

LNG – issues to be considered by Harbour Masters

7th EHMC Seminar

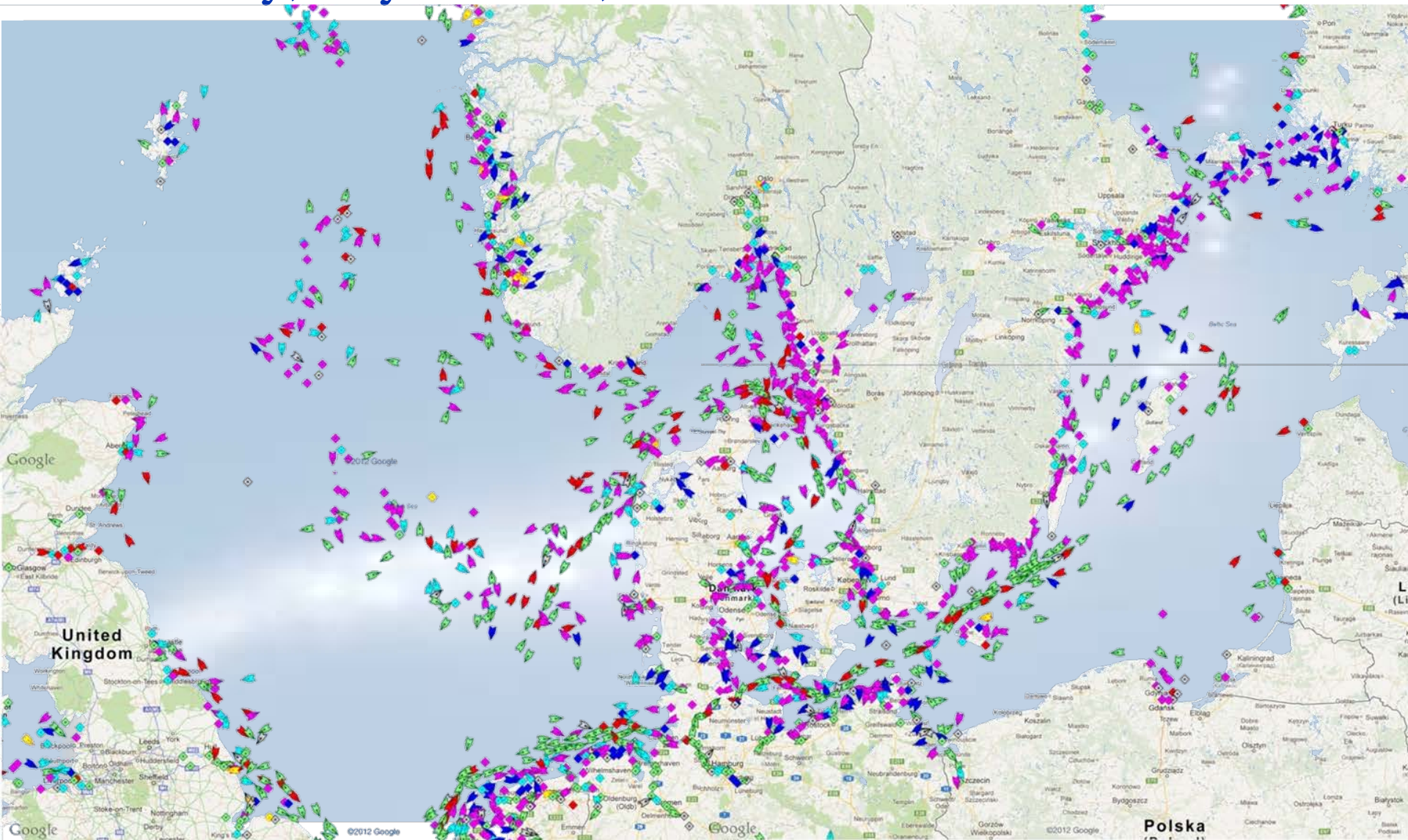
Jan Tellkamp <jan.tellkamp@dnv.com>
Bremen, April 17



MANAGING RISK

- The market trends perspective
- The safety perspective
- Conclusions for harbour masters

Wednesday, July 14 2012, 14:40h UTC



LNG – issues to be considered by Harbour Masters

Bremen, April 17

© Det Norske Veritas AS. All rights reserved.

Two most important drivers...



Geo-politics



Demographic
development



Economic
development



Environmental
response



Technology
development



Energy
availability

... define four scenarios



LOW ECONOMIC GROWTH

STRONG ENV RESPONSE



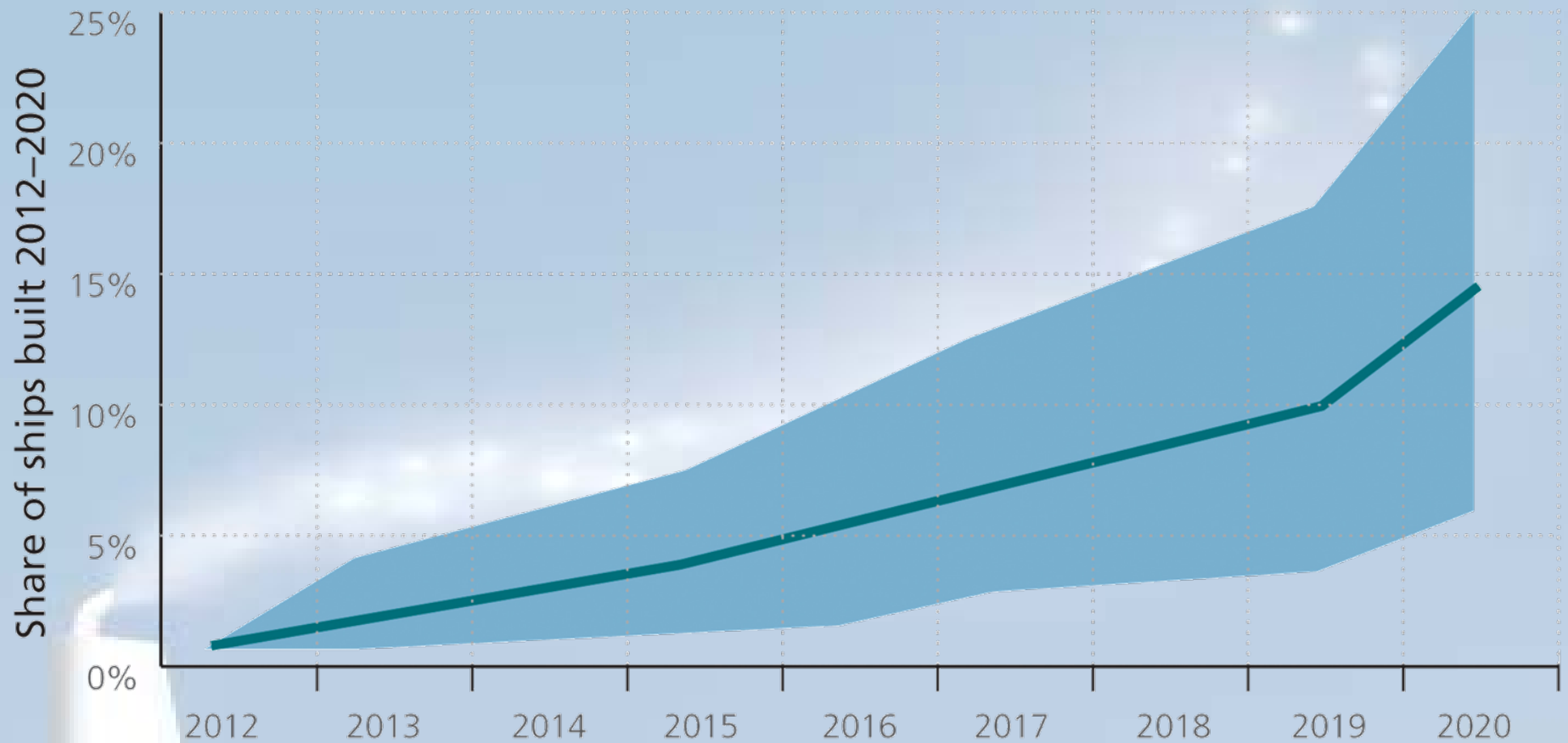
HIGH ECONOMIC GROWTH



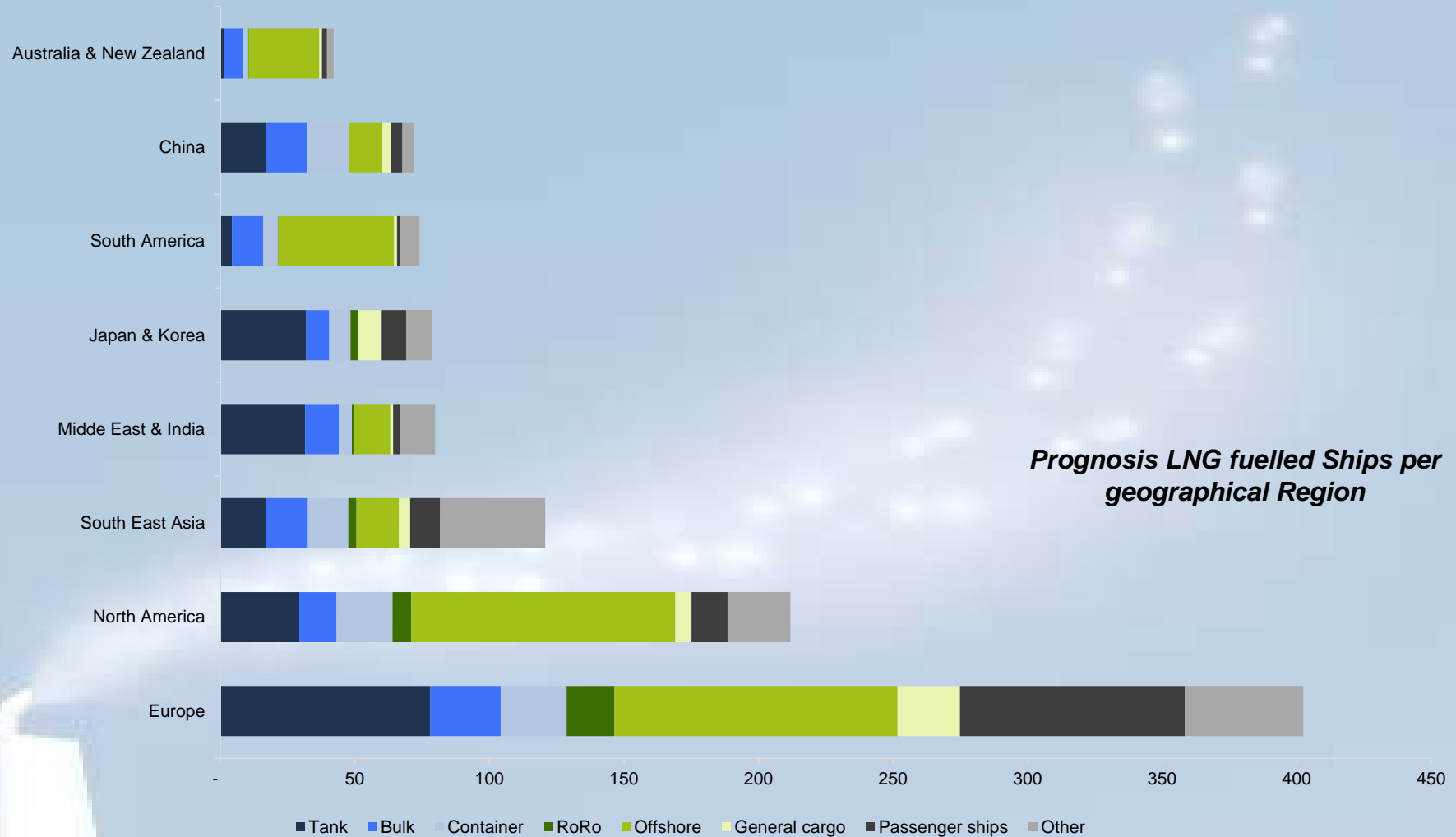
LIMITED ENV RESPONSE



Prognosis LNG fuelled fleet, global

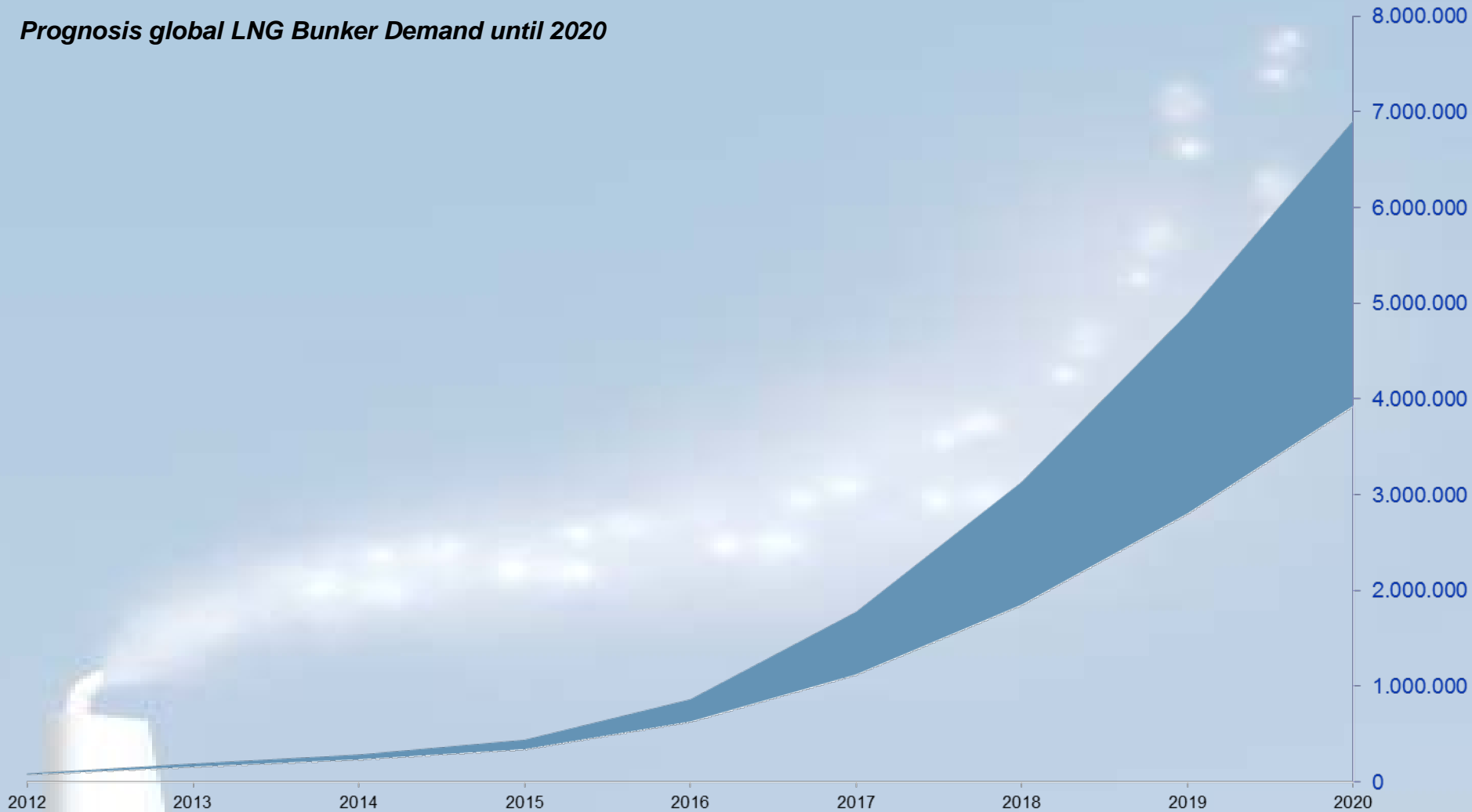


2020 – 1.000 Ships on LNG

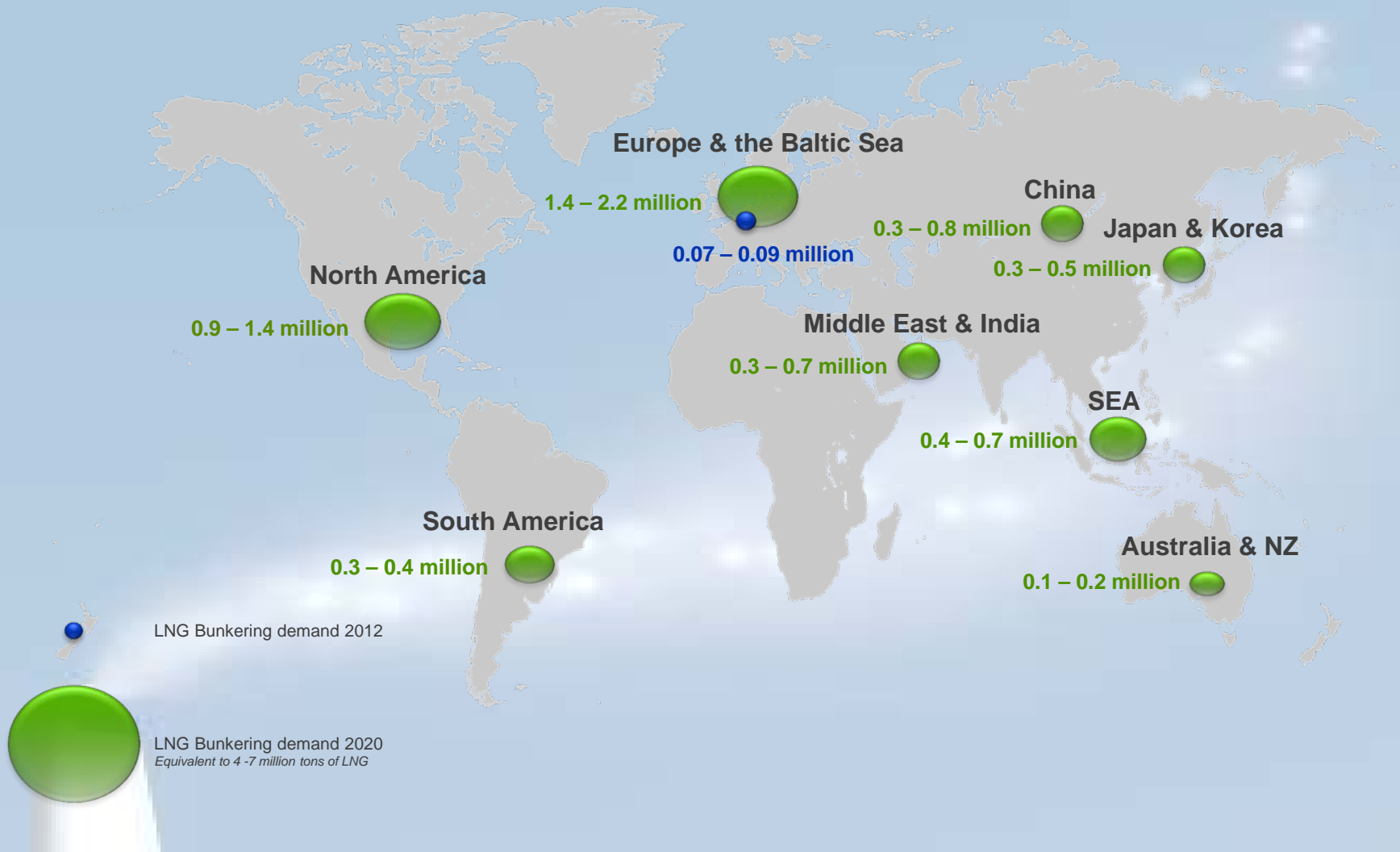


2020 – 1.000 Ships on LNG

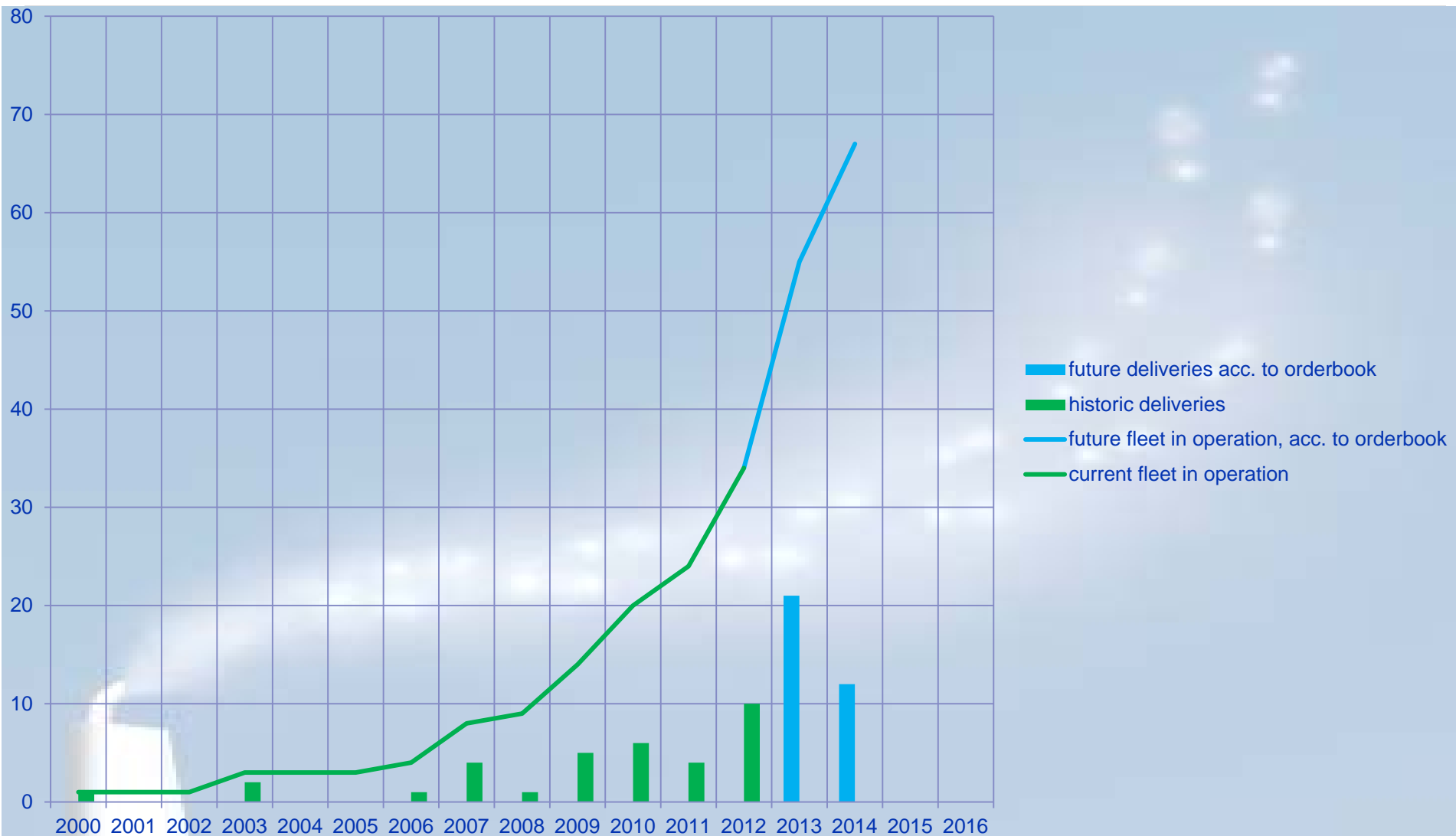
Prognosis global LNG Bunker Demand until 2020



Outlook – global LNG bunker demand by 2020



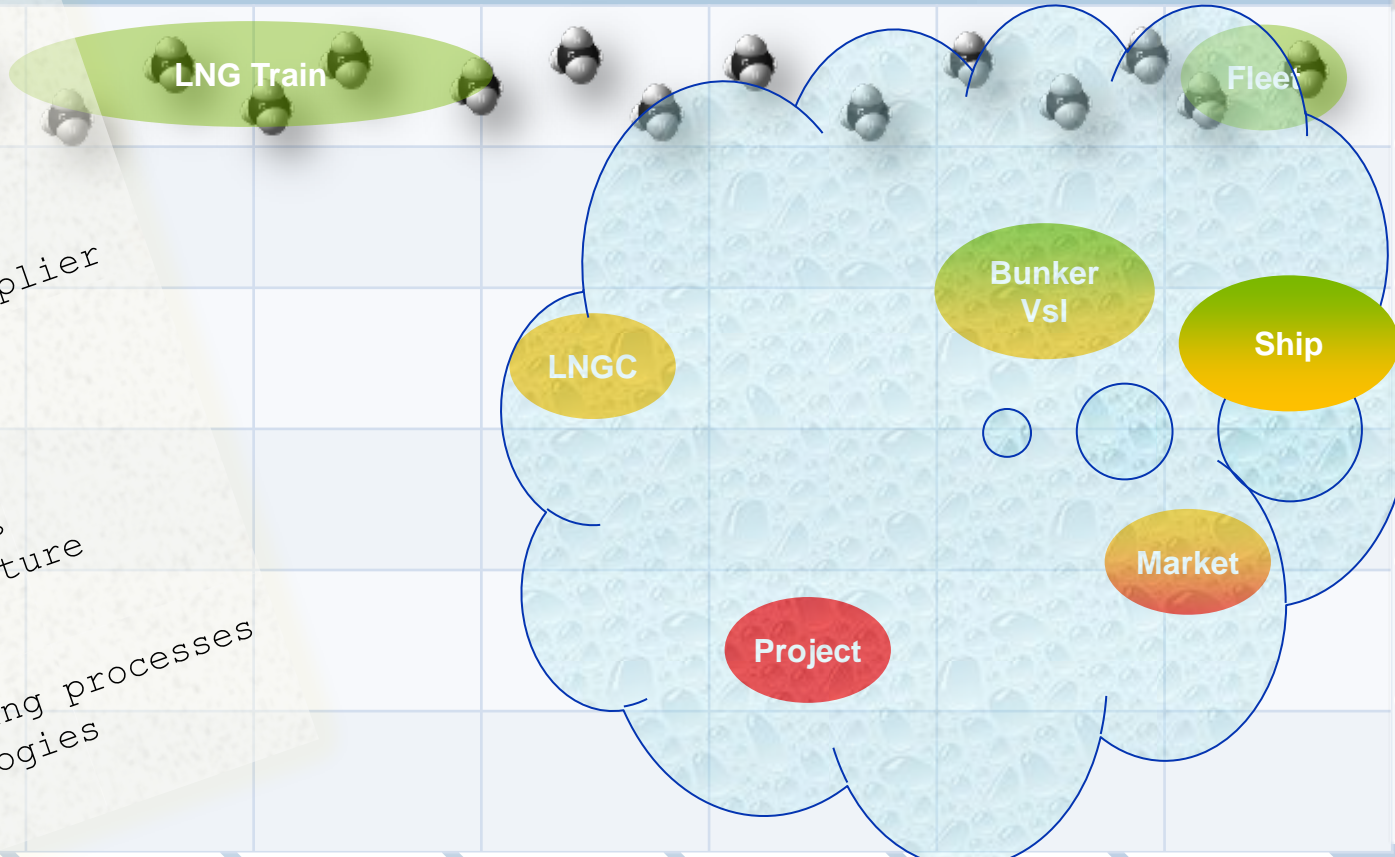
2013 – 55 Ships on LNG (year end)



The LNG train is moving

- Perspectives & roles**
- Policy maker
 - Governments
 - Port authorities
 - Ship owner
 - Ship operator
 - LNG bunker supplier
 - O&G Majors
 - ...

- Developements**
- Regulations
 - Infrastructure
 - Business
 - Port
 - Permitting processes
 - Technologies
 - ...



Wellhead

Production

Liquefaction

Large scale
storage &
distribution

Intermediate
distribution

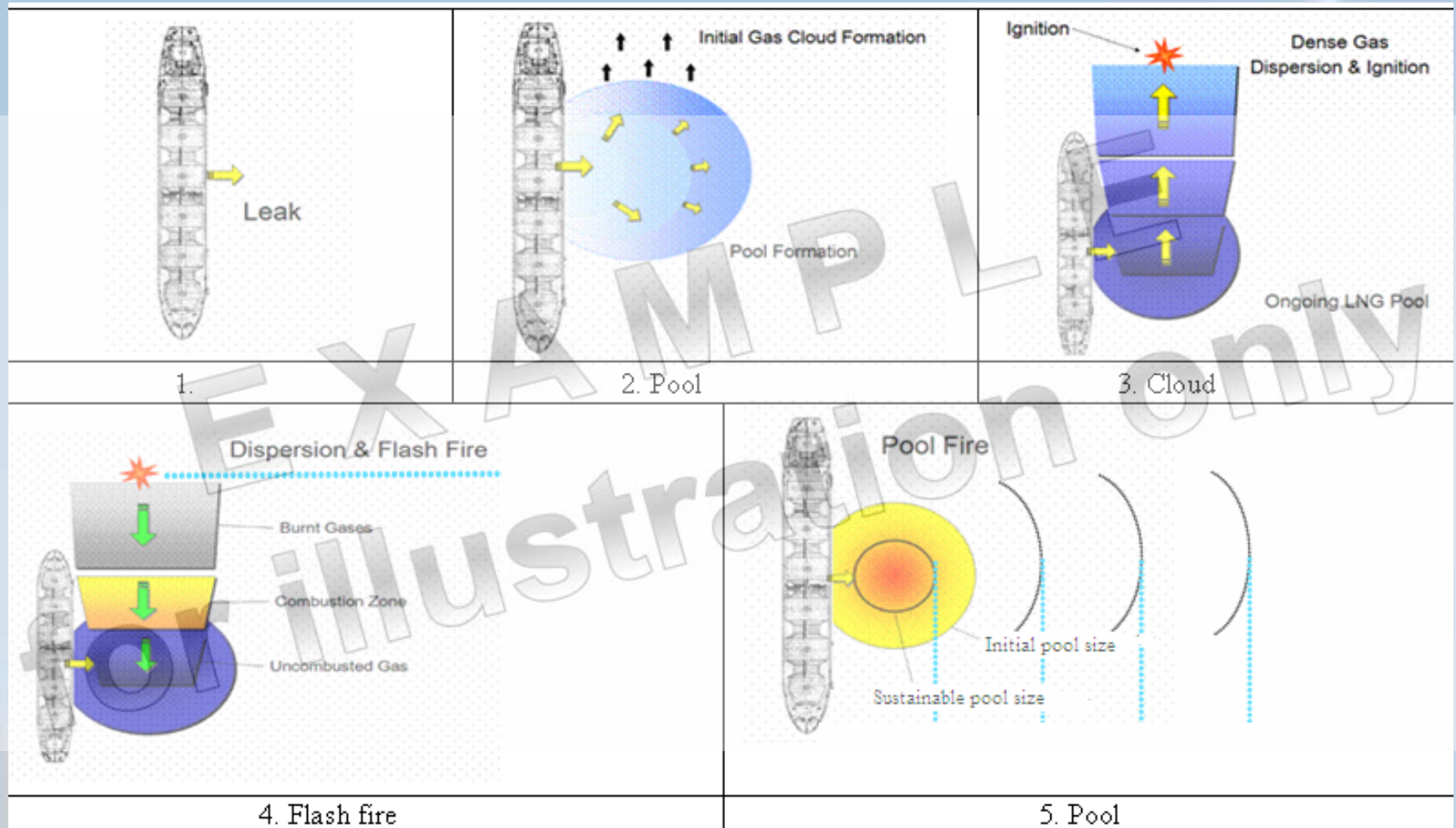
Intermediate
storage

Bunker /
Break Bulk

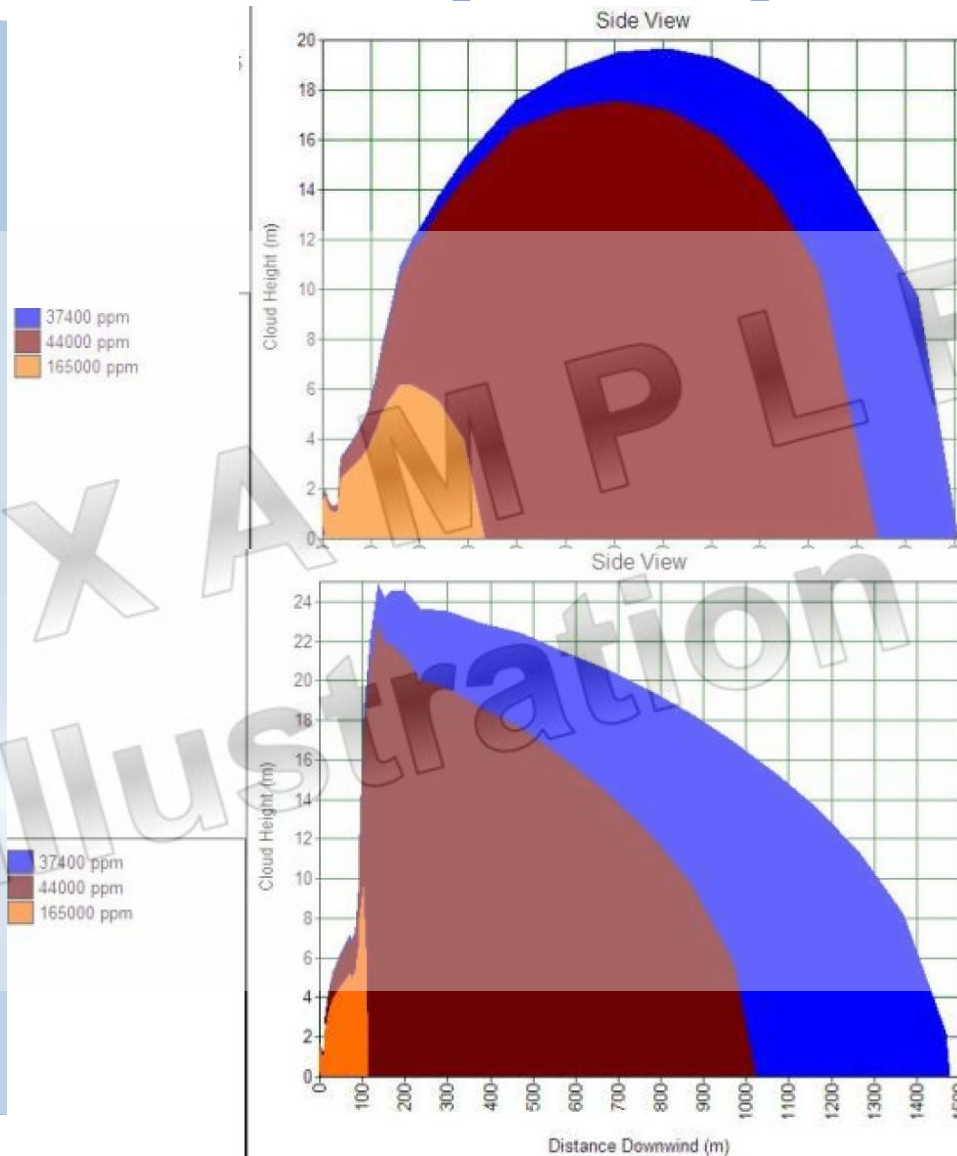
Marine fuel /
other
markets



What – If?

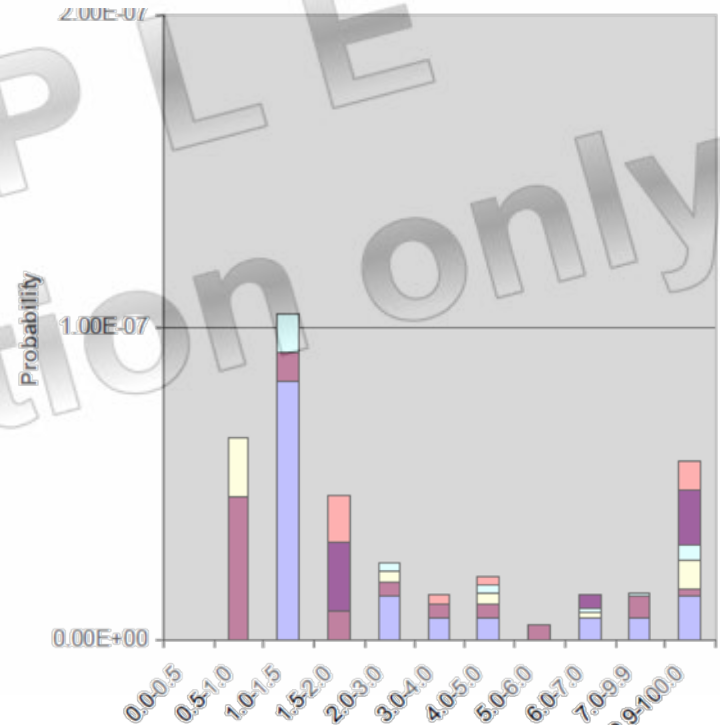
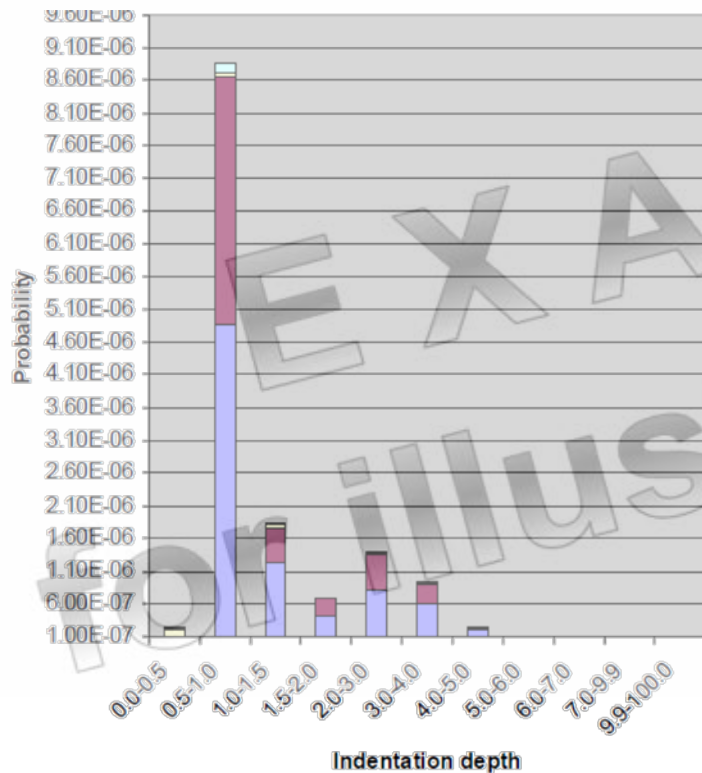


Loss of containment – consequence dispersion

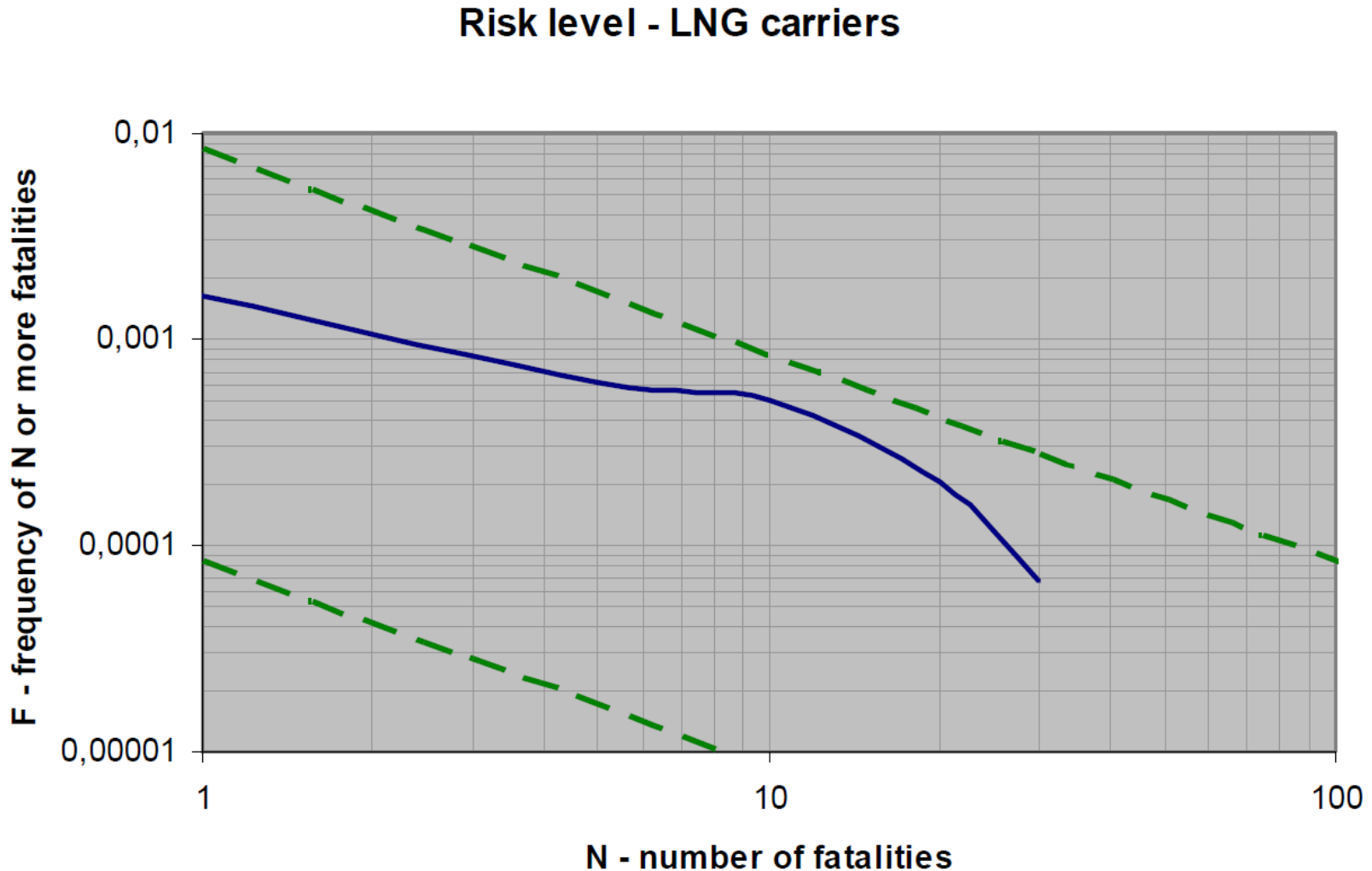


Penetration of LNG Carrier - probability

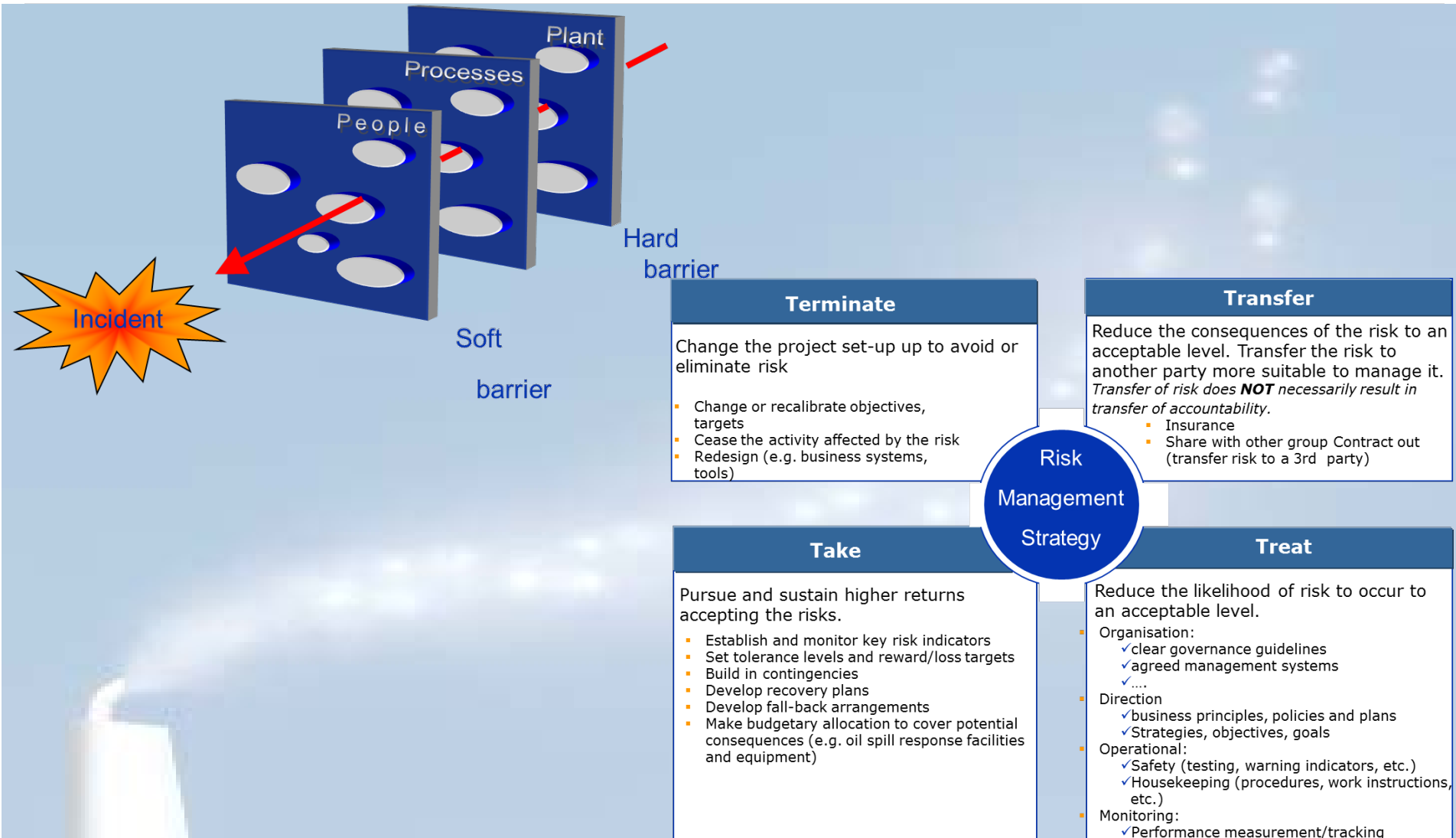
- LNG spills may occur if LNGC is indented ≥ 3 meter
- Probability for indentation ≥ 3 meter is smaller than $5E-8$ per year \rightarrow negligible risk



Group risk, example Crew (IMO MSC 83/21/1, societal risk)



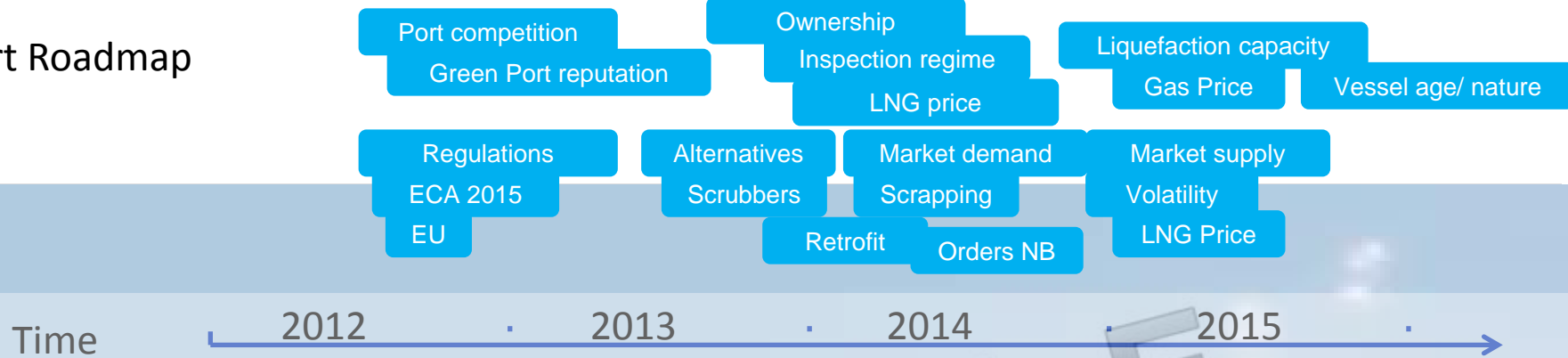
effective risk management strategies



Port Roadmap

Why

What



Logistical models for value chain

infrastructure
finance

...

Which logistical model fits best?

Regulatory Framework

Roles responsibilities
Permitting

...

Standardisation

Which regulatory framework should we develop & operate?

Public Engagement

Political aspects

...

What & how should we communicate & engage public?

Organisational Framework

competences

...

What & How should we organise our processes and capabilities ?

How Todo

Safeguarding life, property and the environment

www.dnv.com



MANAGING RISK