SMALL SCALE LNG INFRASTRUCTURE SOLUTIONS

2015 is closing in – is LNG still in the pipeline for Danish stakeholders?

Danske Havne

TRANSPORTENS INNOVATIONSNETVÆRK

ESPO

LNG Projects in Denmark

5 ports:

Port of Skagen

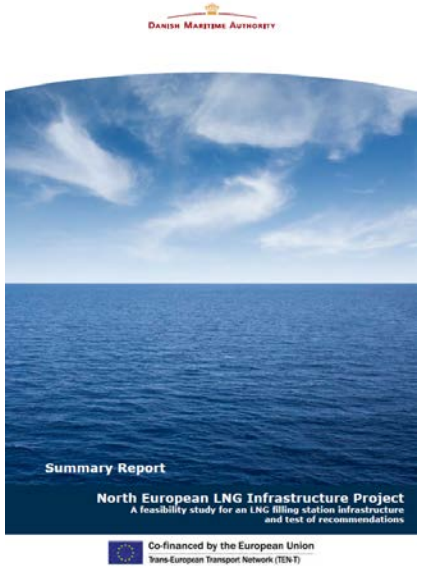
Port of Hirtshals

Port of Aarhus

Samsø Island ferry

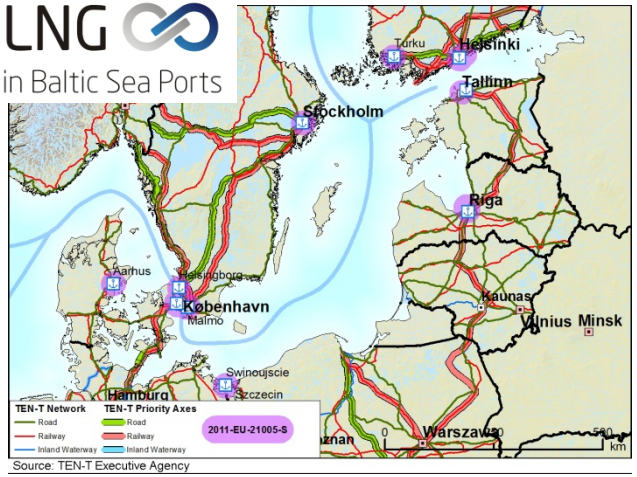
Copenhagen Malmö Port

Projects



May 2012
National project with
EU funding on the need
for LNG infrastructure

Denmark's first LNG fuelled
Domestic ferry
October 2014



TEN-T project 2010 – Dec 2014
Ports in Copenhagen-Malmö,
Helsingborg, Stockholm,
Helsinki, Turku and Tallinn
Feasibility studies are finalised.
Next step: Operators

SKAGEN HAVN

LNG bunkering for
cruise vessels April 2015

May 2013 LNG ferry
Bunkering in Norway

Hirtshals Havn
PORT OF HIRTSHALS

Why LNG?

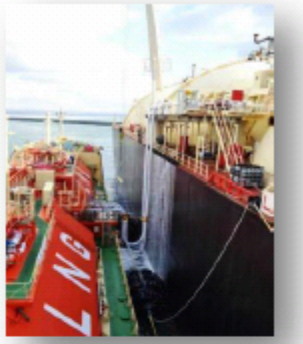
- New regulations:
  - SOx, 0.1% by 2015, 0.5% globally by 2020
  - NOx, Tier III limitations for all ships built after January 2016
  - CO2 emissions
  - European S-Directive
  - Proposal for Directive Clean Power for Transport

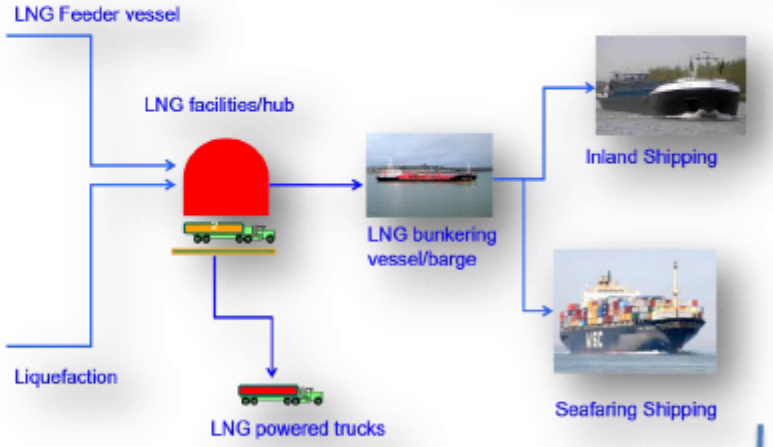
- LNG as a ship fuel would comply with all new regulations
  - NOx: 85-90%
  - SOx: 100%
  - Soot/particles: 100%
  - CO2 reduction (20-25%)
- Proven technology
  - Approx. 30 LNG fuelled vessels in operation
  - Boil-off used on LNG carriers

LNG appears to be the most complete medium term viable solution

Main Challenges for LNG

- Safety concerns
  - On-board vessels and in relation to port operations
- LNG bunkering
  - Port regulations and impact on operations
- Infrastructure
  - Development of supply chain
  - Chicken-and-egg cycle
- Vessel application
  - Added costs for a new build
- LNG price





What can be done by ports?

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IAPH • PORT ENVIRONMENT COMMITTEE
WPCI

World Ports Climate Initiative

IAPH International Association of Ports and Harbors

WPCI LNG Fuelled Vessels Working Group

2013				2014			
Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4

SWG 1: Draft bunker checklists

SWG 1: Draft accreditation guideline

Industry reference group meeting 8th of October in Antwerp

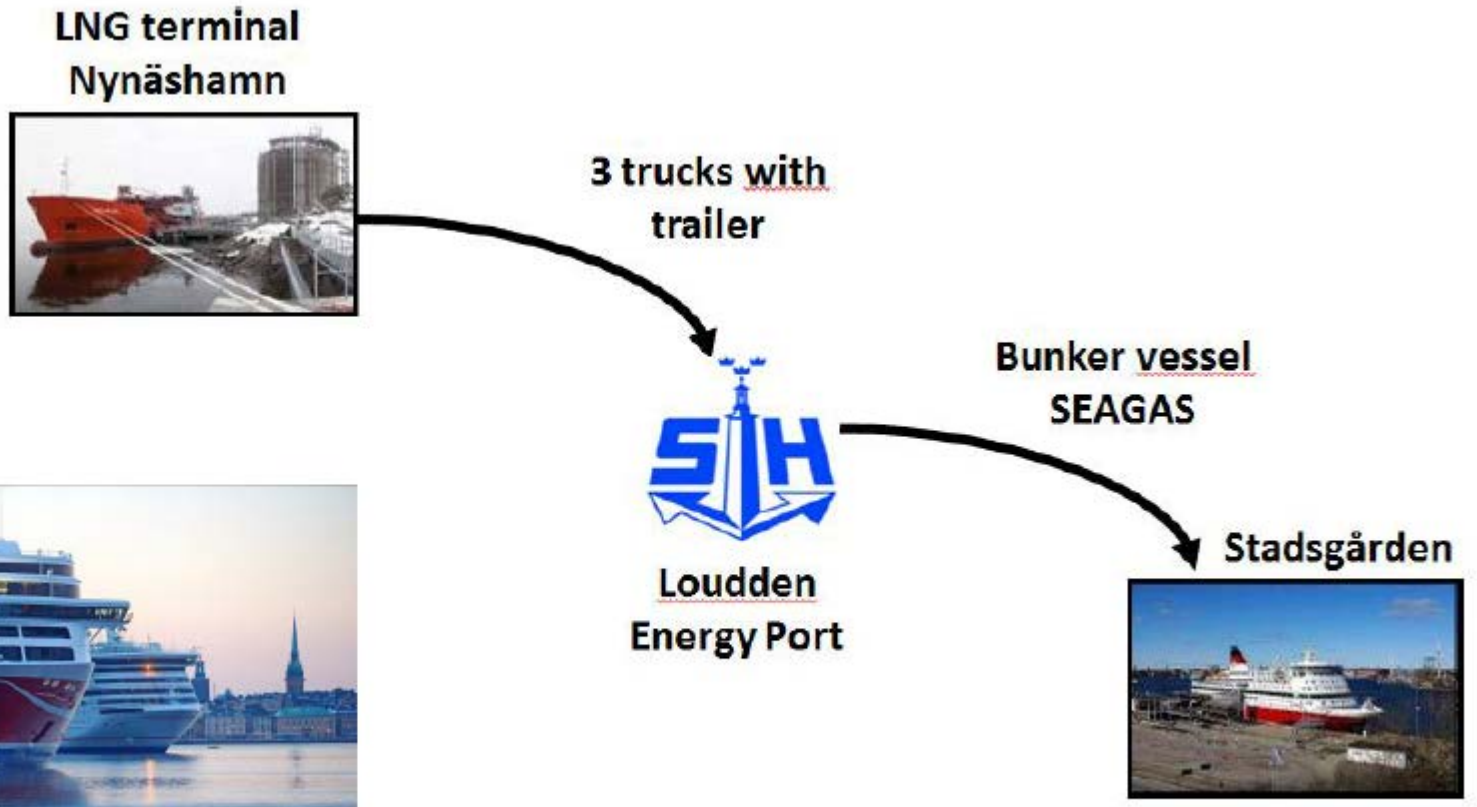
SWG 3: Launching LNG website

SWG 2: Report LNG risk perimeters

IMO 0,1% Sulfur Regulation within SECA

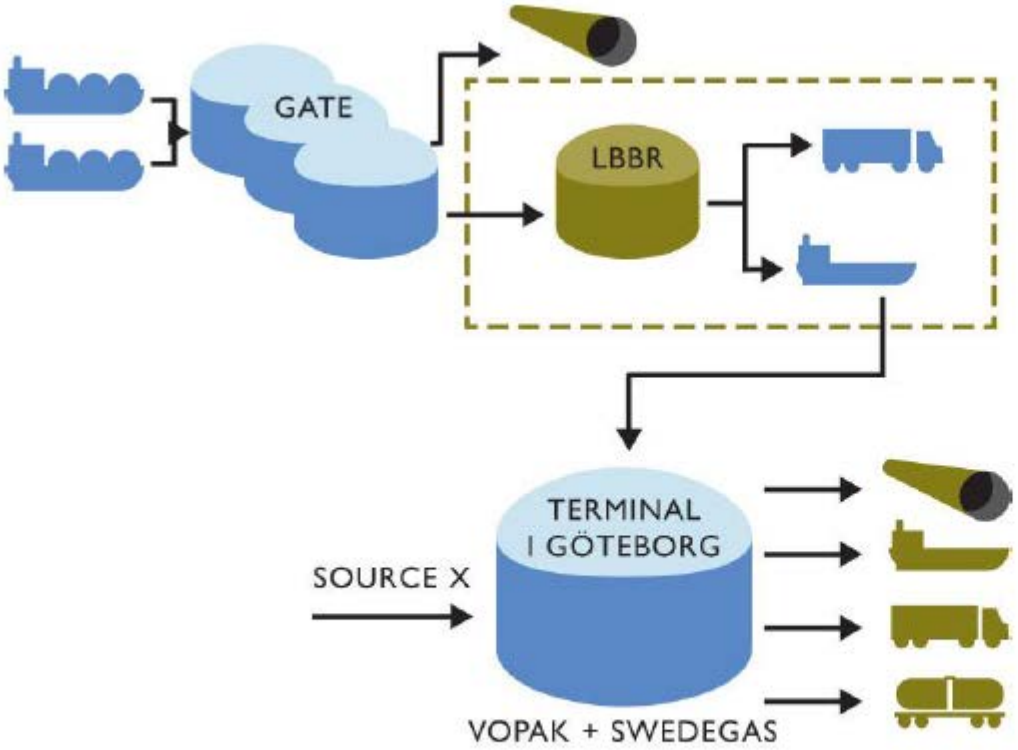
Stockholm-Turku

Viking Grace – daily service from Stockholm to Turku - Daily bunkering in Stockholm



Gothenburg

New LNG terminal – production, storage, ship bunkering, truck loading rail loading and regasification (injection to national grid)



★ Construction 2014

I SAMARBETE MED

Rotterdam

- LNG carrier/bunker vessel = normal tanker carrying dangerous goods
- LNG fuelled ship = normal ship, no extra port regulations

- Shore- to- Ship bunkering: 1st July 2013
- Ship-to Ship bunkering: 2014

Gate terminal:

- 2013: Export facility

Breakbulk terminal:

- 2014: Start up truckfilling station
- 2015: Start-up LNG BB terminal

Bunkering Seinehaven:

- 2011: Argonon: 1st inland vessel on LNG
- 2013: Greenstream: 1st single fuel vessel

LNG small scale infrastructure:

- 2014: Commercial LNG Bunker station for inland vessels
- 2014: 3 LNG tankstations for trucks

- **Ambition:**
  - 2015: LNG bunkerbarge operational in Rotterdam

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LNG Chain: Rotterdam-Gothenburg

- Market catalyst, small scale distribution chain
- Preparations ongoing, total budget €184 mln
- Submitted to MoS TEN-T 2012-2015
- Operational 2015, 2017

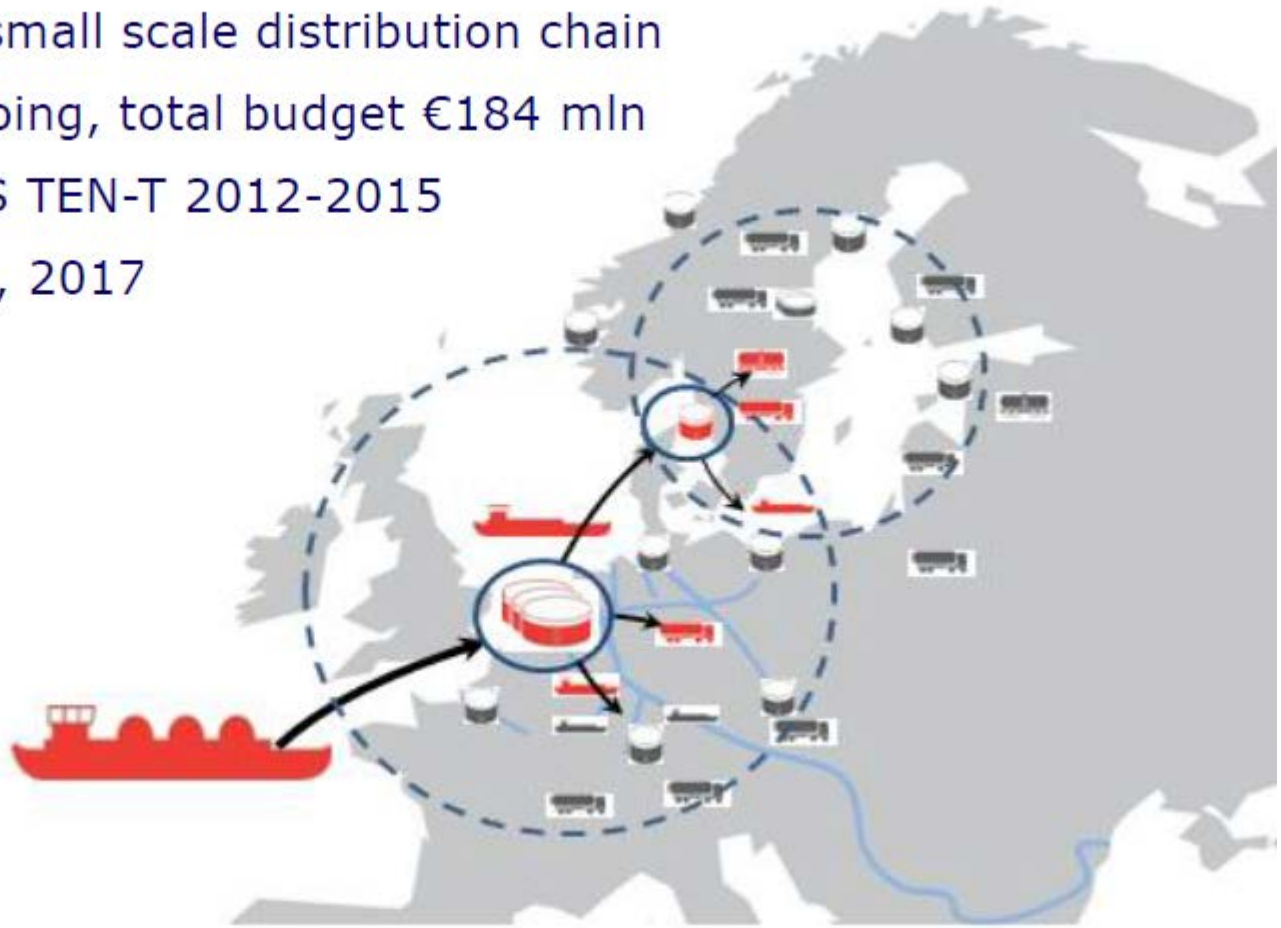
LNG Break Bulk Gate terminal Rotterdam

Vopak

Port of Rotterdam

GÖTEBORGS HAMN

swede gas



Similar projects

Port of Zeebrugge and Port of Antwerp:

- LNG procedures
- LNG supply chains
- LNG security
- Bunker vessels – ship2ship
- Share the risk – port and operators in common investment setup

Hamburg

- Ongoing assessments for LNG storage facility, berth for a bunker barge and bunkering locations
- LNG barges for providing electricity to vessels
- LNG trucks (pilot 2013)

Berth´s for Feedership

LNG Storage possible

Possible Service Berth for a Bunker Barge

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Tallinn

Terminal Project

- Full third party access
- Re-gas capacity (regional consumption)
- LNG bunkering, truck loading facilities
- Approval pending (TEN-T Energy), Estonia or Finland
- 2016-2020

Conclusions

- LNG is at the present the most complete medium term viable solution – still not a “silver bullet”
- Several ongoing port projects in North Europe – but still small demand
- Significant remaining challenges – demand and insecurity concerning sulphur rules 2015 and other solutions e.g. scrubber, electricity, dual fuel
- Pressing timetables, complementarity of compliance strategies and solutions
- Ongoing policy initiatives from European Commission
- An opportunity for South European ports too??

Thank you for your attention

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