

Ministry of Economic Affairs

# **(Future) role of natural gas in the Netherlands**

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## Overview of presentation

- Gas in the Netherlands: facts and figures
- The Dutch gas market: development of the TTF
- Position of gas in the Dutch and Northwest European energy mix
- Factors impacting Dutch gas consumption:
  - demand side developments
  - production side developments
- Northwest Europe: transition from low calorific to high calorific gas



## Gas in the Netherlands: facts and figures

- Dutch gas balance 2013:
  - production: 80 bcm - export: 58 bcm
  - import: 20 bcm - consumption: 42 bcm
- Exports: Germany, Belgium, Italy, France, UK and Switzerland.  
Imports: Norway, Russia and since mid 2011 LNG.
- NL-production = 47% EU-production and NL-production = 17.5% EU-consumption.
- NL-consumption = 8.5 % EU-consumption (5th largest consumer in EU).
- Consumption:
  - share of gas in energy consumption: 43.2%;
  - 53% of electricity generated by gas-powered installations;
  - almost 100% of households connected to the gas network.
- Remaining reserves: 900 bcm (680 bcm in Groningen field).
  - production will continue for decades;
  - shift from net exporter to net importer around 2025.  
(New development: unconventional gas ??)



## Gas in the Netherlands: facts and figures

- Total length of transmission network: 12,050 km.
- Entry – exit system with 50 entry and 1,100 exit points.  
Number of interconnection points: 25.
- GATE LNG-terminal with throughput capacity of 12 bcm/year (can be expanded to 16 bcm/year).
- Gas storages:
  - Norg: 5.6 bcm
  - Grijpskerk: 2.4 bcm
  - Alkmaar: 0.5 bcm
  - Epe (G): 0.5 bcm
  - Zuidwending: 0.2 bcm
  - Bergermeer: 4.1 bcm (operational 2015).





## The Dutch gas market: the gas hub TTF

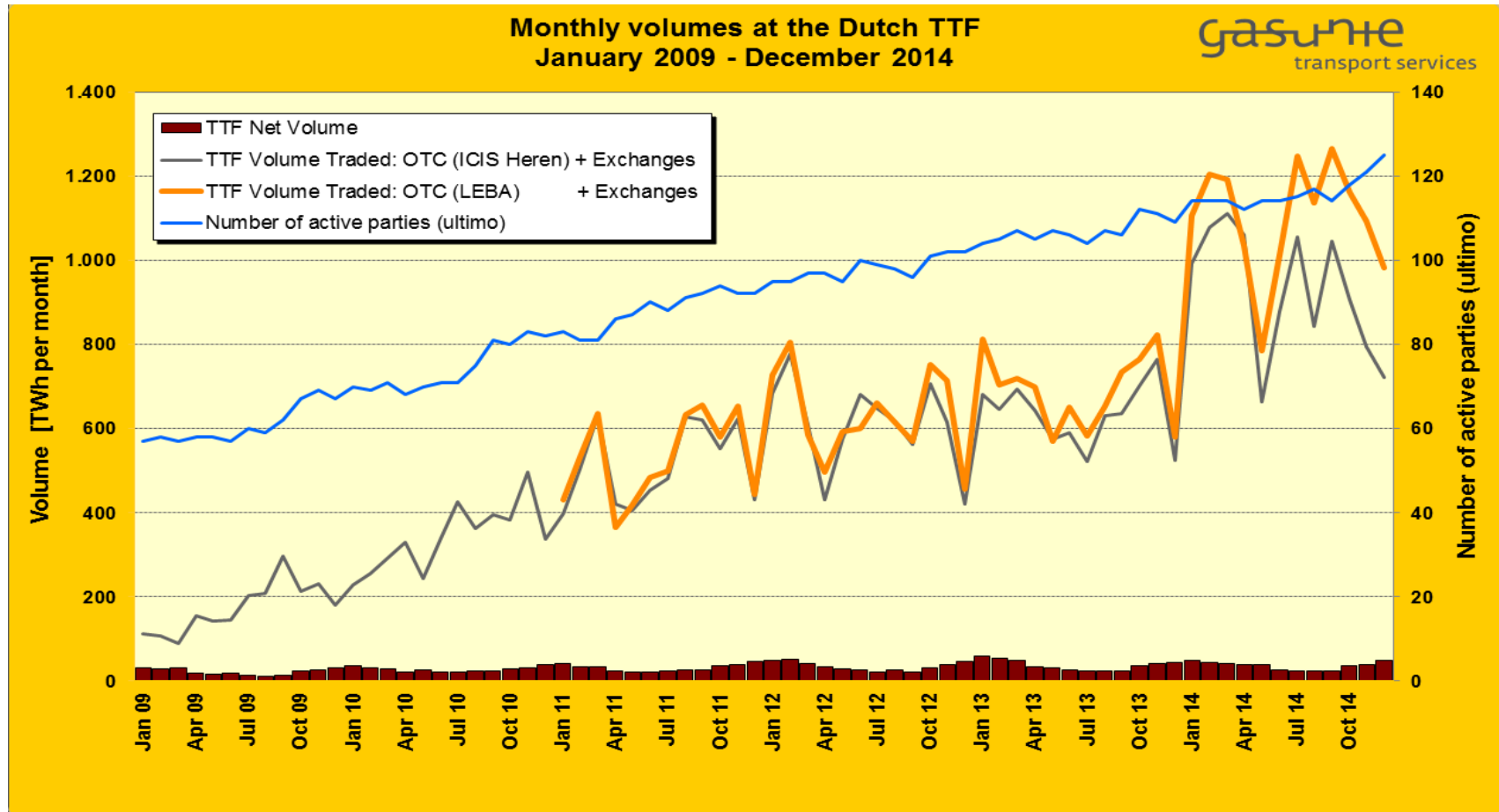
- TTF started 2003: virtual point in gas grid where ownership of gas is handed over.
- Operated by Gasunie Transport Services (Dutch TSO for gas).
- Supports OTC, spot market and futures trading through ICE-Endex. TTF price also used on other trading floors (Germany – EEX).
- Can be used by registered shippers/traders who pay a license fee.
- Volume developments 2003 – today (source: GTS / OTC (LEBA) + Exchanges):

	total traded volume	net volume	churn
2003	2.5 bcm	1.5 bcm	1.8
2008	65.2 bcm	20.2 bcm	3.2
2011	645.8 bcm	38.3 bcm	16.9
2013	845.6 bcm	45.8 bcm	18.5
2014	1.352,8 bcm	44,0 bcm	30.7

- TTF largest hub in continental Europe.
- TTF on par with NBP in ICIS Tradability Index for gas hubs Q1 2014.



## Development of the TTF: (towards) a liquid market



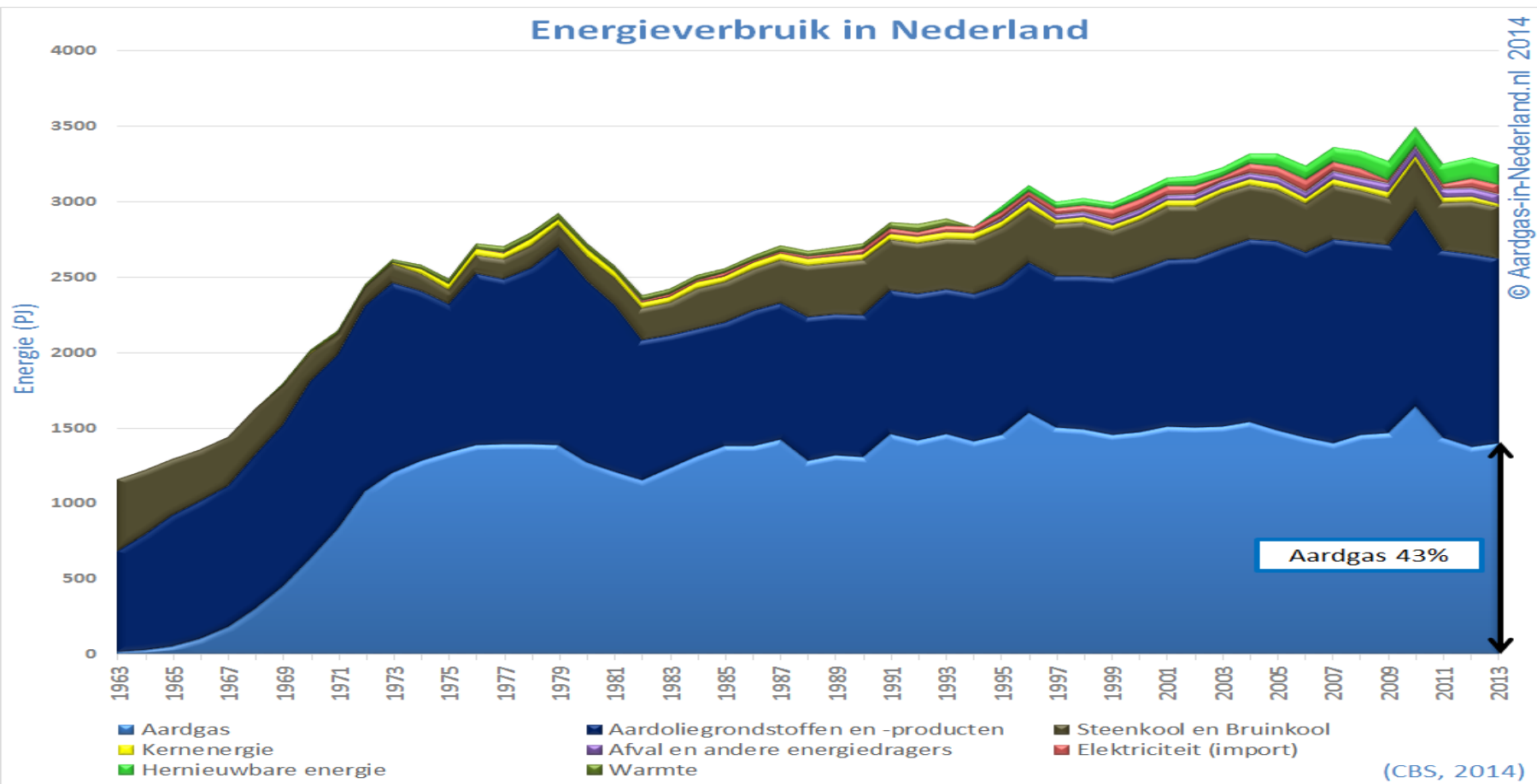


## Development of TTF in a European context

- Oldest hub: NBP (UK); followed by Zeebrugge (B) and TTF (NL)
- Delivery point of a number of long term contracts has been moved to a hub => increases flexibility for both buyer and seller.
- Convergence of prices between hubs: TTF, Zeebrugge (B) and NBP (UK).
- In Q1 – Q3 / 2014: delivered volume on NWE continental = 88% of gas demand in involved countries (A, B, Fr, G, IT, NL) (source: IHS)
- However EU market still quite diverse and no uniform picture yet due to:
  - role of long-term supply contracts;
  - relative low number of producers;
  - differences in size of market areas;
  - differences in role of gas in energy mix.
- A liquid market is on its way in the (Northwest) Europe, now it is time to take the next steps.
- But: does not mean the end of long term contracts. They will remain to play a role (security supply – security demand) however price concepts, delivery points, etc. may change, also as a consequence of EU rules and regulations.



# Primary energy consumption in the Netherlands (in PJ)







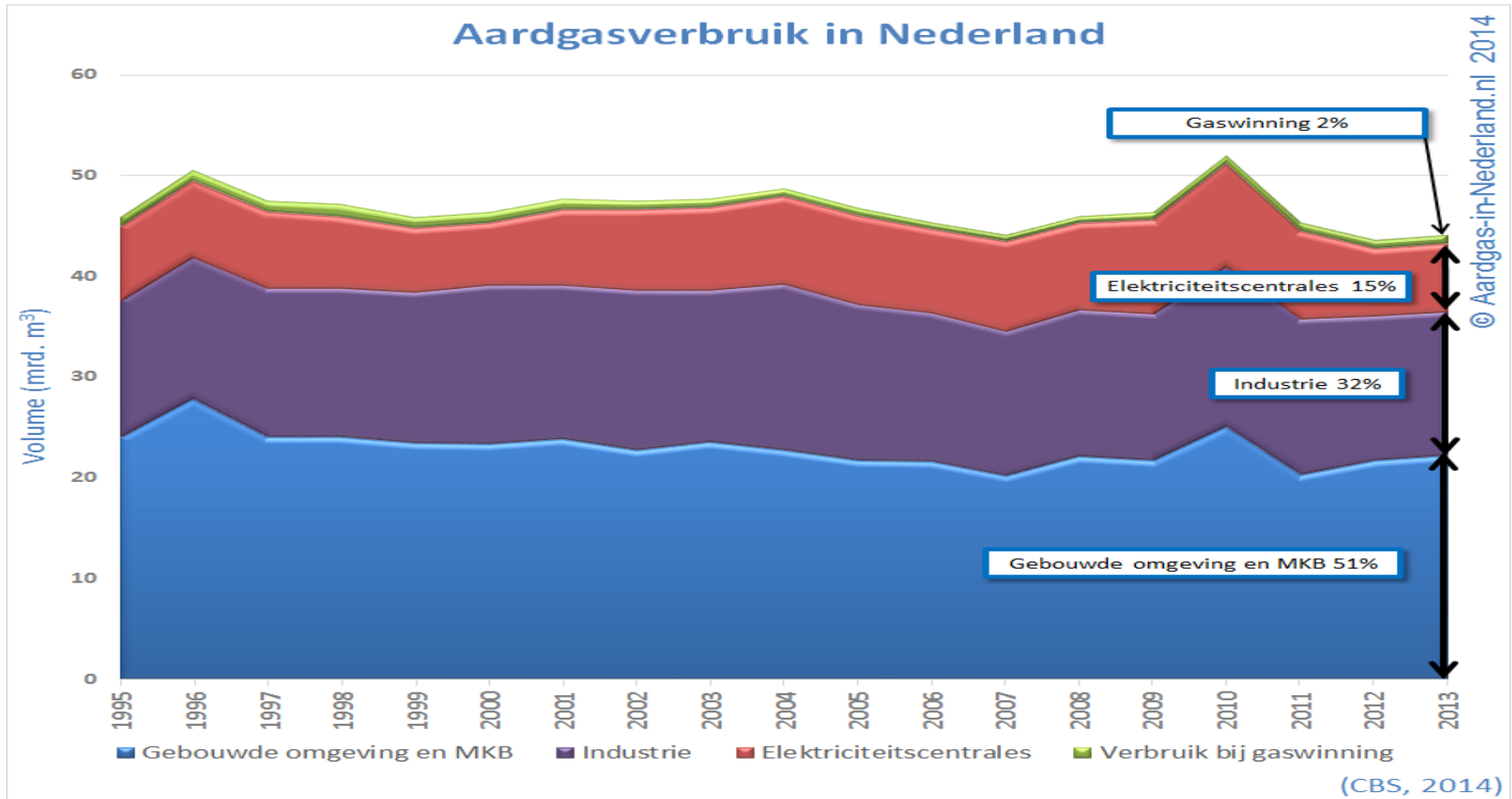
## Natural gas consumption in Northwest Europe in 2013

	Primary gas consumption in bcm	Share of natural gas in primary energy consumption
Belgium	16.9	25.3%
Denmark	3.3	16.5%
France	46.0	14.7%
Germany	88.3	22.5%
Ireland	4.6	29.1%
Luxembourg	1.1	20.5%
<b>Netherlands</b>	<b>39.8</b>	<b>43.2%</b>
United Kingdom	78.5	32.5%
EU-28	460.4	23.1%

Source: data based on Eurogas, Statistical Report 2014.



## Natural gas consumption in the Netherlands (in bcm)





## Factors impacting Dutch gas consumption: demand

- Drive towards more efficient use of energy and use of renewable energy.
- For the small user market and especially for households: switch to large-scale use of heat and electricity (all-electric) when new residential areas and homes are built (?).
- Industrial use of natural gas:
  - reduction due to the economic crisis and the (relative) high price of gas;
  - energy-savings measures lead to additional demand reduction, but this is offset by a growing economy;
  - industries which use gas as feedstock have no alternative in short to medium term.
- Gas-fired power plants:
  - share of electricity generated by gas-fired power plants decreased: more renewables, competition from coal-fired power plants;
  - outlook questionable: coal-fired power plants becoming more flexible and efficient, but less efficient gas-fired power plant already decommissioned.
- Cogeneration (combined heat and power (CHP)):
  - profitability of many CHP installations has deteriorated;
  - outlook questionable: potential for energy savings is there, but how about ETS?
- Transport sector: potential growth sector for gas demand, especially CNG and LNG, depending on the implementation of the Alternative Fuels Directive



## Factors impacting Dutch gas consumption: demand

Future gas consumption also impacted by the Energy Agreement (2014) concluded between: employers and unions, nature conservation and environmental organisations, other civil-society organisations, financial institutions and central, regional and local governments.

Ambitions of the Energy Agreement:

- saving on final energy consumption: 1.5% per year;
- increase of share of renewable energy from 4% to 14% by 2020;
- achieving a reduction in CO2 emissions of 80 to 95% by 2050, among others through closure of old (build in the 1980s) coal-fired power plants in next coming years.

Dutch gas consumption	2015	2020	2025	2030
Total	37.8	36.3	33.4	31.1
- Domestic (households)	10.2	9.3	8.9	8.6
- Power plants	3.6	4.9	2.9	3.0
- CHP	4.8	4.7	4.1	3.8

Source: ECN, National Energy Survey 2014; data in bcm.



## Factors impacting Dutch gas consumption: production

Dutch gas production	2015	2020	2025	2030
Total	64.5	55.3	35.3	16.2
- Groningen field	39.4	39.0	26.0	12.0
- Other fields	25.1	16.3	9.3	4.2

Data in bcm

Declining gas production raises (political) questions on the future role of gas:

- growing imports of natural gas: avoid dependence on limited number of suppliers;
- exploit potential of unconventional sources of gas or strive for other sources of energy (combined with additional efforts on energy efficiency);
- should we phase natural gas out of the energy mix?

Questions influenced by the currently bleak public image of natural gas.

Plus specific for the Netherlands and Northwest Europe: how to deal with the decline of low calorific gas?



## Low calorific gas transition in Northwest Europe

- Low calorific gas (L-gas) has Wobbe between 42.7 and 46.9 MJ/m<sup>3</sup>.
- L-gas is used in Belgium (5 bcm/year), France (5 bcm), Germany (30 bcm) and the Netherlands (30 bcm) => total market size of 70 bcm/year.
- Groningen field is by far the largest source of L-gas. Other sources are:
  - some small fields in the Netherlands;
  - German production (10 bcm/year, but already in decline);
  - quality conversion: turning high calorific gas (H-gas) into L-gas by adding nitrogen.
- Emerging decline of the Groningen field brings new questions:
  - continue to use L-gas and build additional quality conversion facilities?
  - convert market areas from L-gas to H-gas?
  - replace the L-gas supply by other sources of energy, like heat?
- Questions to be addressed by all L-gas using countries as Dutch L-gas supply will be phased out between 2020-2030 (the Netherlands from 2030 onwards).
- Most viable option: converting market areas combined with introducing other sources of energy. Transition requires long and careful preparation: all appliances to be converted or replaced.
- Belgium, France, Germany and the Netherlands working together on this: ministries, regulators and transmission system operators.



## To summarize (and generalize)

Gas is currently the most important source of energy for the Netherlands. The Dutch gas market (TTF) is a mature, liquid market.

The future prospects for gas in the Netherlands (and the EU) are impacted by:

- the competitive position of gas compared to other energy sources;
- the role gas can claim in the transition towards a low-carbon energy society and as a desirable partner to accommodate;
- the public image of natural gas;
- confidence in the security of supply;
- the choices that will be made in the L-gas transition.



Further information:

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