

Ministry of Economic Affairs

# L-gas in the Netherlands: current situation and future outlook

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## Gas in the Netherlands

- Dutch gas balance 2016 (figures in bcm):

- production:	50	- consumption	38
. G-gas	(28)	. G-gas	(25)
. H-gas	(22)	. H-gas	(13)
- import (H-gas):	40	- export:	52
		. G-gas	(3)
		. L-gas	(26)
		. H-gas	(23)
- Exports: Germany, Belgium, France, Italy, Switzerland and UK.  
Imports: Norway, Russia and LNG.
- NL-consumption = 8 % EU-consumption (5th largest consumer in EU).
- Consumption:
  - share of gas in primary energy consumption: 40%;
  - 50% of electricity generated by gas-fired power installations;
  - 95% of households connected to the gas network.
- Consumption split:
  - gas distribution companies: 20 bcm (53%)
  - large industries: 12 bcm (32%)
  - power plants: 6 bcm (15%)



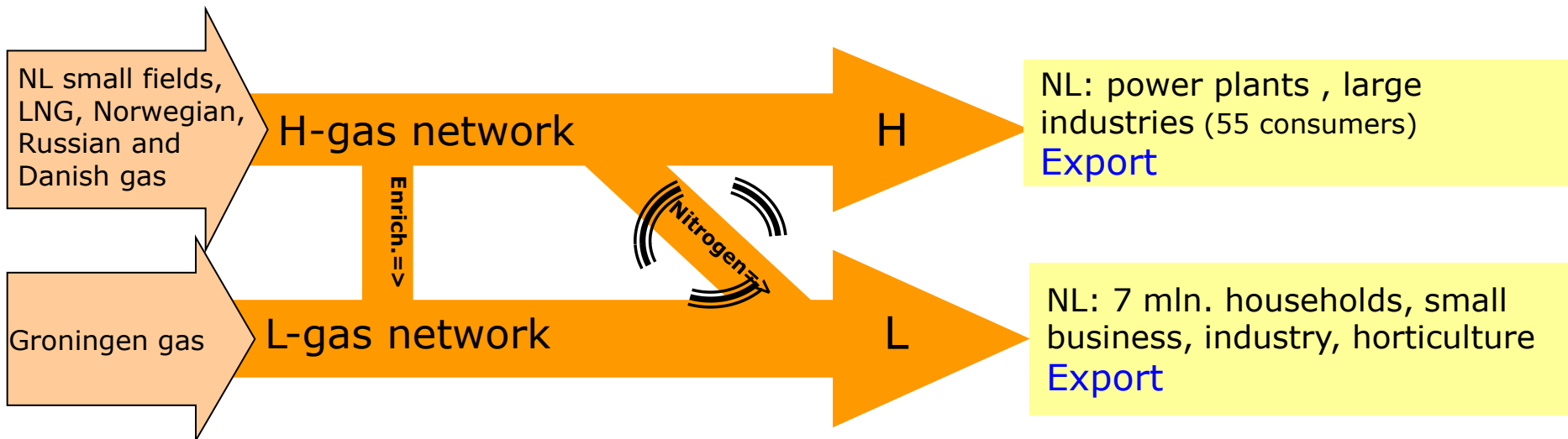
## Dutch gas production: high and low calorific gas

- Dutch gas production includes both low calorific gas (L-gas) and high calorific gas (H-gas).
- Production from the Dutch small fields is H-gas: Wobbe 51.8 – 53.0 MJ/m<sup>3</sup>.
- Production from the Groningen field is G-gas: has Wobbe 43.8 MJ/m<sup>3</sup> is within:
  - the Dutch G-gas bandwidth (Wobbe 43.5 – 44,4 MJ/m<sup>3</sup>); and,
  - the export L-gas bandwidth (Wobbe 43.8 – 46.5 MJ/m<sup>3</sup>).
- The Groningen field is by far the largest source of (Dutch) G/L-gas. Other main sources:
  - enrichment by GTS (the Dutch TSO for gas): adding H-gas to G-gas, without exceeding the upper limit of the G-gas (Netherlands) or the L-gas (exports) bandwidth;
  - quality conversion by GTS: turning H- gas into L-gas by adding nitrogen to bring it within the L-gas bandwidth.



## Quality conversion: turning H-gas into L-gas

- Dutch Gas Act obliges GTS to provide for quality conversion.
- The possibilities to provide quality conversion are being determined by the size of the conversion installations and the Wobbe of the H-gas..





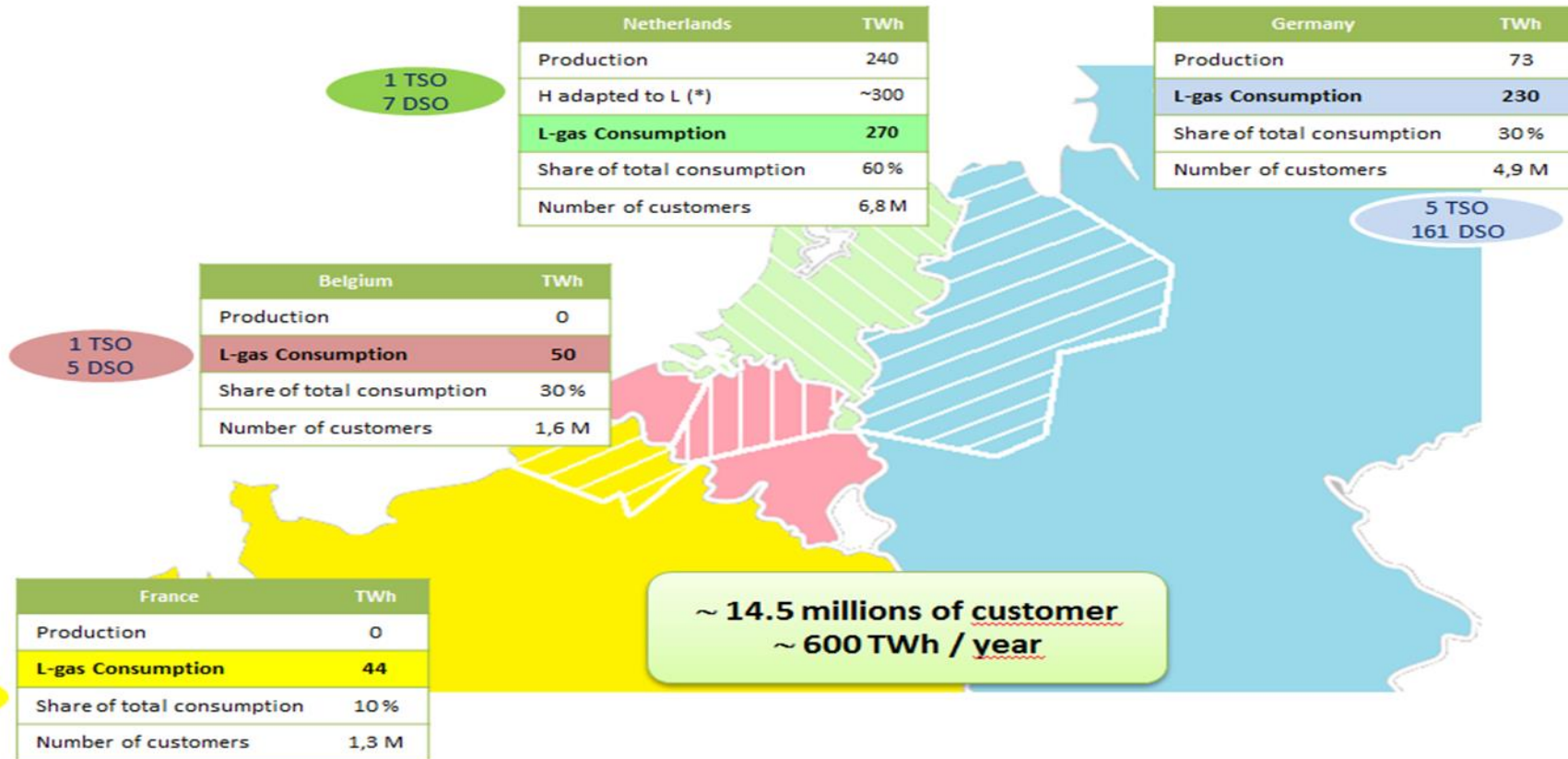
## Demand for Dutch G/L-gas in a cold year (in bcm)

Demand		Supply	
Germany	20	Groningen production	30
Belgium	5	Enrichment	12
France	5	Quality conversion	18
Netherlands	30		
Total	60	Total	60

NB. Figures are currently being updated by GTS in cooperation with other L-gas TSOs



# European L-gas market

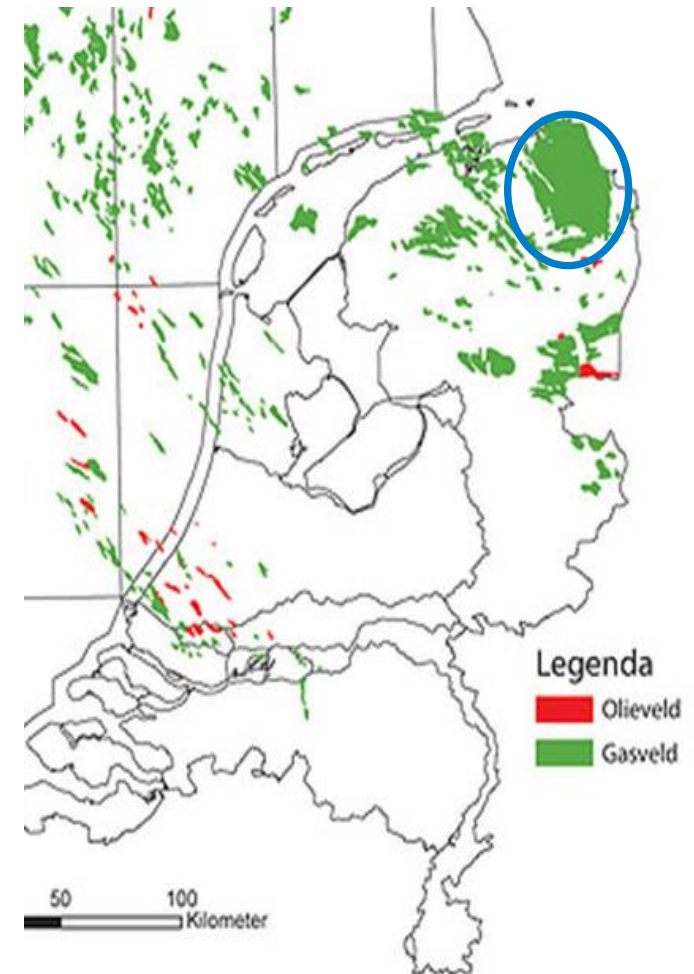
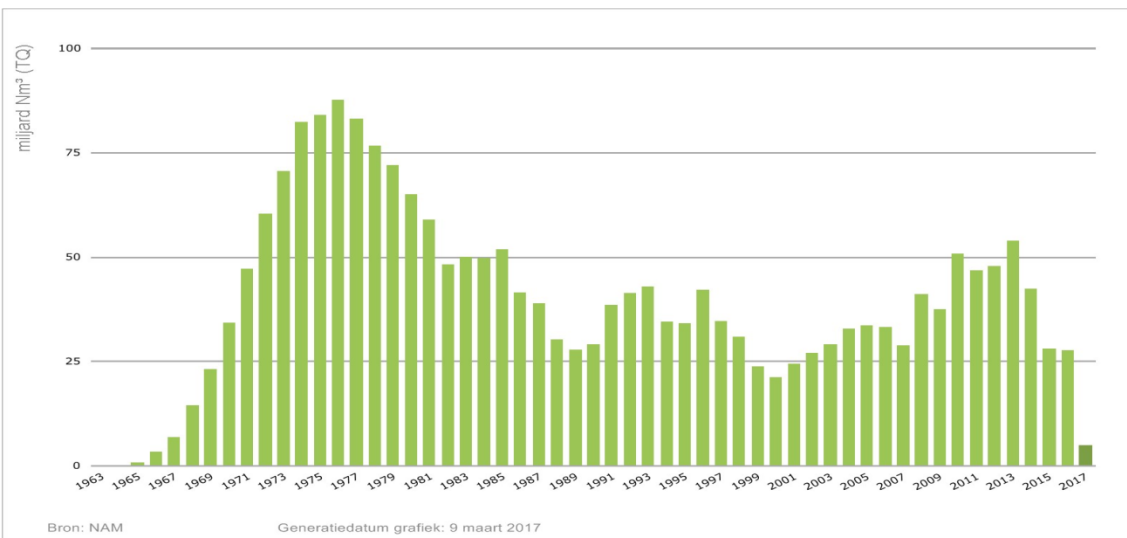


Source: ENTSOG – North West Gas Regional Investment Plan 2017



## The Groningen field

- Field owned and operated by NAM.
- Discovered: 1959.
- Start production: 1963.
- Size: 900 km<sup>2</sup>.
- Initial estimate: 60 bcm.
- Adjusted to 150 bcm and possible 400 bcm.
- Today's estimate: 2,800 bcm.
- Number of wells: 300 (20 production clusters).
- Production 1963 – today: 2,175 bcm:





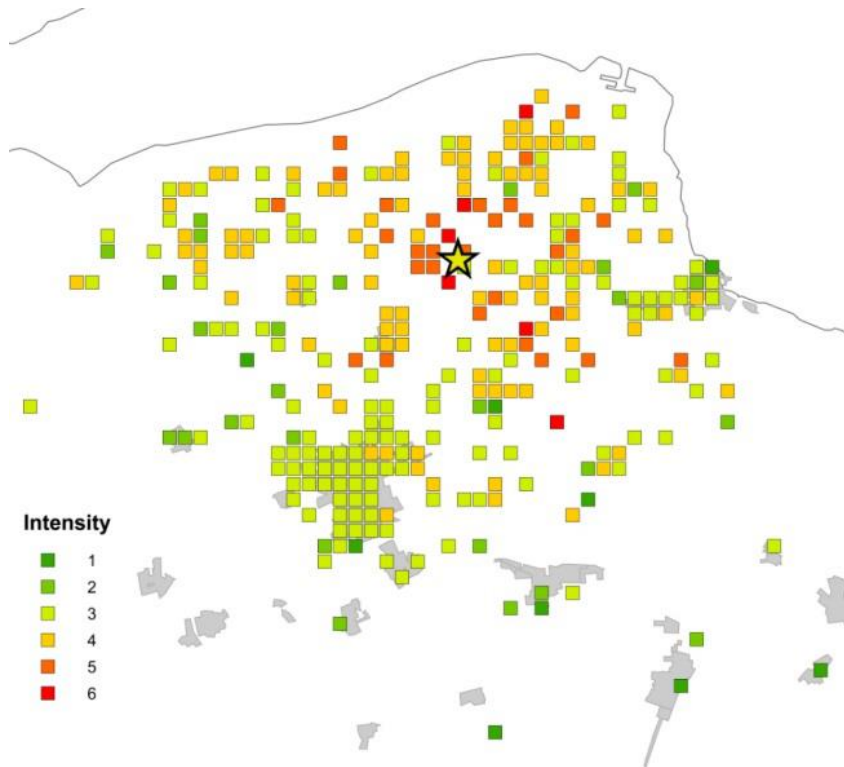
## The Groningen field goes in decline

- Remaining recoverable reserve: 600 – 650 bcm.
- Decrease of capacity due to lower pressure.
- No alternative source of G/L-gas (besides quality conversion).
- 2011/2012: first discussions initiated by the Netherlands on the phasing out of L-gas between 2020 and 2030:
  - Dutch government through Pentalateral Gasplatform (Benelux, France, Germany).
  - GTS with other TSOs.
  - GasTerra with customers.
- Since 2013: discussions influenced by Dutch production decisions in response to the increase of earthquakes in Groningen and the concerns about their consequences.





## Earthquake 16 August 2012



- Centre: village of Huizinge (municipality of Loppersum).
  - Magnitude: 3.4 (Richter).
  - Greater intensity (effects at surface) than previous tremors.
  - Strongest tremor resulting from gas extraction so far in the Netherlands.
  - Number of reports of damage greater than ever.
- reason for further investigations by:
- State Supervision of the Mines (SSM)
  - Royal Dutch Meteorological Institute
  - NAM



## Typical damage





## Consequence: string of decisions on allowed production

Reasons:

- Subsequent earthquakes.
- Increased concerns about safety.
- Unrest in the area of Groningen.
- New insights in the behaviour of the field.
- Verdict of the Dutch Council of State of 18 November 2015.

Leads to (political) pressure to reduce the production (as far and as soon as possible):

- limit production to what is needed to meet physical demand (security of supply);
- make far better use of the quality conversion installations of GTS;
- call to reduce the exports => intensified already ongoing discussions with neighbouring countries on market conversion;
- call to reduce domestic consumption => phase out gas consumption in residential areas.



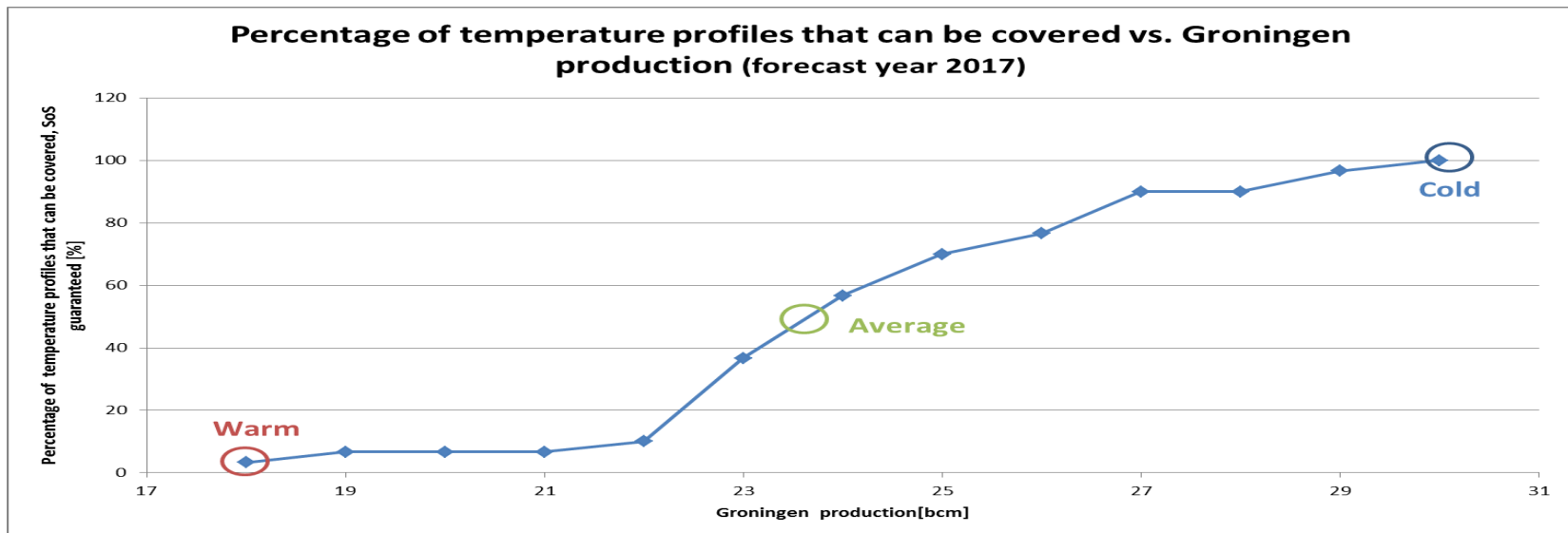
## Overview of decisions Groningen production

Date	Allowed Production	Remarks
17 January 2014	2014 and 2015: 42.5 bcm 2016: 40 bcm	Production in central area reduced with 80% to max. 3 bcm/year.
16 December 2014	2015: 39.4 bcm Gas year 2015/16: 39.4 bcm	Four sub-caps for different sections of the field.
9 February 2015	First half 2015: 16.5 bcm	Based on amount of gas needed to ensure security of supply in cold year.
26 June 2015	2015: 30 + 2 bcm Gas year 2015/16: 30 bcm (+ 2 bcm in case of technical problems at GTS)	2 bcm back-up for technical problems. 2015: exclusive of one-time surplus of 3 bcm from Norg expansion.
18 December 2015	Gas year 2015/16: 27 bcm (+ 2 bcm in case of technical problems at GTS)	Based on verdict Council of State. In cold year production may increase to max. 33 bcm.



## Decision 30 September 2016

- Base line: production of 24 bcm/gas year (enough to ensure security of supply in an average year) to be allowed up and until gas year 2020/21.
- A production of max. 30 bcm/year in case of cold year (security of supply).
- A back-up facility with a capacity of 0.5 mln m<sup>3</sup>/h and a volume of 1.5 bcm/year to cope with unforeseen situations in the transport system.
- Annual assessment of the allowed level of production by 1 October (developments with regard to safety and security and supply).





## Modification decision 18 April 2017

- Start preparations to modify the September 2016 decision per 1 October 2017.
- Reason: since 1 October 2016 the number of earthquakes in the central area of the field has increased.  
=> The earthquake density (the number of earthquakes per square kilometre per year) in this central area increased from 0.12 to 0.22 which is very close to the limit of 0.25 that is set in the September 2016 decision.
- Dutch State Supervision of the Mines advised a (stepwise) reduction of the gas production if and when the limit of 0.25 is reached, with a 10% reduction as a first step.
- Considering the increased amount of earthquakes the Dutch Cabinet decided not to wait for the limit to be reached and the formal assessment by 1 October 2017. The gas production will be reduced with 10% to 21.6 bcm/gas year by 1 October 2017.
- GTS in the mean time reassessed the amount of Groningen gas needed to secure the supply in an average year. Preliminary result: a little more than 21 bcm. Reduction from 24 bcm is possible due to a more efficient use of the conversion installations.



## Outlook towards 2020, 2030 and onwards

- Until 2021:
  - Only small changes in size of the L-gas market and the demand for Dutch L-gas (GTS assessment).
  - Allowed production from the Groningen field will be 21.6 bcm in an average year which may be increased in a cold year.
  - But: allowed level of production may change following appeals before the Dutch Council of State against the decision(s) and the annual assessment.
  - Plus: gas production may/will be a topic in the formation of a new Dutch Government.
- Until 2030:
  - Germany will phase-out L-gas between 2020 and 2030
  - France and Belgium will phase-out L-gas between 2021/24 and 2030.
  - No phase-out of L-gas foreseen for the Netherlands. Groningen production may however be reduced further and replaced by converted H-gas (new conversion installation?).
- After 2030:
  - No more L-gas exports to Germany, Belgium and France.
  - Groningen production (for the Netherlands only) may however be reduced further and replaced by converted H-gas.
  - Efforts in the Netherlands to phase out G-gas from the residential sector.



Further information:

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