



## Rotterdam LNG Hub

Gasunie and VOPAK broaden the scope of Gate

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**Gasunie**



# Gate Terminal: Gas Access to Europe



45%



45%



# Gate LNG receiving terminal



# Gate opening September 23, 2011



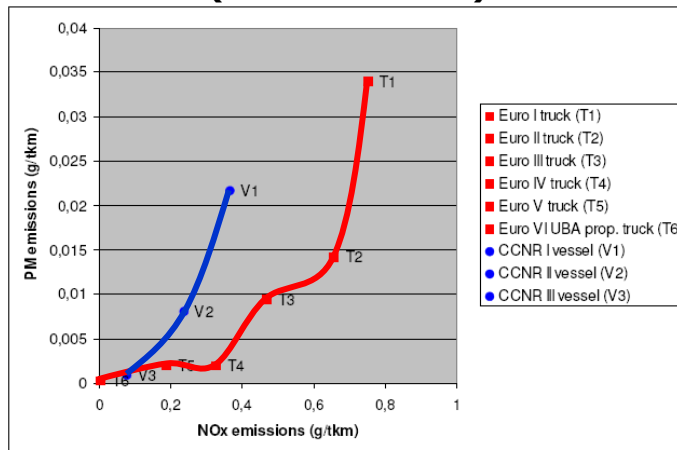
# 1. Environmental driver

LNG the fuel to meet ECA emission standards 2015  
- low sulphur

Emission limits for transport by truck and ship are tightened and converging. LNG as transport fuel can meet these requirements

## Tightening emission norms for trucks

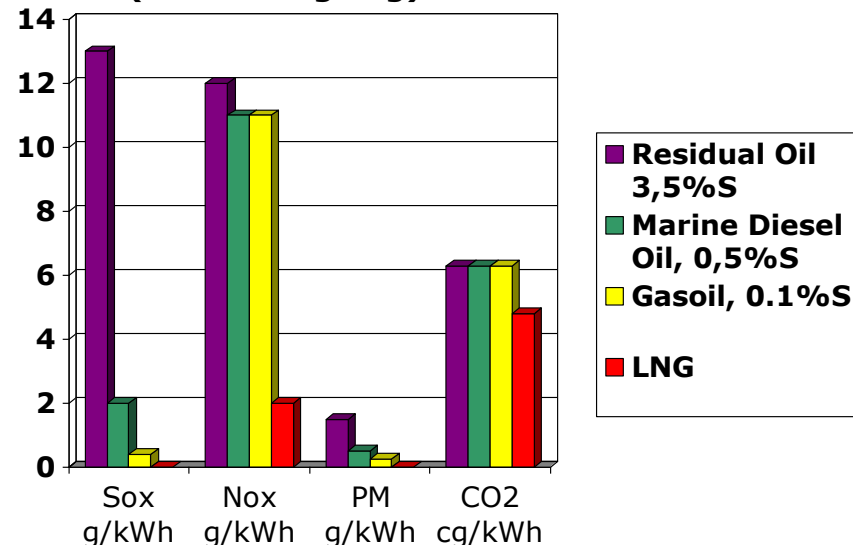
(Source: KEMA)



Truck: Euro V has been implemented in 2009, Euro VI will come into force in 2014.  
Ships: CCNR v3 will have similar emission levels in 2014

## Emission comparison

(Source Magalog)



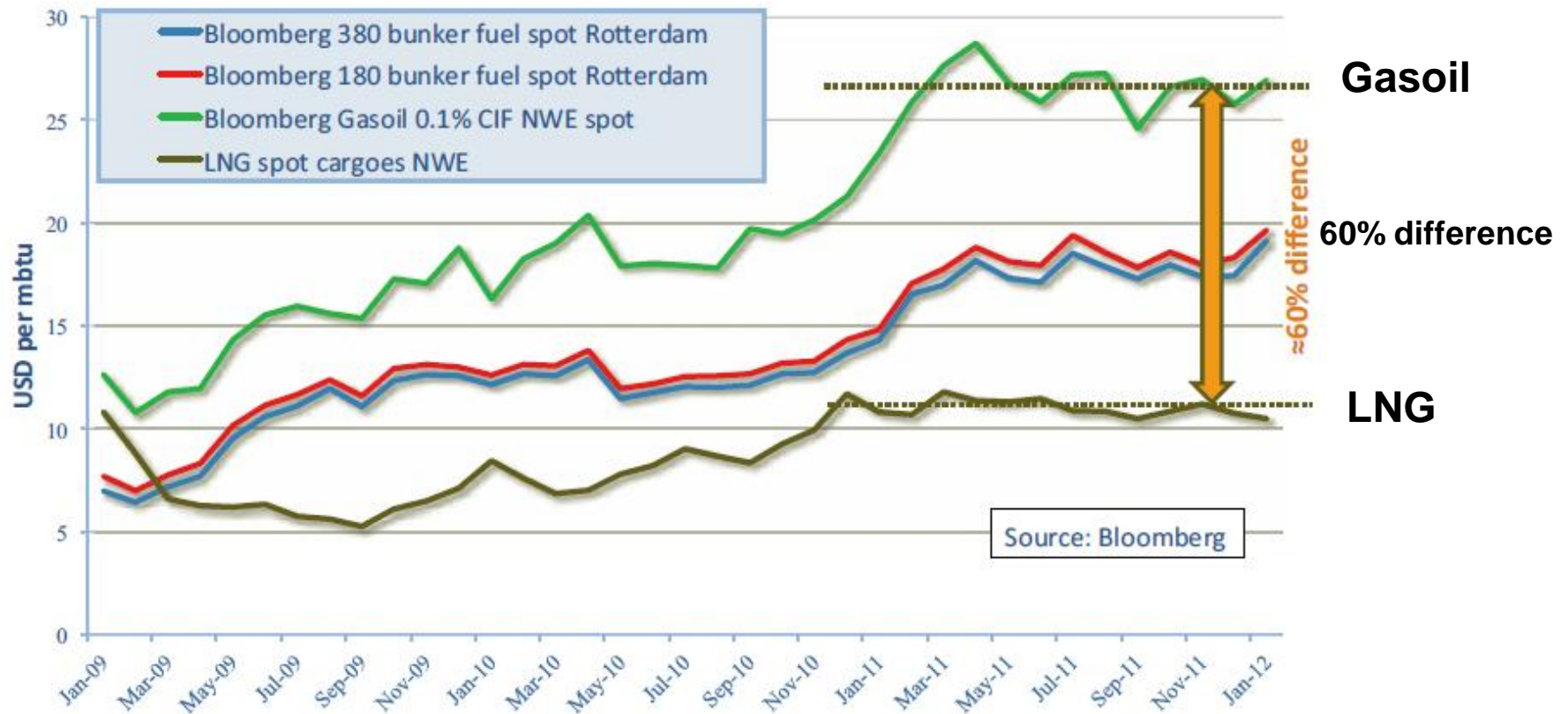
## 2. Regulation driver

### EU support LNG as Transportation Fuel

- EC has published its alternative fuels strategy on January 24th.
  - The commission is proposing that LNG refueling stations be installed in all 139 maritime and inland ports on the Trans European Core Network by 2020 and respectively 2025
  - The Commission is proposing that by 2020 refueling stations are installed every 400 km along the roads of the Trans European Core Network.
  - CNG The commission proposal will ensure that publically accessible refueling points, with common standards, are available Europe-wide with maximum distance of 150 km by 2020

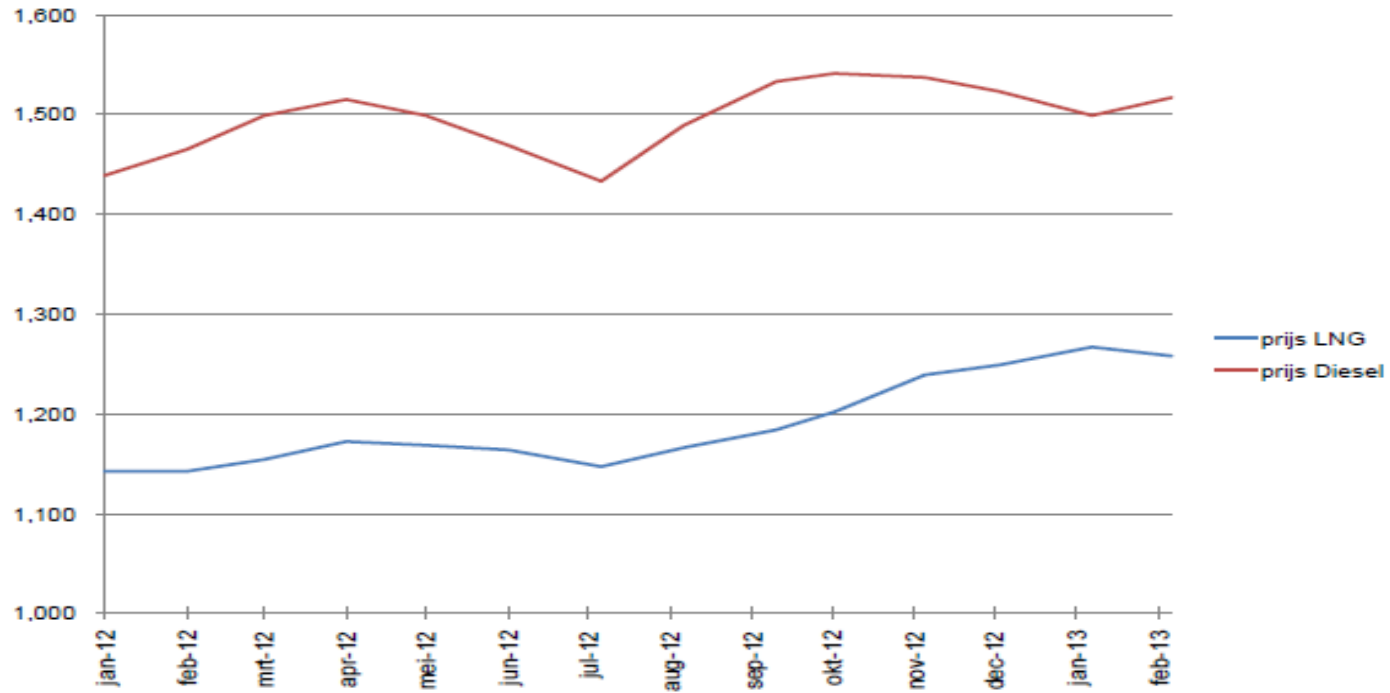
### 3. Market driver

#### LNG Prices compared to alternative fuels



## Grafiek

Prijzen LNG vs diesel

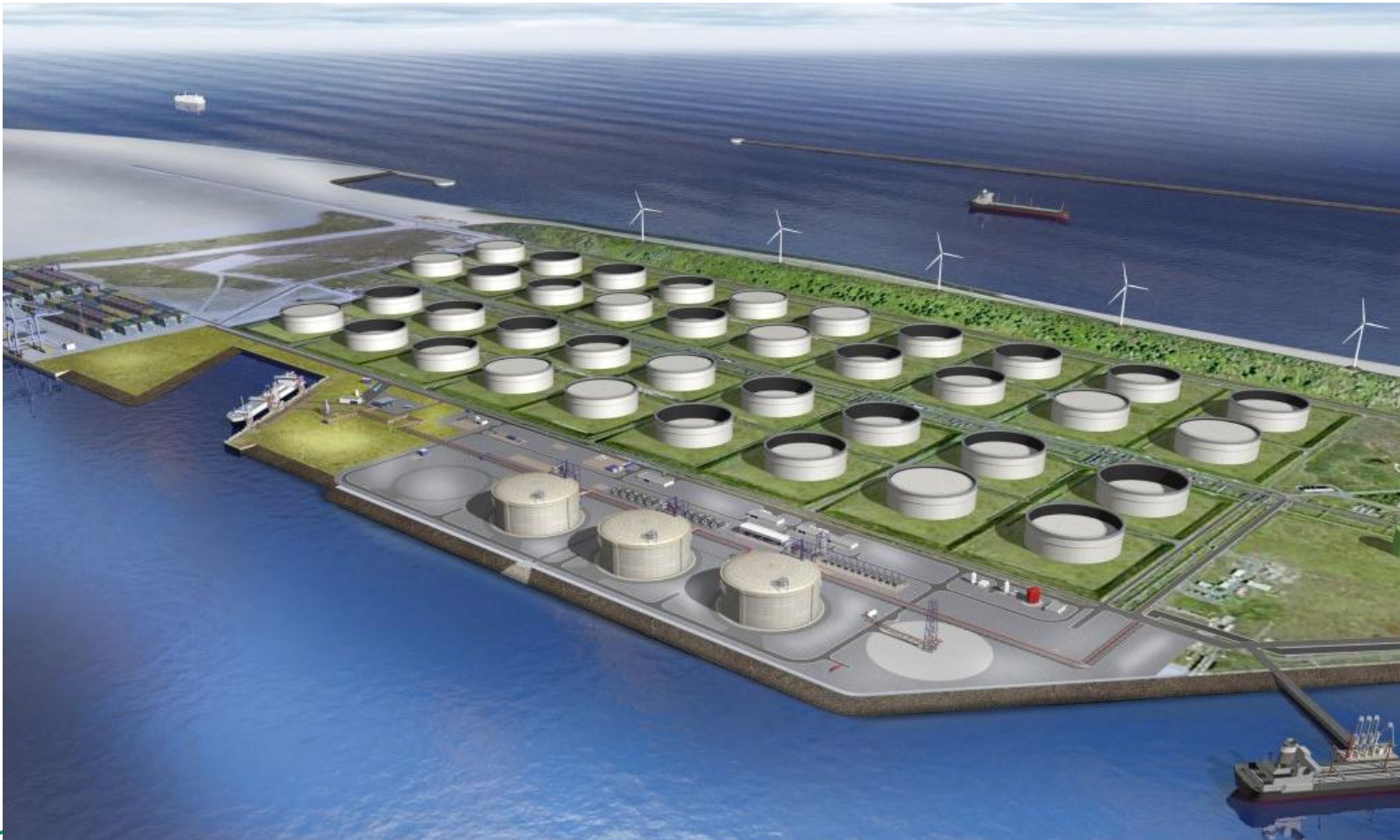


Source website LNG24

# Rotterdam initiative Break Bulk LNG Extended LNG chain



## View at Gate and Break Bulk facilities

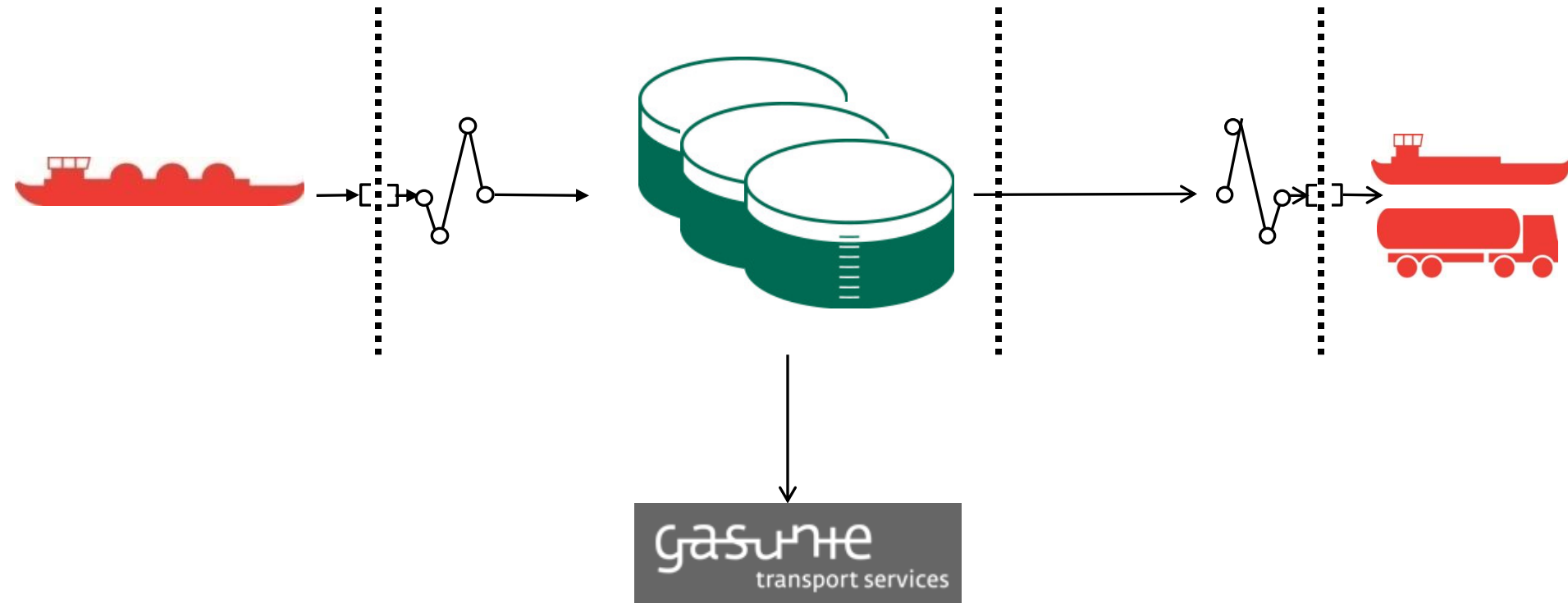


# LNG break bulk Rotterdam

The project, the services:

- LNG supply via Gate terminal
- Reloading of LNG to smaller vessels and barges
- LNG Truck loading
- LNG loading of trains and containers under discussion

## LNG Supply via Gate



# LNG suppliers



**Several other  
supply opportunities:**

**+ 1 BCM/a available**

# Dedicated jetty for small LNG vessels



# Project outline

Phase	I - Bridging period	II – initial phase BB	III – continuation BB
Entity	Gate	R'dam BB	R'dam BB
Scope	<ul style="list-style-type: none"> <li>• Modifications Gate Jetty</li> <li>• Operational requirements</li> </ul>	<ul style="list-style-type: none"> <li>• 1<sup>st</sup> dedicated jetty</li> <li>• 2 truck loading bays</li> <li>• Tie-ins @ Gate</li> </ul>	<ul style="list-style-type: none"> <li>• 2<sup>nd</sup> dedicated jetty</li> <li>• multiple truck loading bays</li> </ul>
Ship size	> 5.000 m3	1.000 – 40.000 m3	1.000 - 40.000 m3
KSF	<ul style="list-style-type: none"> <li>• Gate jetty &amp; operations suitable for backloading</li> <li>• Loading of small vessels</li> <li>• Customer contracts</li> </ul>	<ul style="list-style-type: none"> <li>• Plot allocation</li> <li>• HoA &amp; TUA (market commitment)</li> </ul>	<ul style="list-style-type: none"> <li>• Market growth (adaptation LNG as fuel)</li> <li>• Enforcement by EU/IMO/local authorities</li> </ul>
Others Serv.	<ul style="list-style-type: none"> <li>• Backloading small and regular LNG vessels</li> </ul>	(Dedicated) storage	e.g. Quality upgrading
Time	2013 – 2014/2015	Q3 2014 - 2035	2020 - 2040

# LNG loading in Rotterdam

# Current status Rotterdam LNG

- Heads of Agreements signed to use the dedicated small scale facilities
- Discussions on final binding contracts (TUA) are ongoing
- Permit application 5 september 2012, outcome expected late March
- Government support “Green Deal” 5 july 2012
- EU subsidy application being prepared by Gasunie/Vopak/Port of Rotterdam as part of international consortium

# Commercial Challenges

- Agreement on the binding terminal contracts
- Supply of LNG
  - Gate customers are willing to supply
  - Gate customers to enter this market??
- Pricing formula's
  - Hub based (TTF)
  - MDO/HFO related
- Key is a fair approach of sharing margin
  - each participant in the chain should benefit



**Thank you for your attention!**

# IGU small scale LNG

- Data collection very promising contribution by the teams
- Provides first insights in the current status of small scale projects
- The large number of projects does raise the question: should the data be distinguished in:
  - Project plans
  - Real developments with envisaged RFO
  - Already in operation
- General Project data well available
- Work needs to be done on:
  - Section “Value chain” (what is the intention)
  - Section “Drivers, Purposes”
  - Section “Business Model”
  - Section “Source” (where is the LNG coming from)

# IGU small scale

- Work needs to be done on:
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  - Section “Drivers, Purposes”
  - Section “Business Model”
  - Section “Source” (where is the LNG coming from)
- Information on Russia and Africa most welcome
- What happens in Southern Europe?
- Scandanavia by far most active,
  - existing infrastructure
  - Size rather small 40/60/100/1000 m3
- Way forward, next milestones