Expert Workshop

LNG Innovation Projects

- Evaluation & Market introduction -

LNG status update

MARIKO

FME POWERED BY DUTCH TECHNOLOGY

GreenShipping Niedersachsen

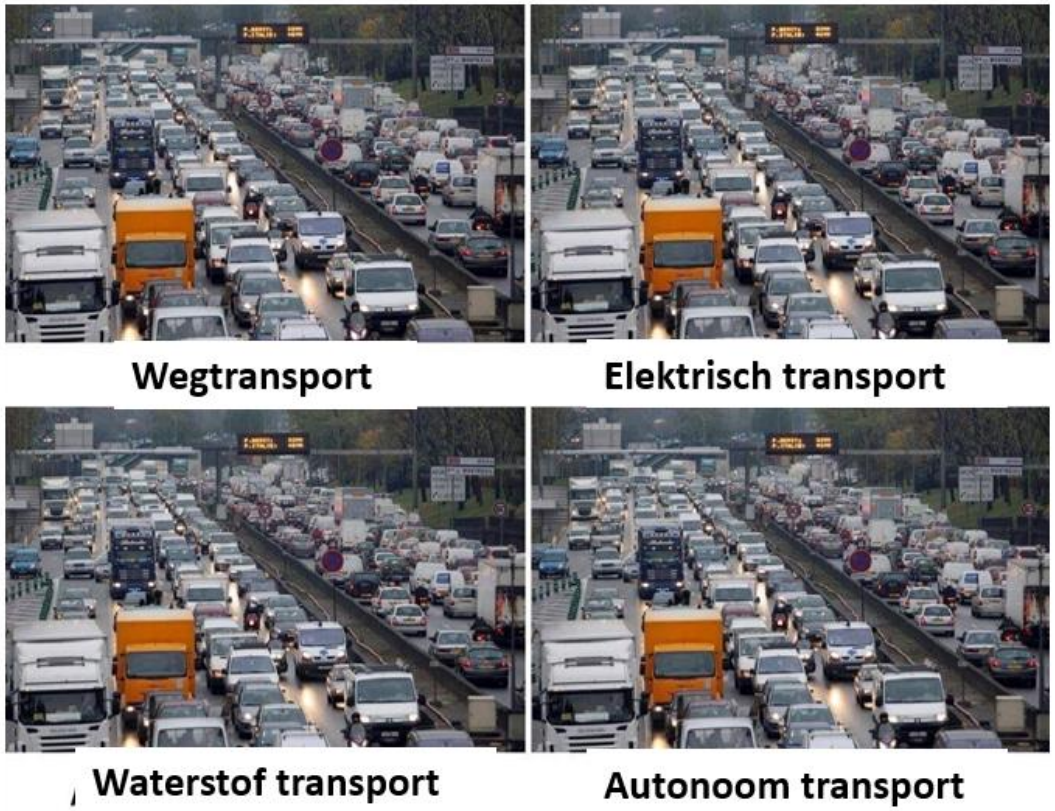
Niedersachsen

Khalid Tachi

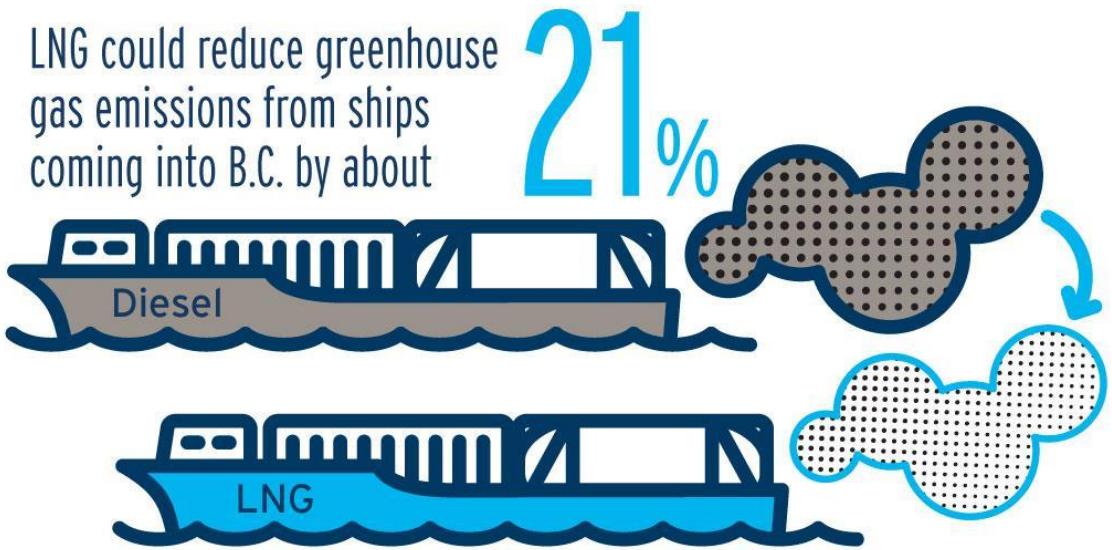
EICB

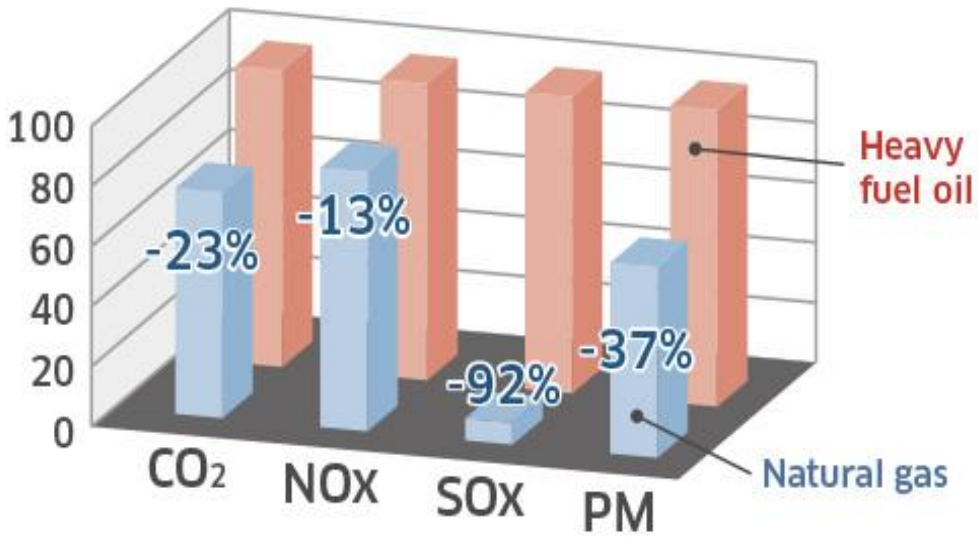
EIBIP
European Inland Barging Innovation Platform

Why Inland Waterway Transport?



Why LNG ?


LNG could reduce greenhouse gas emissions from ships coming into B.C. by about
21%
Diesel
LNG


100
80
60
40
20
0
-23%
-13%
-92%
-37%
CO2
NOx
SOx
PM
Heavy fuel oil
Natural gas

LNG Projects

HORIZON 2020 Cryoshelter Bringing a new LNG-tank technology to industrial readyness

HORIZON 2020 MLU250 The Game Changer Two Stage Micro Liquefaction Unit for (Bio) LNG

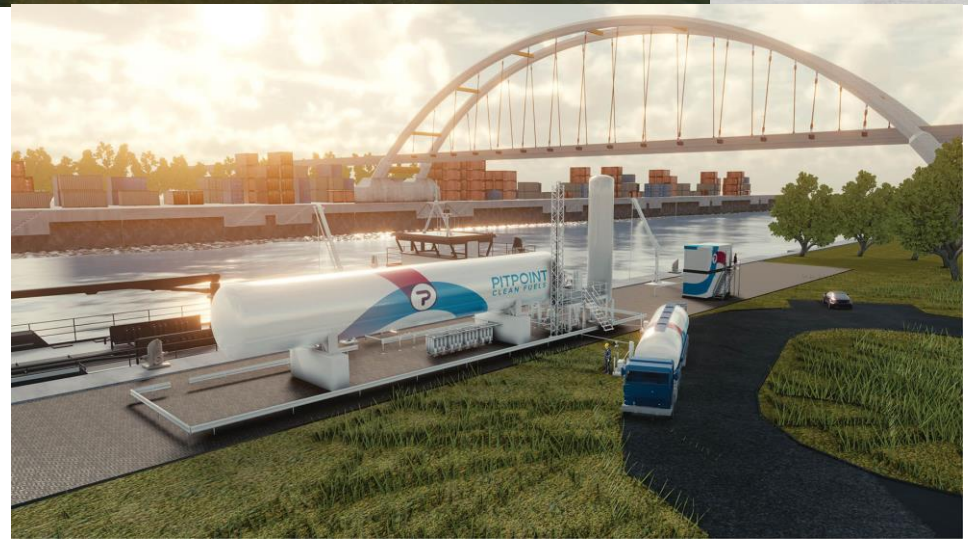
HORIZON 2020 Prominent Promoting Innovation in the Inland Waterways Transport Sector

HORIZON 2020 STOREandGO Innovative large-scale energy STOragE technologies AND Power-to-Gas concepts after Optimisation

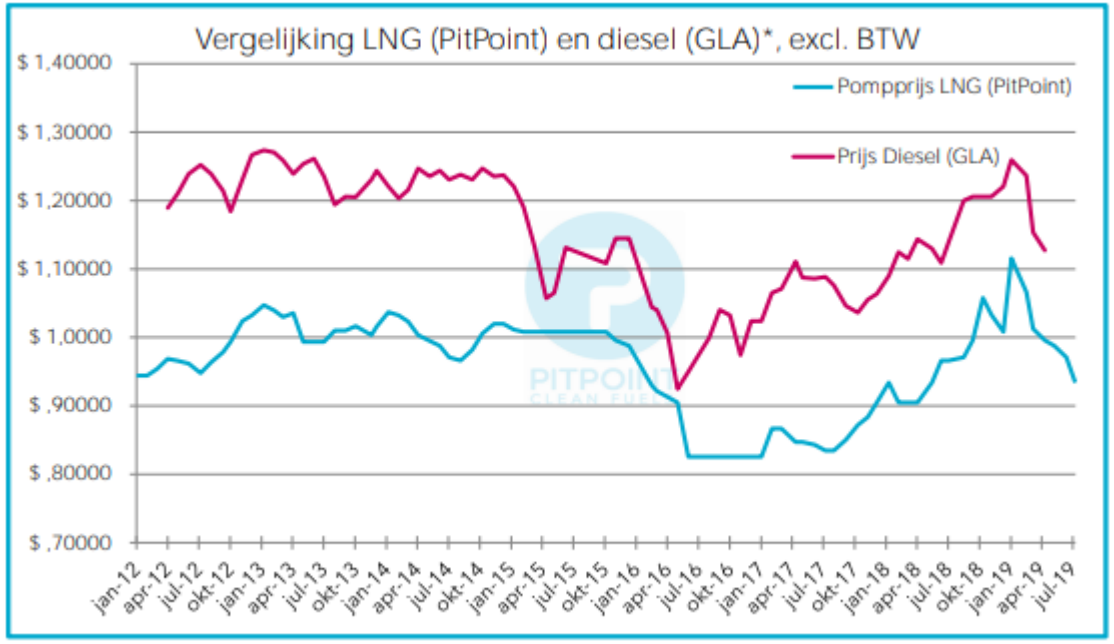
HORIZON 2020 HERCULES-2 FUEL FLEXIBLE, NEAR -ZERO EMISSIONS, ADAPTIVE PERFORMANCE MARINE ENGINE

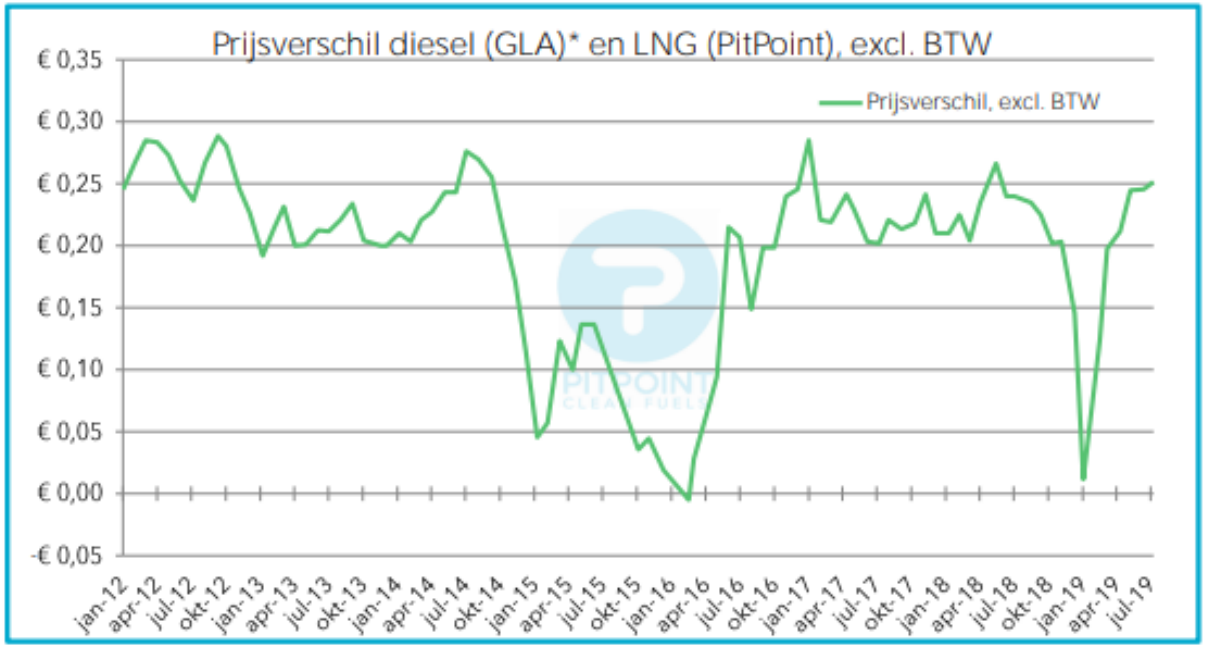
HORIZON 2020 LeanShips Low Energy And Near to zero emissions Ships

CEF LNG Breakthrough for Inland Waterway



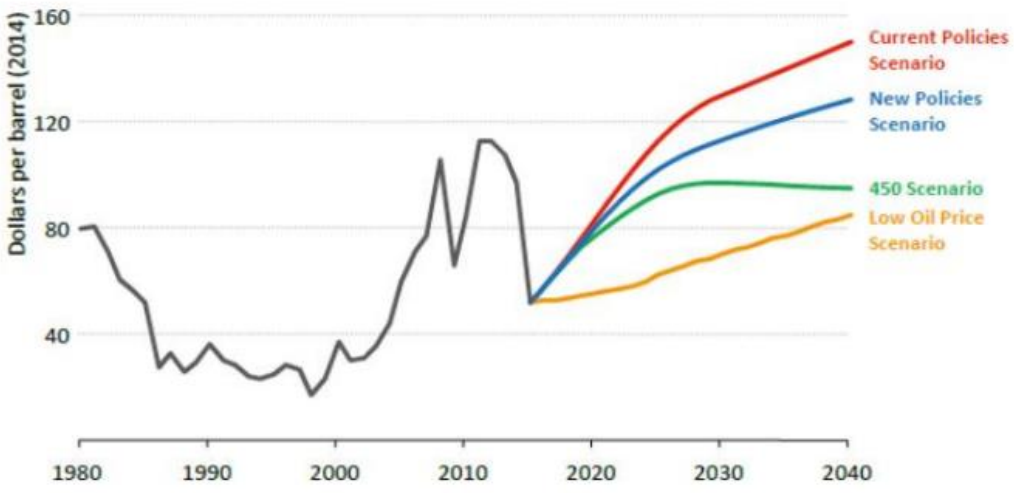
LNG Price Development





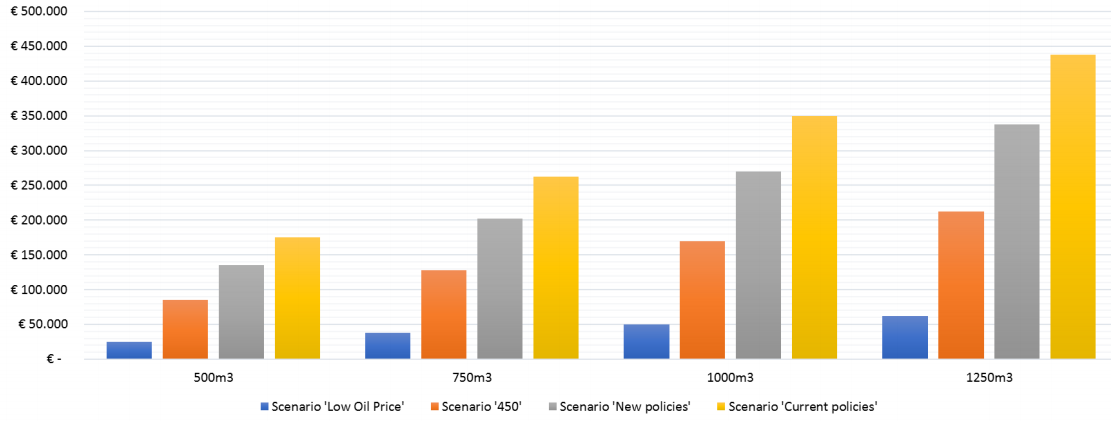
https://www.pitpointcleanfuels.com/app/uploads/2019/07/Prijshistorie-LNG.pdf

LNG Price Development



Source: World Energy Outlook 2015

Figure 4: Price advantage LNG-Diesel for four different fuel consumption categories



NRMM Stage V emissions & Paris Agreement

IWT Emission

Categorie	P_N [kW]	Datum	CO [g/kWh]	HC [g/kWh]	NO_x [g/kWh]	PM [g/kWh]	PN [1/kWh]
IWP/IWA-v/c-1	$37 \leq P_N < 75$	2019	5.00	4.70		0.30	-
IWP/IWA-v/c-2	$75 \leq P_N < 130$	2019	5.00	5.40		0.14	-
IWP/IWA-v/c-3	$130 \leq P_N < 300$	2019	3.50	1.00	2.10	0.10	-
IWP/IWA-v/c-4	$P_N \geq 300$	2020	3.50	0.19	1.80	0.015	1×10^{12}

Bio-LNG