

Gas outlook in Finland: where are the markets going?

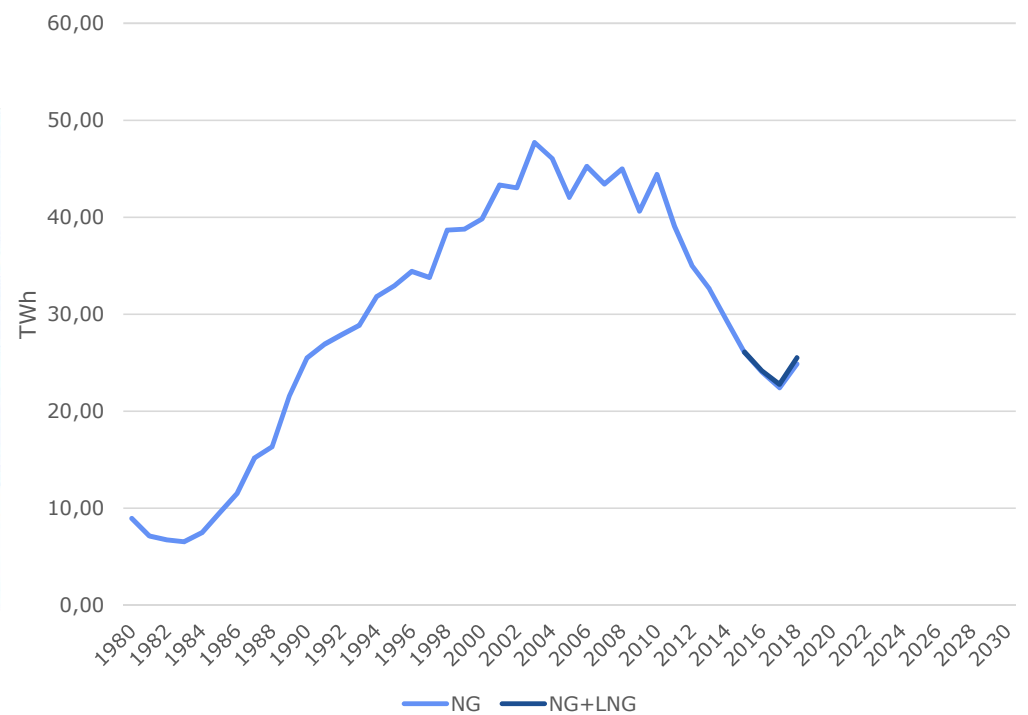
Vaasa Energy Week 2019
Jouni Haikarainen

Gasum

Natural gas delivered to Finland since 1974



Natural Gas Consumption in Finland 1980-2018



2020'S MARKET IS GROWING OUTSIDE TRANSMISSION GRID

Maritime transport

The Baltic Sea Sulphur Directive (2015) will increase the number of LNG-propelled vessels.

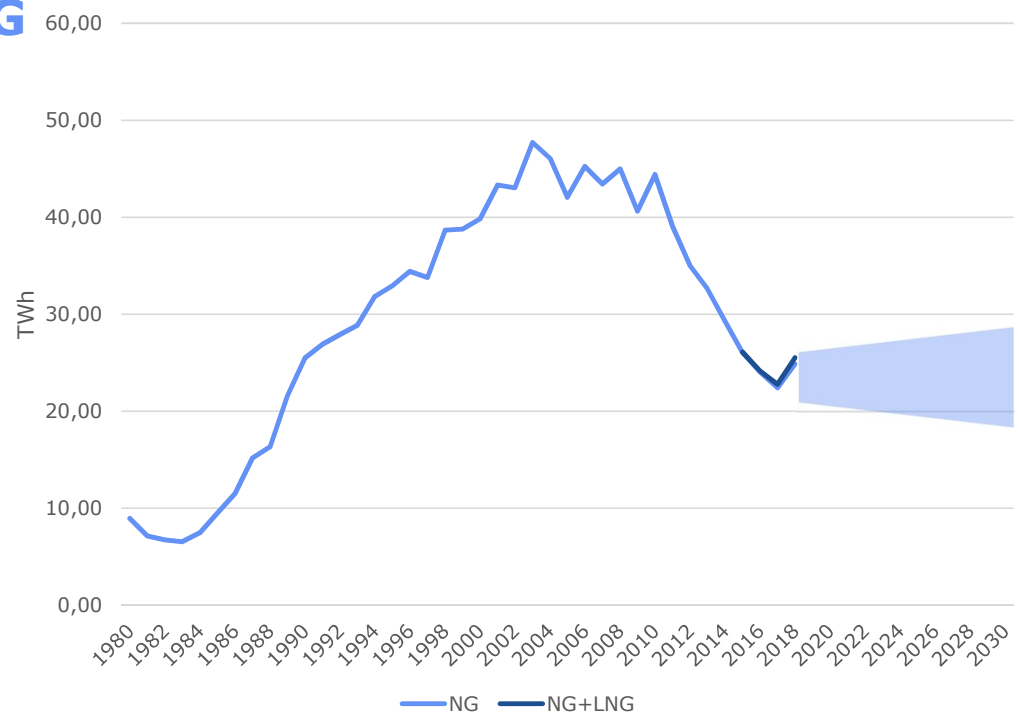
Industrial use

LNG will replace oil and liquid petroleum gas in industrial use.

Road transport

LNG in heavy road transport and as compressed natural gas (CNG) in passenger transport.

Natural Gas Consumption in Finland
1980-2018, & Outlook 2030 (Gasum)





**LNG – CLEAN ENERGY SOLUTION
NOW AND IN THE FUTURE**



INDUSTRIAL USE



ROAD TRANSPORTATION

LNG GROWTH FORECAST IN NORDIC HDV | INCREMENTAL GROWTH BY 2030 PROJECTED IN NORDIC LNG HDV MARKET

Key assumptions

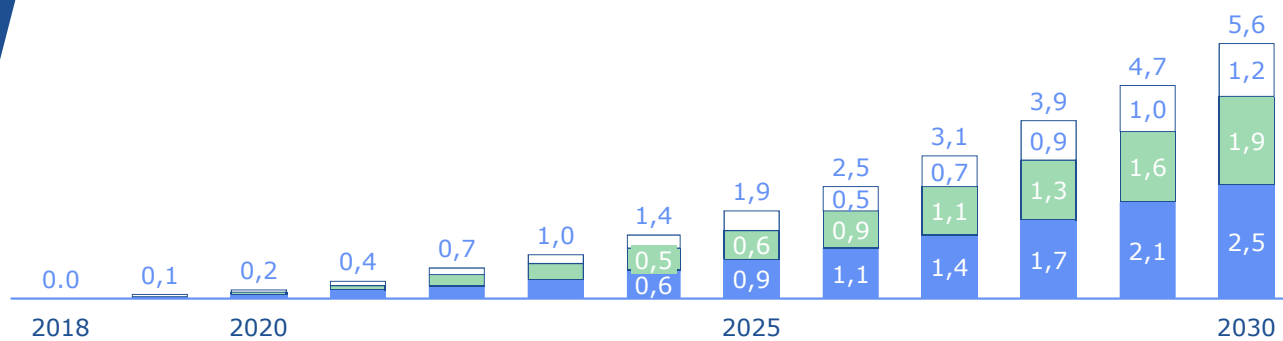
HDV FLEET & LNG TRUCKS

- **HDV definition:** >15T capacity
- **Fleet growth:** based on historical growth
- **Replacement:** Yearly replacement rates kept at constant speed
- **Conversion:** no conversion estimate
- **Regulation:** assumes no change to today
- **LNG share:** 25% of new registrations by 2030

Year-by-year development of Nordic LNG fuelled HDV market

TWh per country

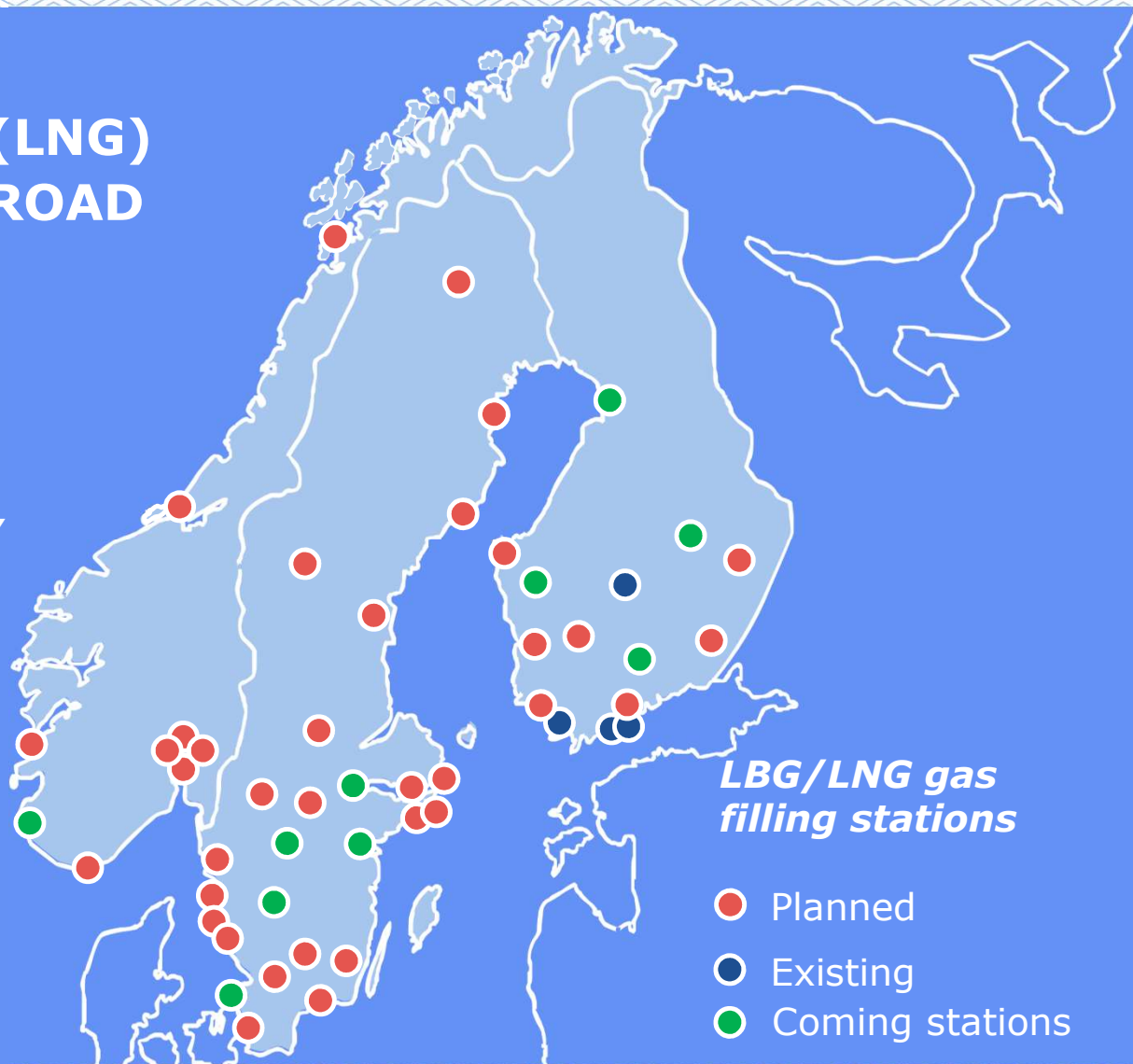
Finland Norway Sweden



Source: Gasum

GASUM'S HEAVY-DUTY (LNG) GAS FILLING STATION ROAD MAP

*Gasum's Market Entry phase
includes around 50 new
LNG/LBG filling stations in
Finland, Sweden and Norway
during 2018-2020*

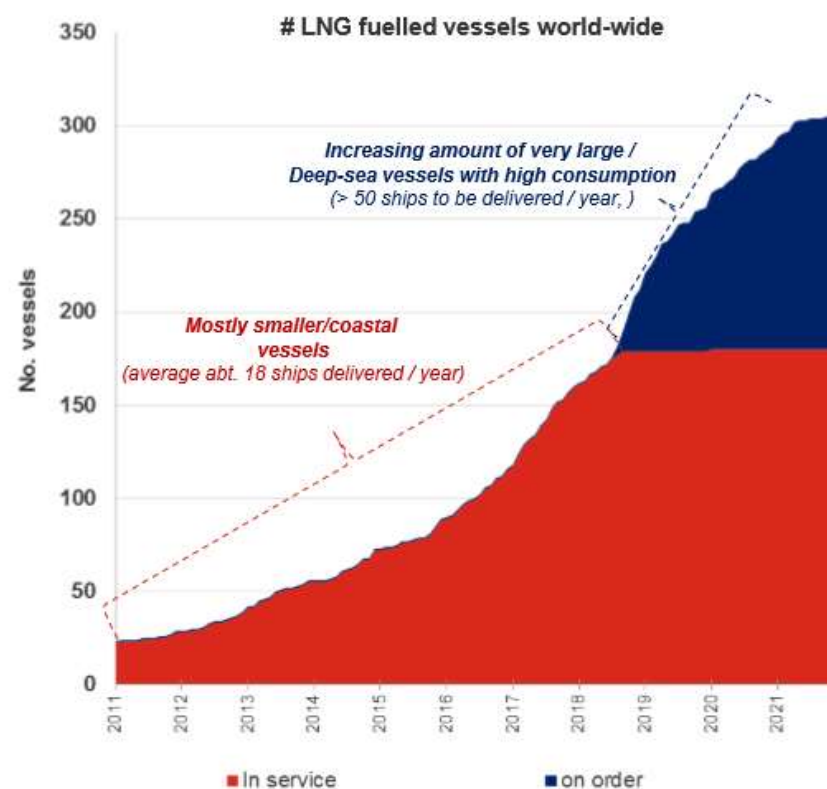
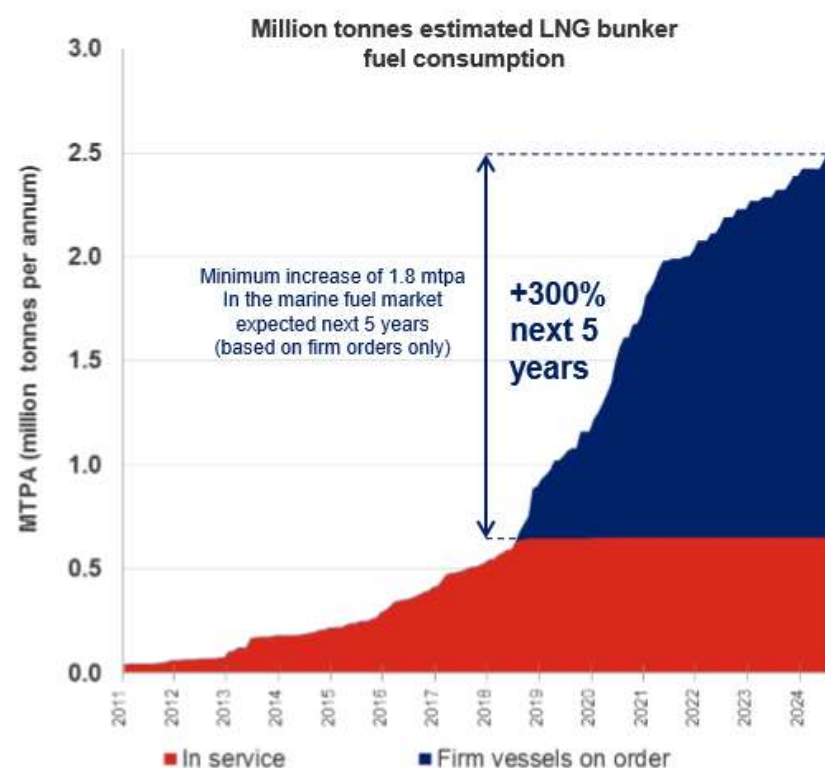




MARITIME TRANSPORT

The world is facing a steep increase in the market for LNG bunkering

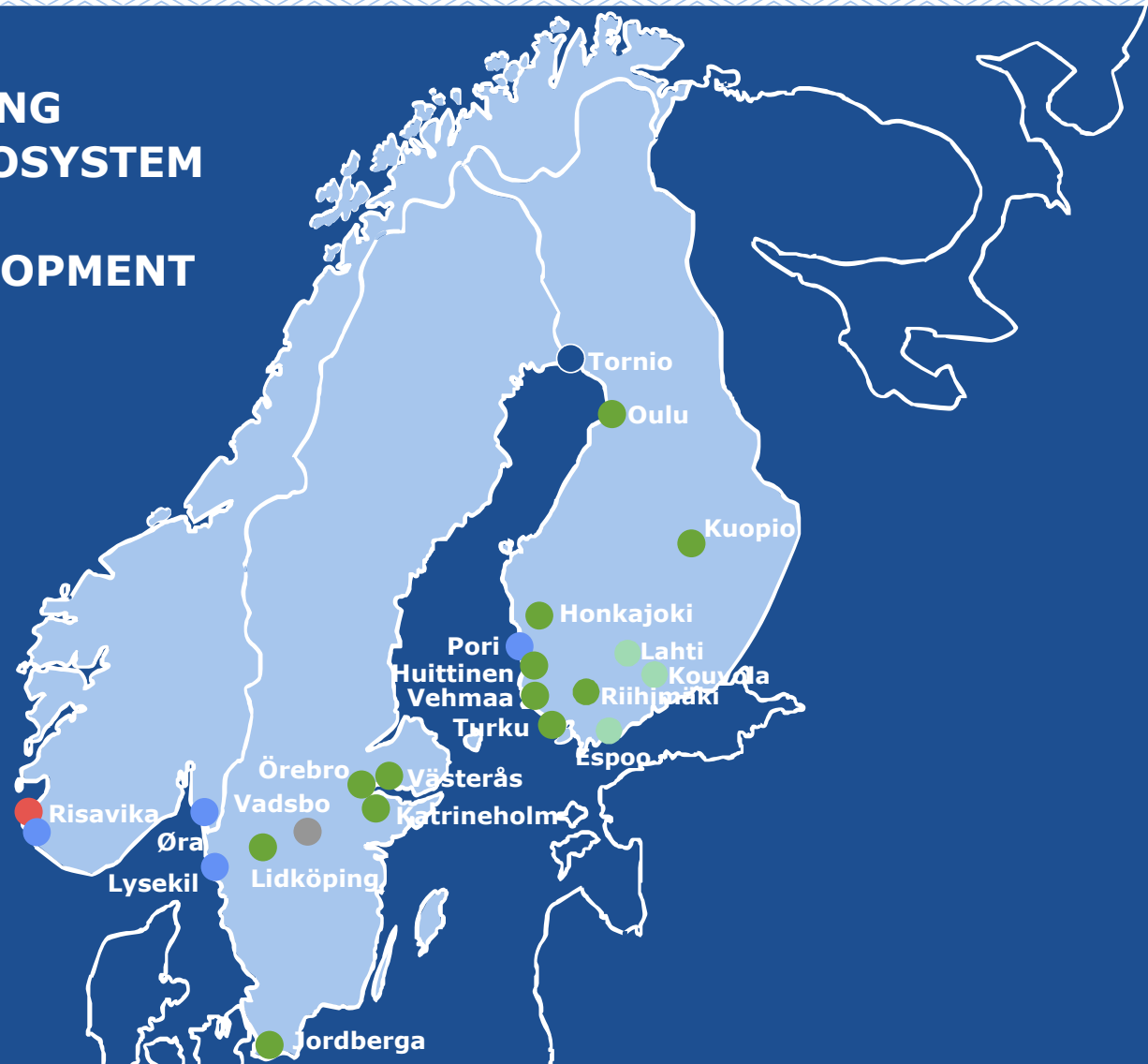
-LNG bunker consumption of the world fleet (all sizes, excluding large-size LNGC's), firm orders only



Source: Clarksons Platou

GASUM IS DEVELOPING THE NORDIC GAS ECOSYSTEM AND PROMOTING SUSTAINABLE DEVELOPMENT

- LNG production plant
- LNG terminal
- LNG terminal (joint project)
- Gasum, biogas
- Gasum, biowaste and biogas
- Biogas production plant (joint project)



BIOGAS PRODUCTION IN FINLAND AND IN SWEDEN IN 2019

Biogas plants	12 plants
Partnership plants	3 plants
Biogas production	650 GWh/a
Waste treatment capacity	Approximately 900,000 tn/a
Organic fertilizers production	Approximately 900,000 tn/a



Gasum



THANK YOU!

Jouni Haikarainen | 040 709 5690
jouni.haikarainen@gasum.com