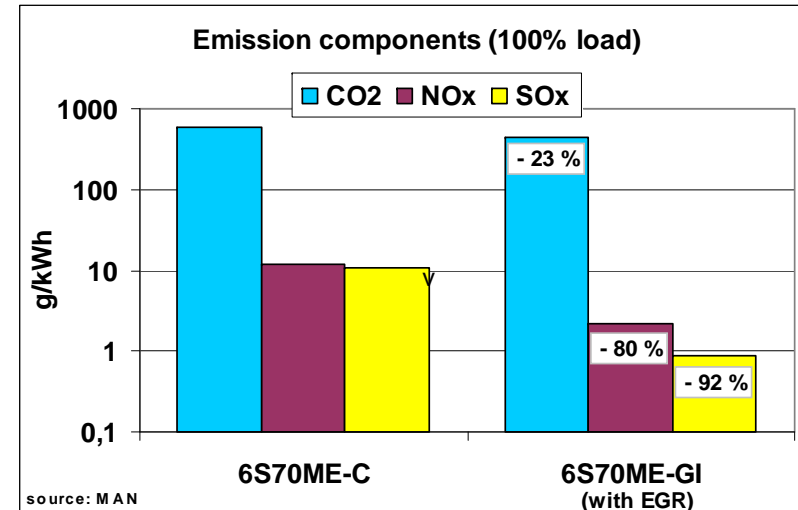
Introduction

The motivation to consider using gas as ship fuel has become stronger.

Three reasons are identified:

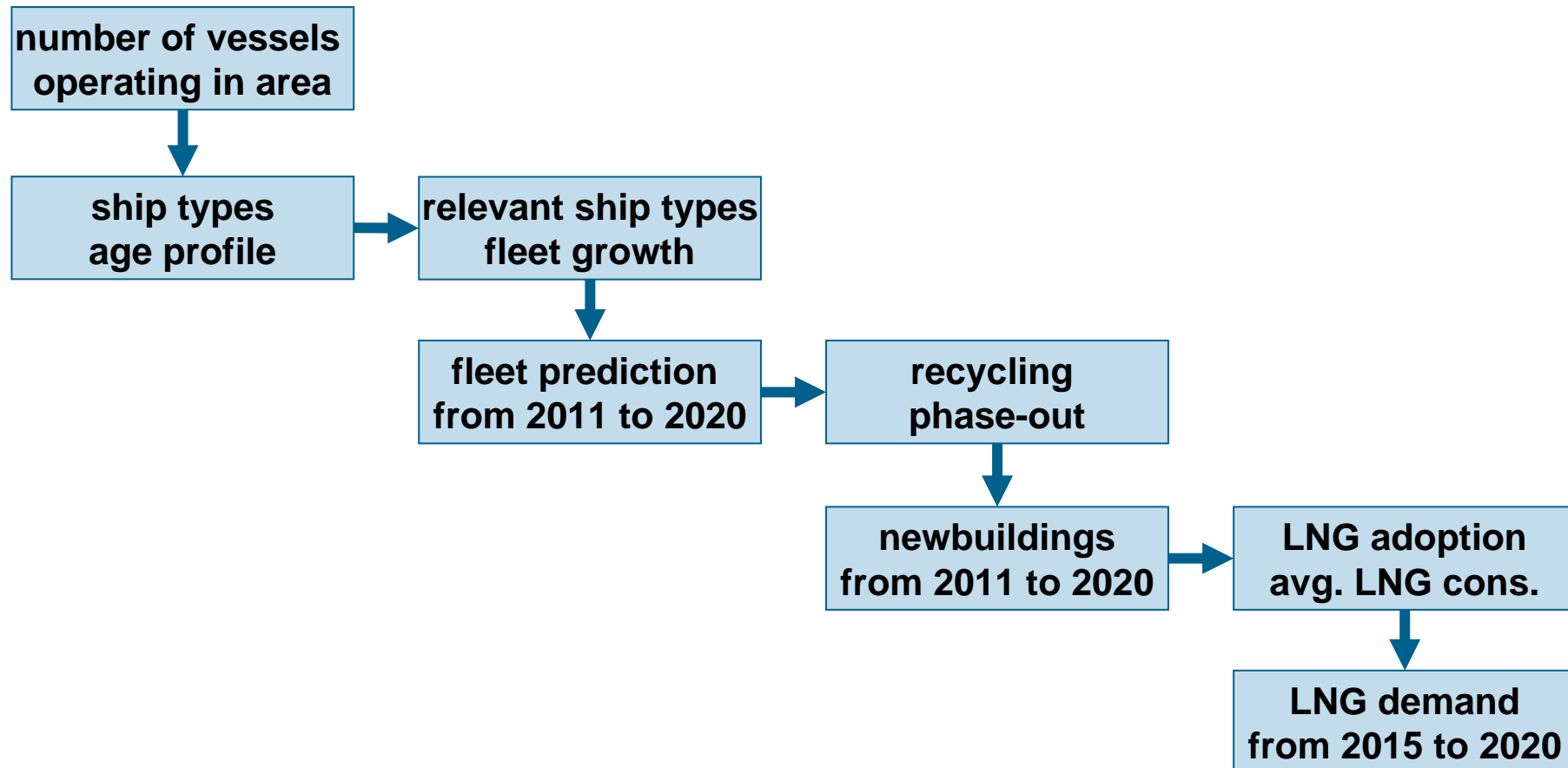
- facilitating high air quality with much reduced SOx emissions
- reducing CO₂-emissions
- attractive price

But how much gas will be asked for and where and when?

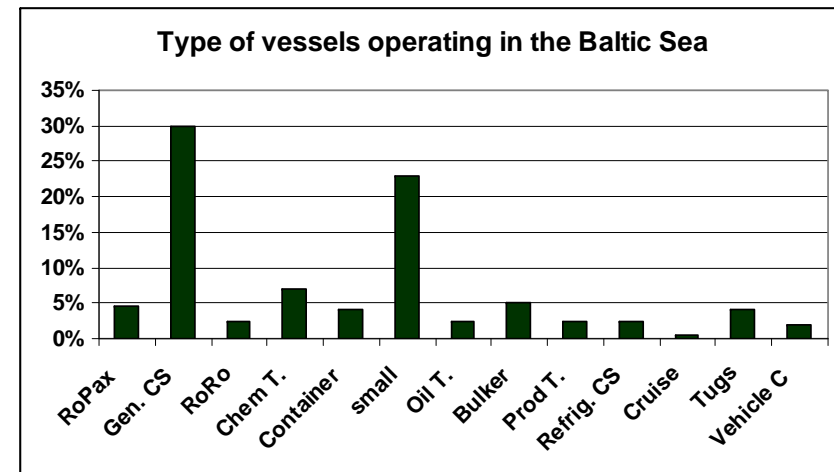
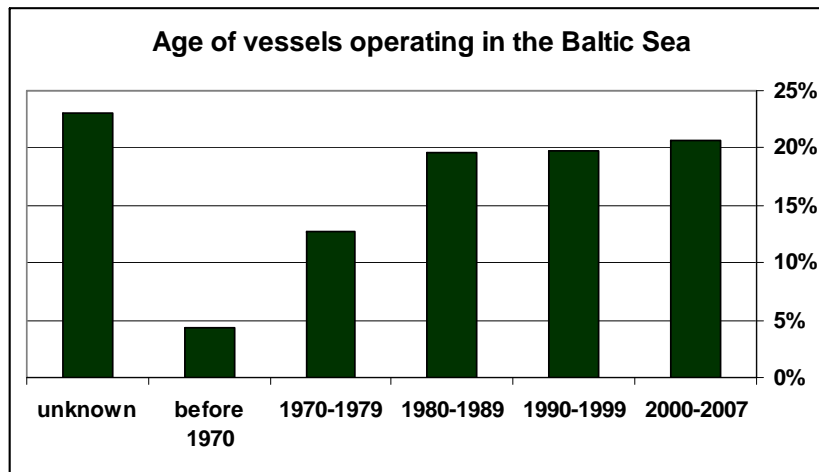


NG: Natural Gas, LNG: Liquefied NG, HFO: heavy fuel oil (IFO 380), MGO: marine gas oil, BTU: British thermal Unit = 1,06 kJ

The procedure to estimate LNG demand



Number of vessels operating in area



A study by Jalkanen et al. (2009) reported on average about 4250 vessels operating in 2007 with seasonal variations in the Baltic Sea.

We assume that most of these vessels are only trading inside the area.

Eventually, only 2945 vessels were considered as relevant and used for the fleet prediction, as small and unknown vessels were removed from the data set.

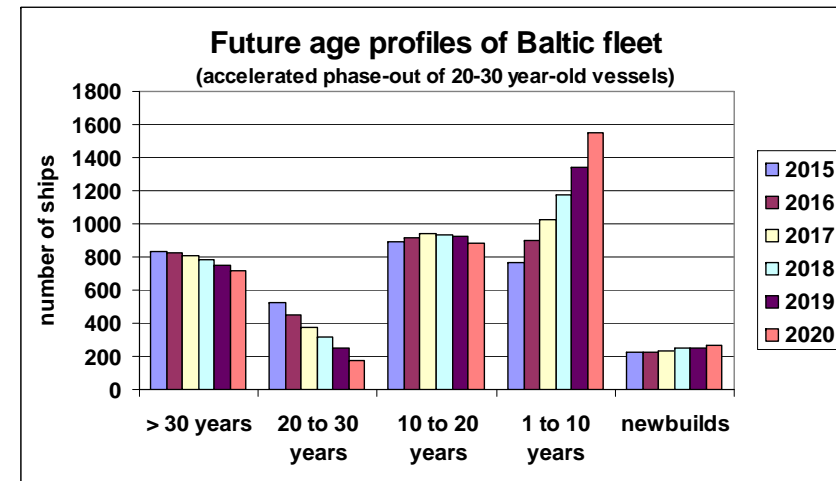
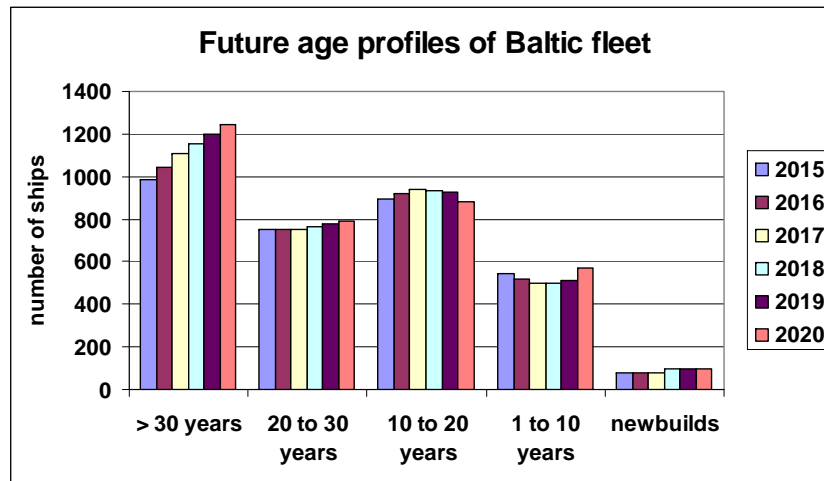
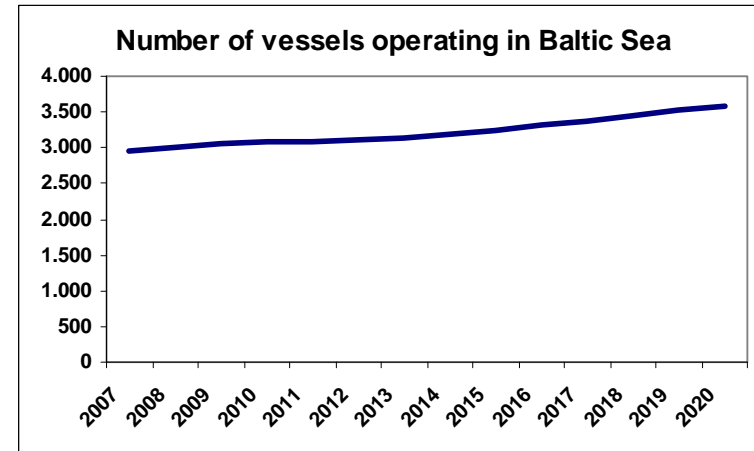
Fleet projection

The fleet model follows a pre-set growth.

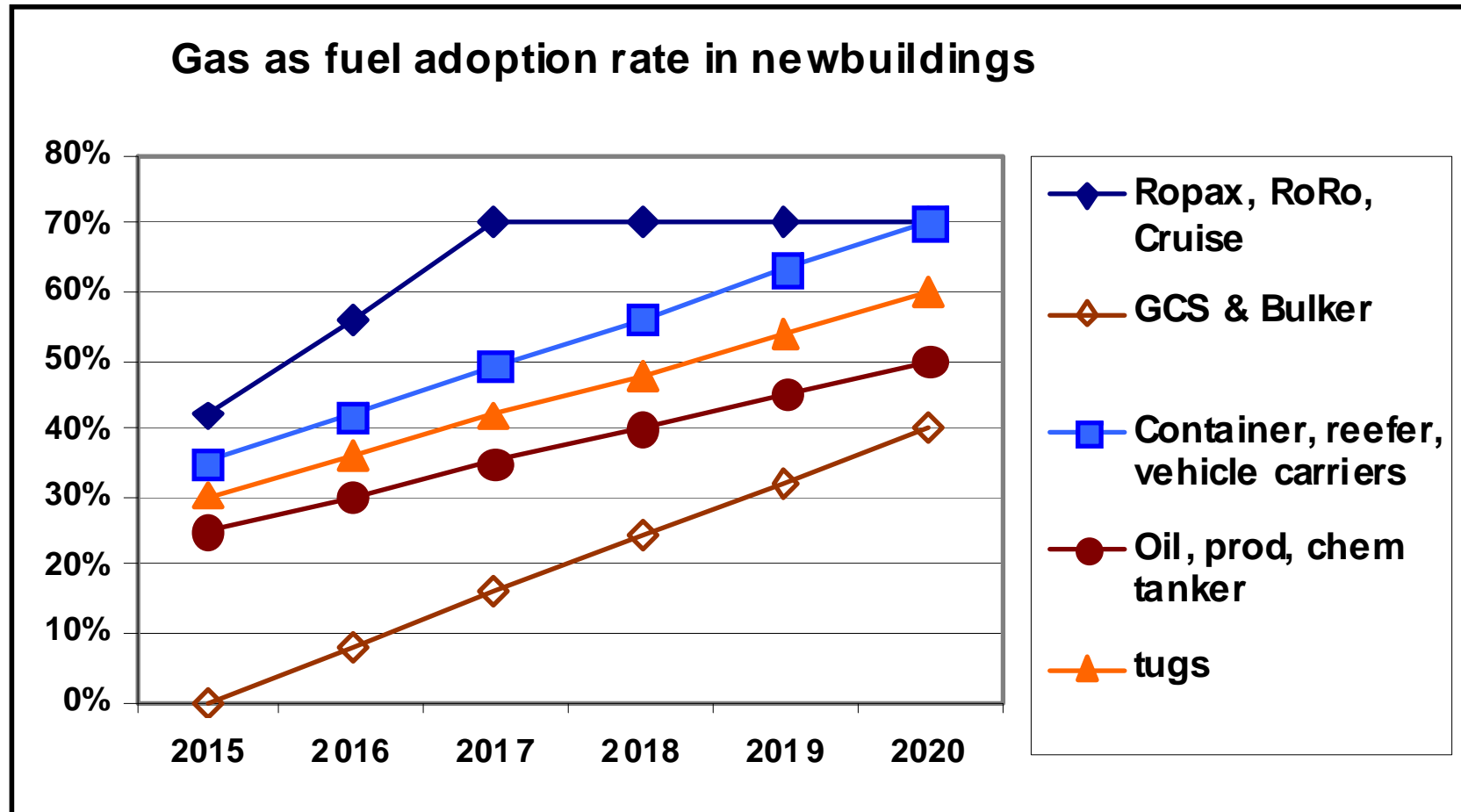
We focus on newbuildings as candidates for using LNG as ship fuel.

Three scenarios were considered which differ in the phase-out and replacement levels.

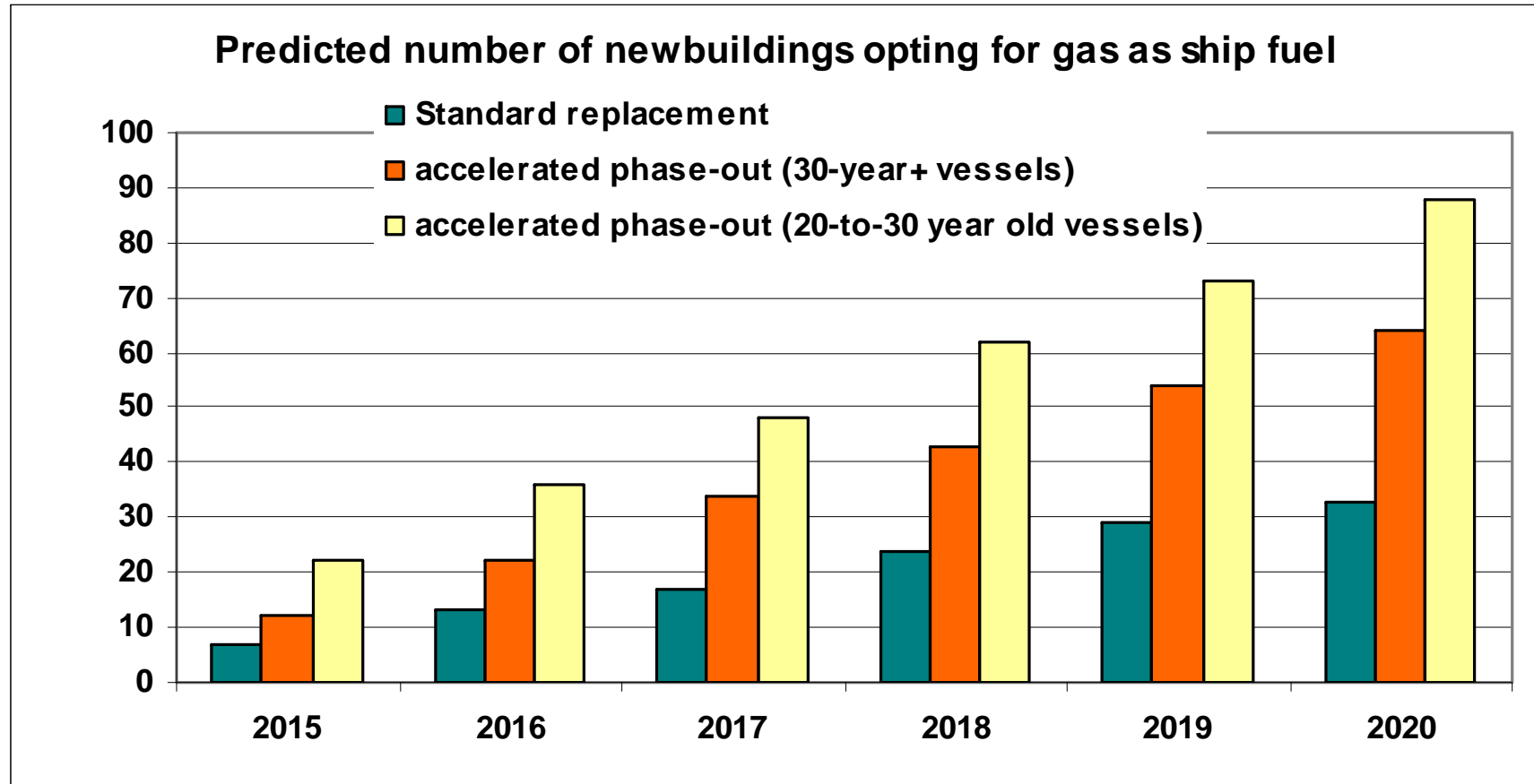
Accelerated phase-out assumes that ECAs will trigger more newbuildings.



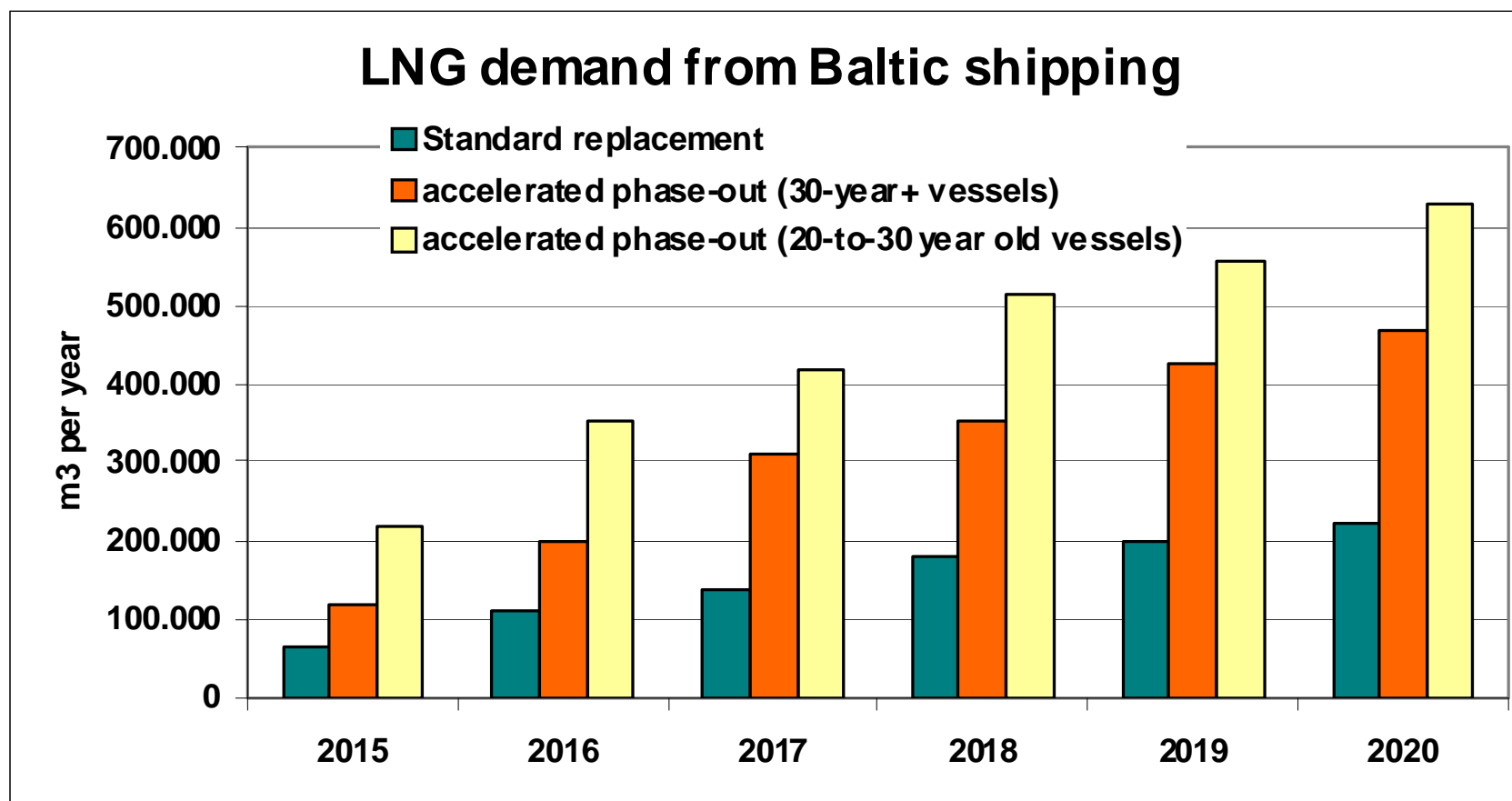
Technology uptake for gas as ship fuel



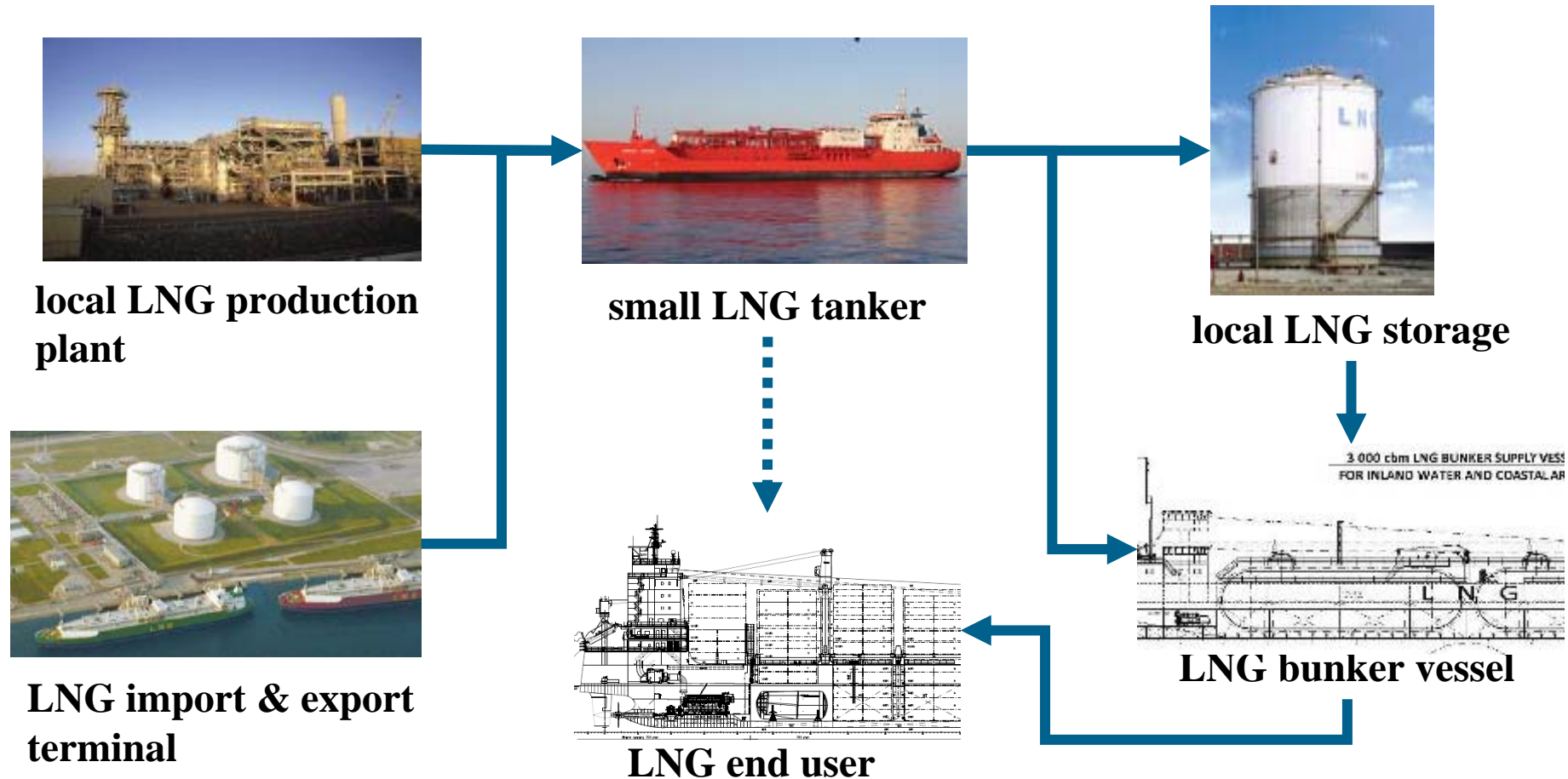
Number of newbuildings predicted to use gas



LNG demand 2015 to 2020



The LNG supply chain – flexible, mobile and ship-based



Conclusions

The motivation to consider using gas as ship fuel has become stronger.

LNG as ship fuel demand in the Baltic Sea was estimated using available data and expert judgement.

Three scenarios with different phase-out, replacement and newbuilding levels were considered.

Demand is expected to be between 100.000 m³ (in 2015) and up to 600.000 m³ (in 2020).

GL Strategic Research continue developing new technologies together with our clients.

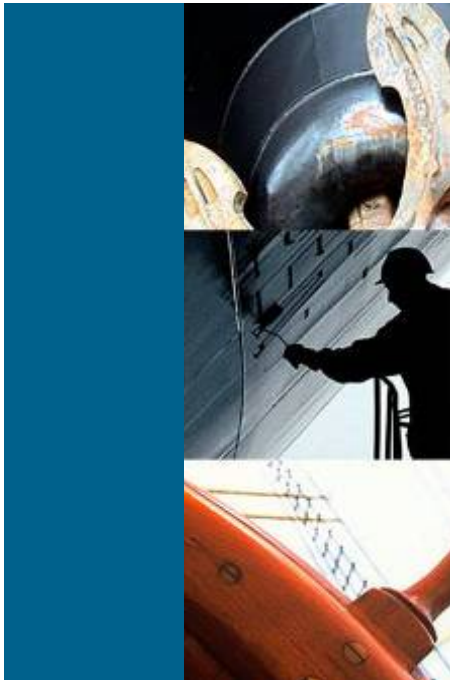


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Thank you for your kind attention.

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