

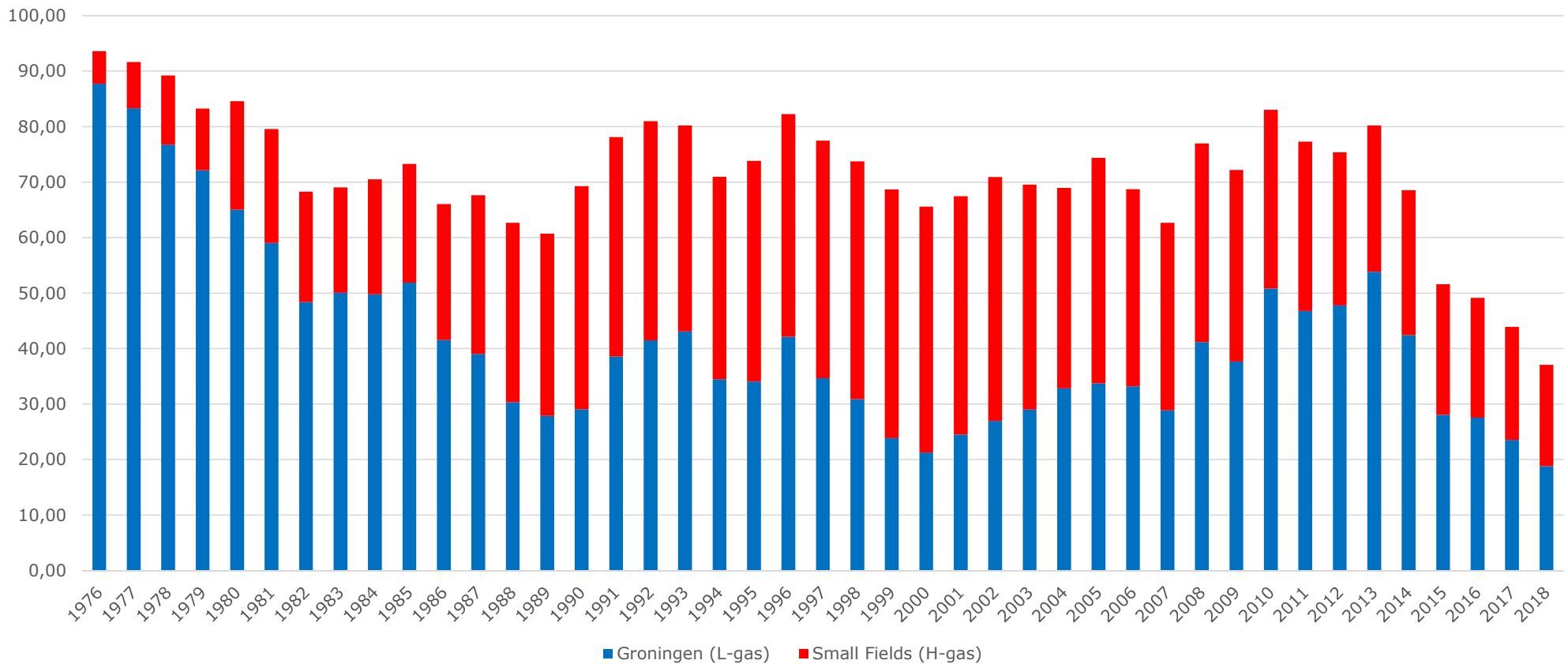
Ministry of Economic Affairs
and Climate Policy

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

Wim van 't Hof
Coordinator Gas Market
-
Directorate-General Climate & Energy



Dutch Gas Production 1976 - 2018





Overview Dutch imports and exports in 2016 - 2018 (in bcm; source: GTS)

Import (H-gas)				Export (H- and L-gas)			
Country/LNG	2018	2017	2016	Country	2018	2017	2016
Germany	42	35	32	Germany L-gas	17	19	19
				Germany H-gas	6	9	10
Belgium	4	5	2	Belgium L-gas	10	9	10
				Belgium H-gas	7	9	8
LNG	3	1	1	UK H-gas	3	2	5
<i>Total</i>	<i>48</i>	<i>41</i>	<i>35</i>	<i>Total</i>	<i>43</i>	<i>48</i>	<i>52</i>

- > Export flows to Belgium are inclusive of flows to France.
- > Export H-gas flows to Germany are inclusive of flows to Switzerland and Italy.
- > Import flows from Germany are comprised of Norwegian and Russian gas.
- > Largest import point is Emden (Germany; 23 bcm in 2017) which is an import point for Norwegian gas. After 2021 also Russian gas might flow to the Netherlands through Emden.
- > Import flows from Belgium are comprised of UK and Norwegian gas and LNG.



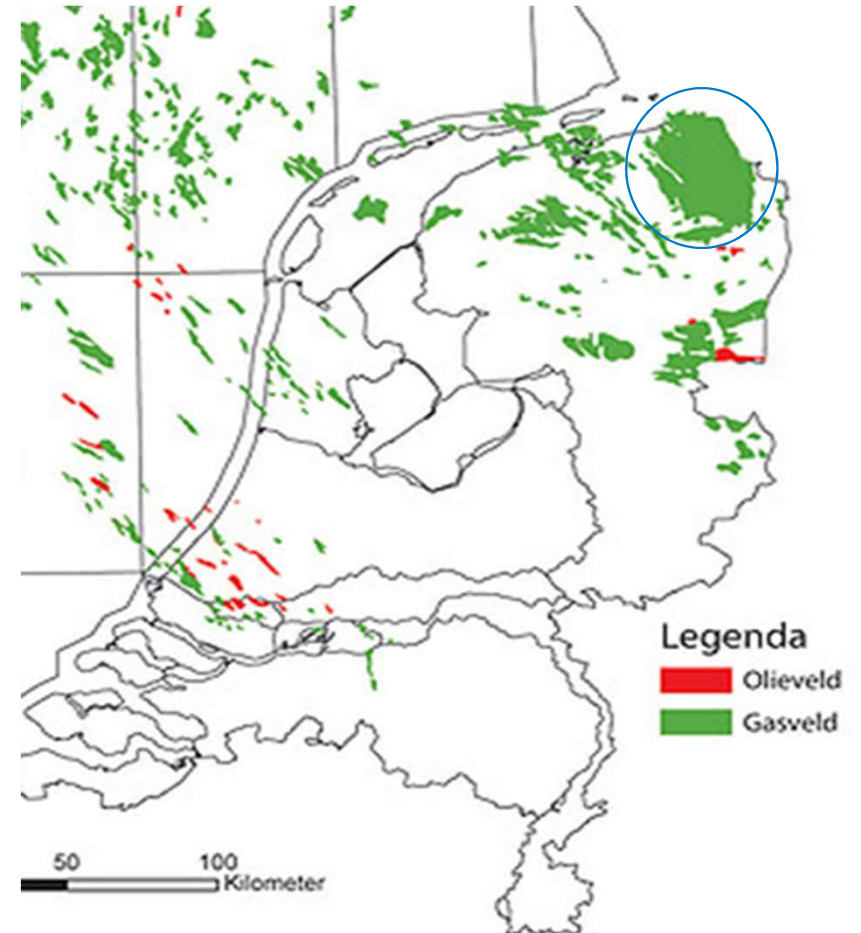
The Groningen Field and Groningen Gas

The Groningen field:

- Discovered: 1959
- Contains low calorific gas (L-gas)
- Start production: 1963
- Initial estimate: 60 bcm
- Adjusted to 150 bcm and possible 400 bcm;
- Current estimate: 2,800 bcm (10th largest field in the world)
- Remaining reserve: ~ 550 bcm.
- Groningen field also an important source of flexibility. Of importance for the delivery of gas to households who all use L-gas and use more gas in winter than in summer.

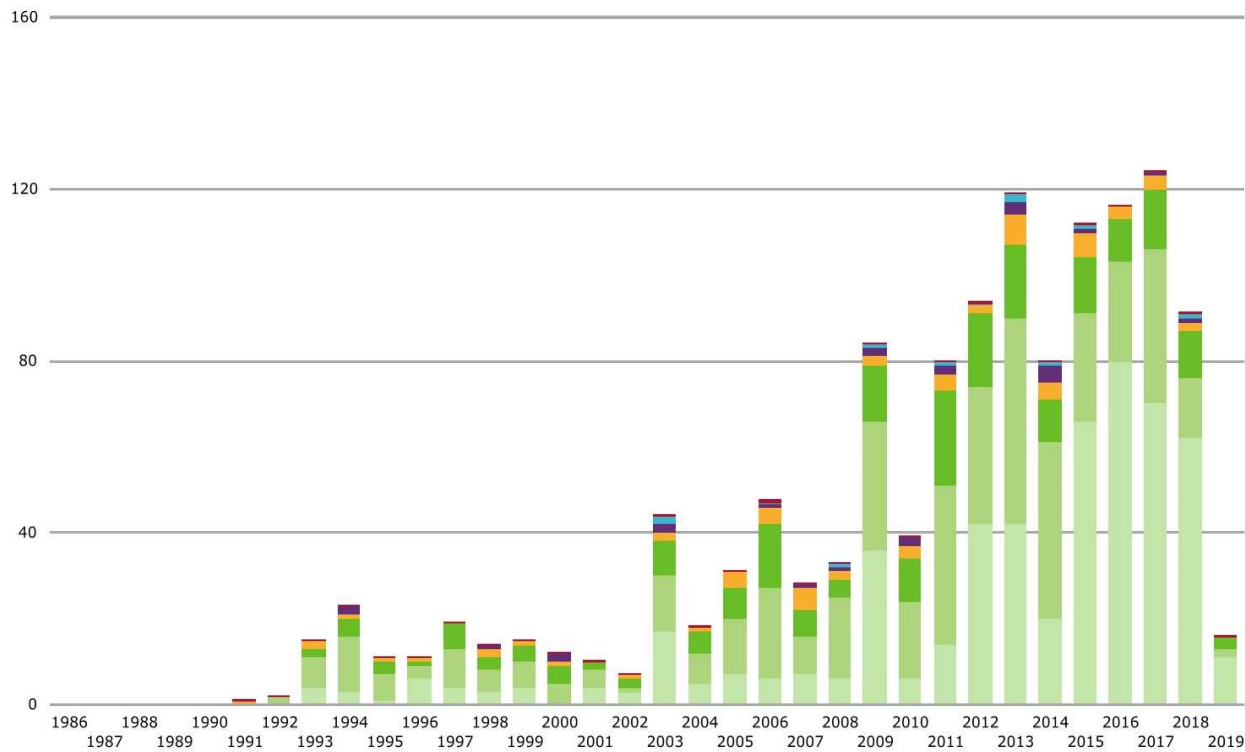
Groningen gas:

- L-gas consumption in a cold year: Belgium (5 bcm/y), France (5 bcm/y), Germany (30 bcm/y) and Netherlands (30 bcm/y).
- Groningen field still largest source of L-gas. Other sources:
 - > a few small fields in NL (very limited);
 - > German production (7 bcm in 2017, in decline);
 - > enrichment: adding high calorific gas (H-gas) to L-gas;
 - > quality conversion: converting H-gas to L-gas by adding nitrogen.





Earthquakes in the Groningen Field



Legenda

Magnitude

- < 1.0
- < 1.5
- < 2.0
- < 2.5
- < 3.0
- < 3.5
- > 3.5



Bron: KNMI
Generatiedatum grafiek: 4 april 2019





Consequences of the Earthquakes

- Very high number of damages in the area of Groningen:
 - › January 2018 earthquake: 5,654 damages reported;
 - › total number of damages reported to date: > 20,000.
- Highly increased concerns about the safety and well-being of the inhabitants of Groningen.
- (Political) pressure to reduce the production as far and as soon as possible.
- 2018 decisions:
 - › Construction of an additional nitrogen facility by GTS, the Dutch TSO for gas. Savings potential: 7+ bcm.
 - › Procurement of additional nitrogen for one of the existing GTS facilities. Savings potential: 1.5 – 2.0 bcm.
 - › Nine largest industrial users of L-gas will be required by law to switch to other sources of energy (H-gas, electricity, renewables). Savings potential: 2+ bcm.
 - › Dutch Gas Act amended to prohibit the connection of new houses and buildings to the gas grid.
 - › Dutch Gas Act and Mining Act amended to limit the yearly Groningen production to what is needed to safeguard security of supply.
 - › Allowed production for gas year 2018/19 limited to 19.4 bcm in an average year (based on a utilization rate of the existing nitrogen facilities of 92.5%).

Furthermore:

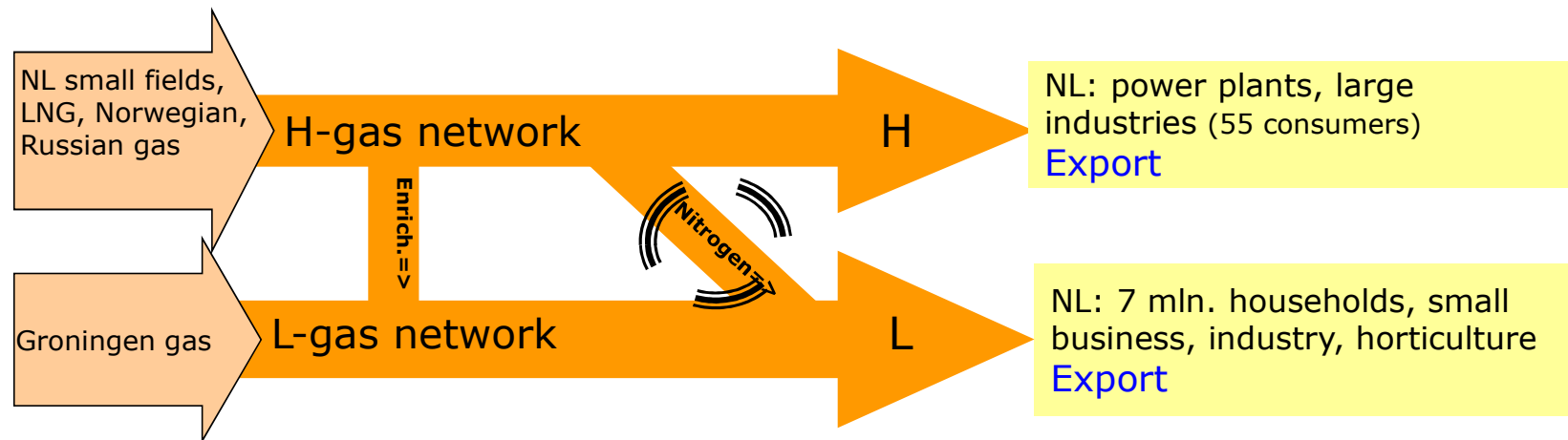
- Large number of local initiatives to phase out gas from the residential area.
- Quick wins identified by Germany to reduce L-gas demand: power plant in Cologne area and blending facility of GTG Nord.

Overall aim Dutch government: to end the gas production from the Groningen field as soon as possible.



Quality conversion: turning H-gas into L-gas to substitute for Groningen

- Gas Act obliges GTS to provide 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.



- Costs of quality conversion socialised over all exit point (L and H, incl. border points).
- Thanks to quality conversion the gas trade in NL is in energy units (KWh's) => GTS needs to make sure that the correct quality is delivered.



Quality conversion installations

Quality conversion installations owned and operated by GTS:

Installation	N2 capacity (m ³ /hour)	Estimated volume of L-gas (bcm/year)
Ommen (base load)	146,000	8
Wieringermeer (base load)	215,000	13
Pernis (back-up)	45,000	n.a.
Heiligerlee – nitrogen cavern (back-up / peak)	190,000	n.a.
New installation: Zuidbroek (Q1 2022)	180,000	7+
Wieringermeer: additional N2 (Q1 2020)	80,000	1.5 – 2



Next steps

- > 26 appeals were filed against the 19.4 bcm production decision. A hearing will be held by the Dutch Council of State on 17 and 18 April 2019.
- > Based on the amended Gas Act and Mining Act a production decision for gas year 2019/20 is in preparation. GTS has indicated that a volume of 15.9 will be needed in case of an average year and 20.8 bcm in case of a cold year.
- > Implementation of the EU Security of Gas Supply Regulation: preparation of regional L-gas chapters for the Preventive Action Plan and Emergency Plan together with the Competent Authorities from Belgium, France and Germany.
- > Dutch Parliament decided for a formal investigation of the Groningen gas production:
 - investigation will be done by a Parliamentary Committee;
 - people asked to testify will have to appear and will be heard under oath;
 - investigation most likely to start in 2020 and can take several months.

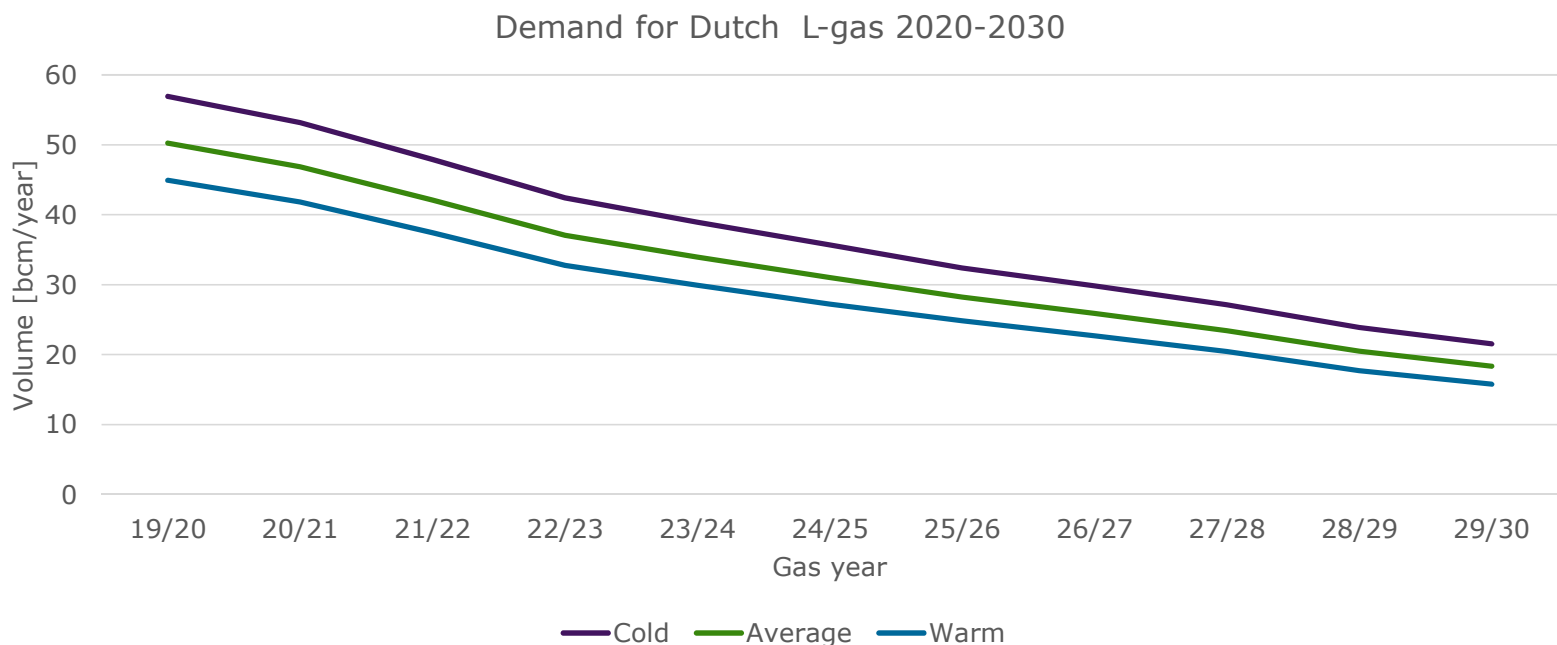


Next steps – 2

Development of a 10-year planning for both the required level of volume and the required capacity level from the Groningen field. Two scenarios are being developed:

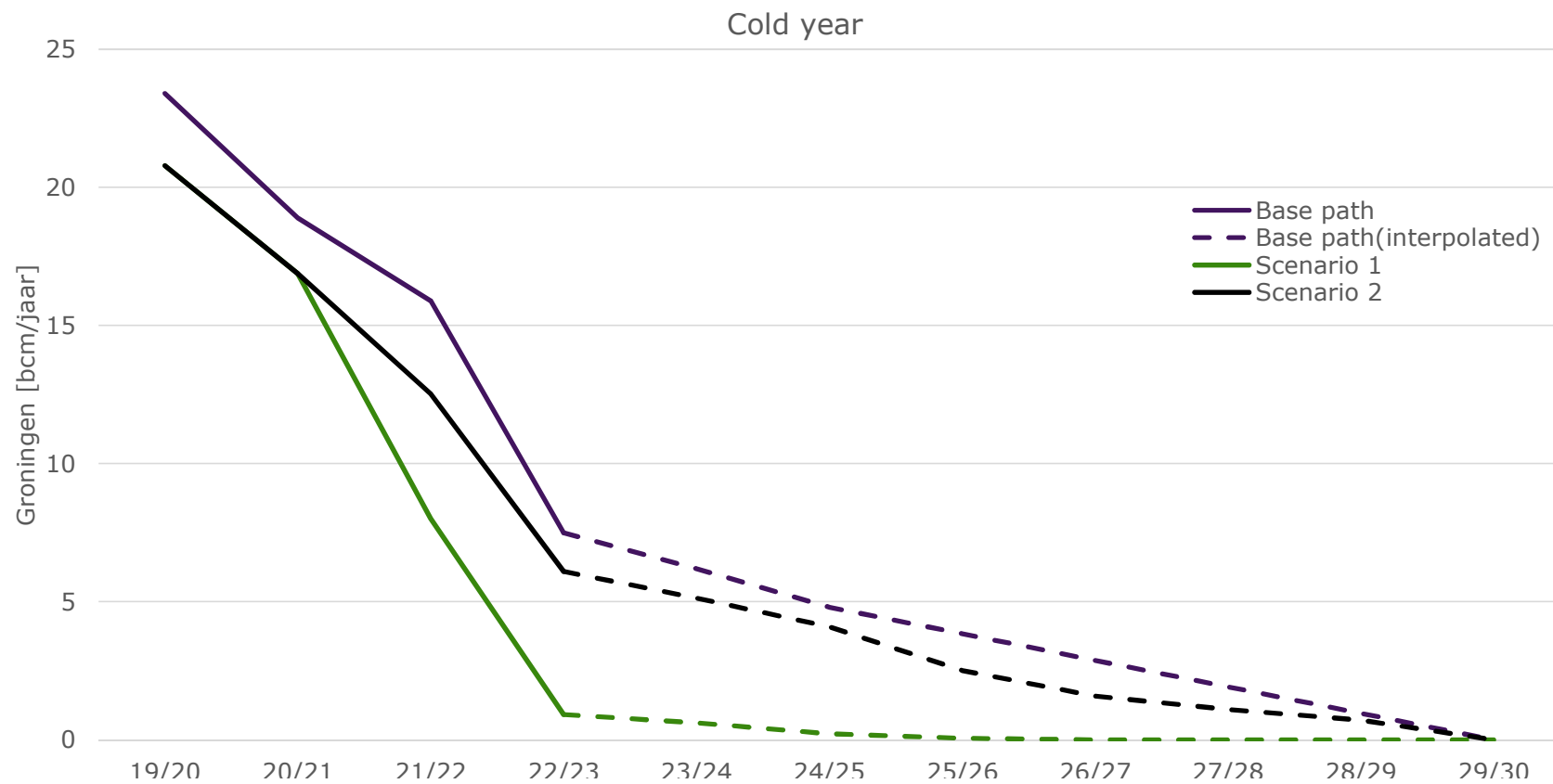
- Scenario 1: UGS Norg and export Oude Statenzijl will be delivered with converted H-gas.
- Scenario 2: UGS Norg and export Oude Statenzijl will be delivered with gas from the Groningen field.

Scenarios will be based on the following development of demand for Dutch L-gas (2020-2030):





Required volume from the Groningen field in a cold year 2020-2030



Consequences for available /needed level of capacity under investigation.



Foreseen impact on the Northwest European gas market

- > L-gas markets in Belgium, France and Germany will convert 100% to other sources of energy by 2030 => substitution has to be found for 40 bcm of L-gas.
- > Nine largest Dutch industrial consumers of L-gas will be required by law to convert to other sources of energy by 2022 (including H-gas) => may lead to an additional H-gas demand of 2+ bcm/year.
- > Remaining Dutch L-gas market will have to be served for 100% by converted H-gas after the closure of the Groningen field. Is a market of 30 bcm in a cold year but will decrease.
- > The new Dutch nitrogen facility will lead to an increased demand for H-gas from 2022 => additional H-gas demand of 7 bcm/year. Brings H-gas demand for the nitrogen facilities to max. 30 bcm/year. May decrease in later years due to decreasing exports and decreasing domestic demand.

This all may lead to a fundamental change of the gas flows in Northwest Europe.



Further information

Wim van 't Hof
Ministry of Economic Affairs and Climate Policy
The Netherlands
tel.: +31.70.379 6618
email: w.r.j.l.vanthof@minez.nl