

# Schaliegas, nieuw gas voor NL?

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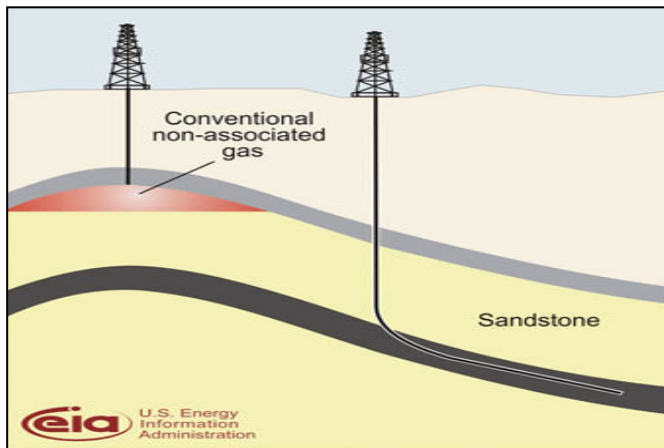
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for life



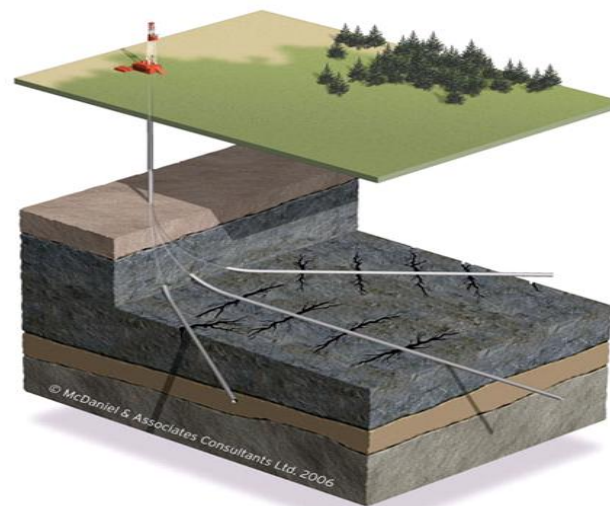
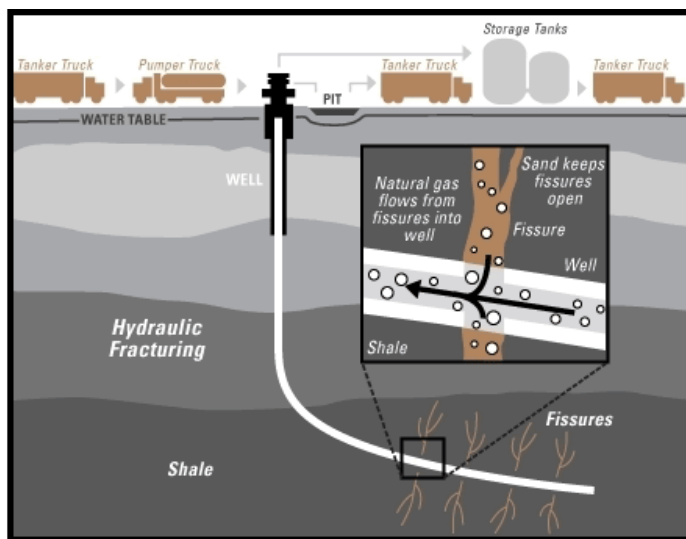
# Wat is schaliegas?

- Schaliegas is gas dat is ontstaan in een kleilaag rijk aan organisch materiaal dat in de loop van miljoenen jaren is gevormd.
- Het zit dieper dan conventioneel gas en is moeilijker te winnen
- Winning van schaliegas kan alleen door het gesteente open te scheuren



# Nieuwe ontwikkelingen

- Technologische ontwikkelingen (gebruik horizontale boringen, fraccen) hebben het mogelijk gemaakt om meer kosteneffectief te produceren



# Status gaswinning in NL

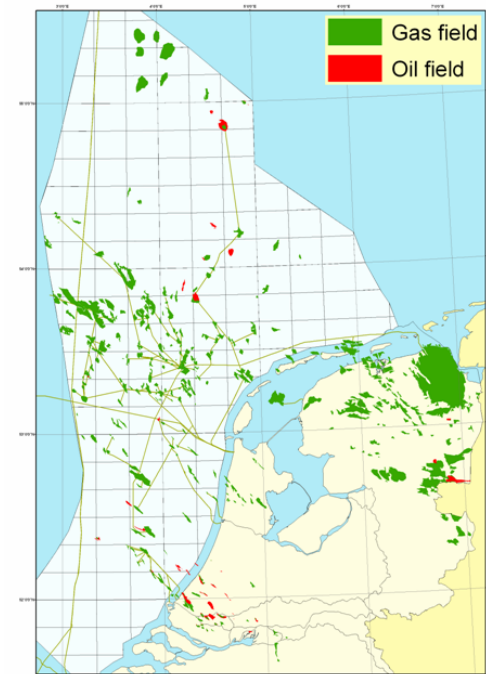
**437 gasvelden** ontdekt (on- & offshore)  
daarvan nu :

- 239 in productie
- 4 geconverteerd naar gasopslag
- **57 al uitgeproduceerd**
- 41 gepland om te gaan produceren
- 71 zgn. “stranded fields”

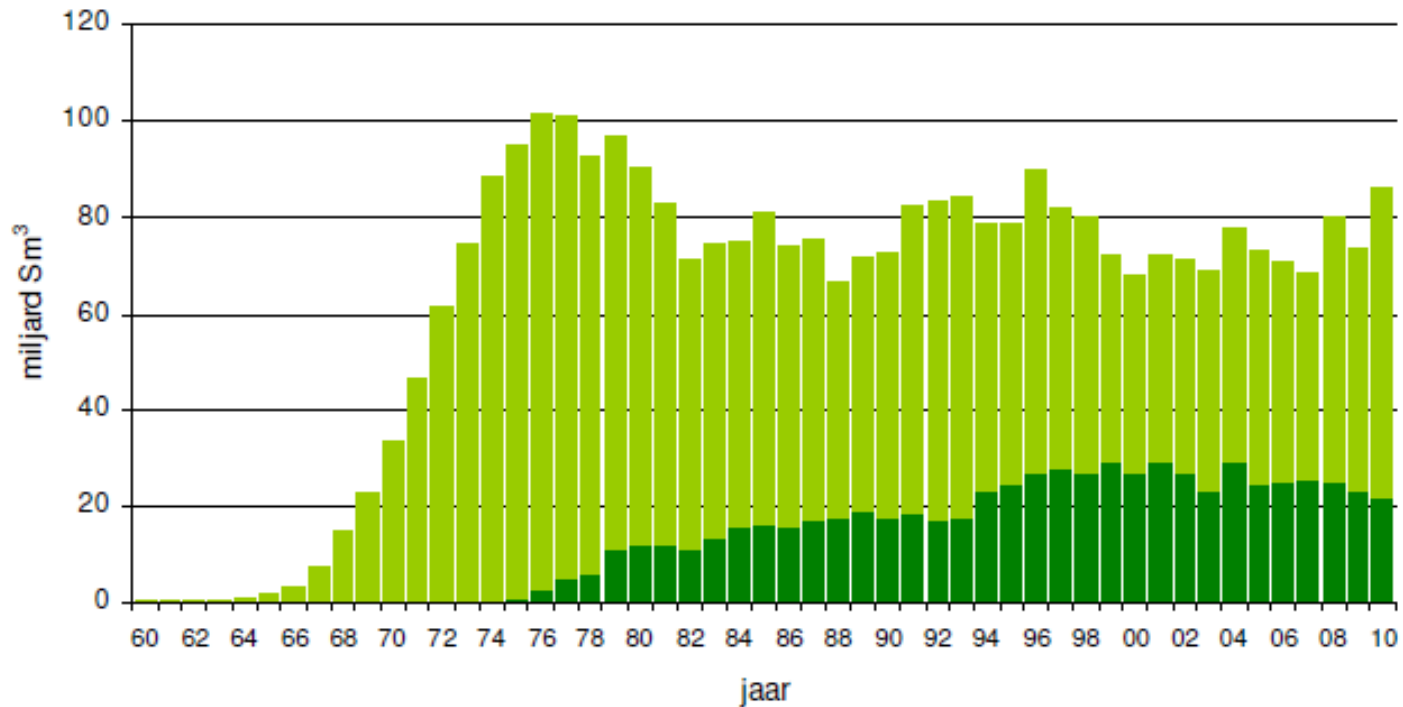
Op 1 January 2011:

nog 1304 miljard kuub gas

- 75% in Groningen veld
- 12% kleine velden onshore
- 13% offshore velden



# Gaswinning in NL



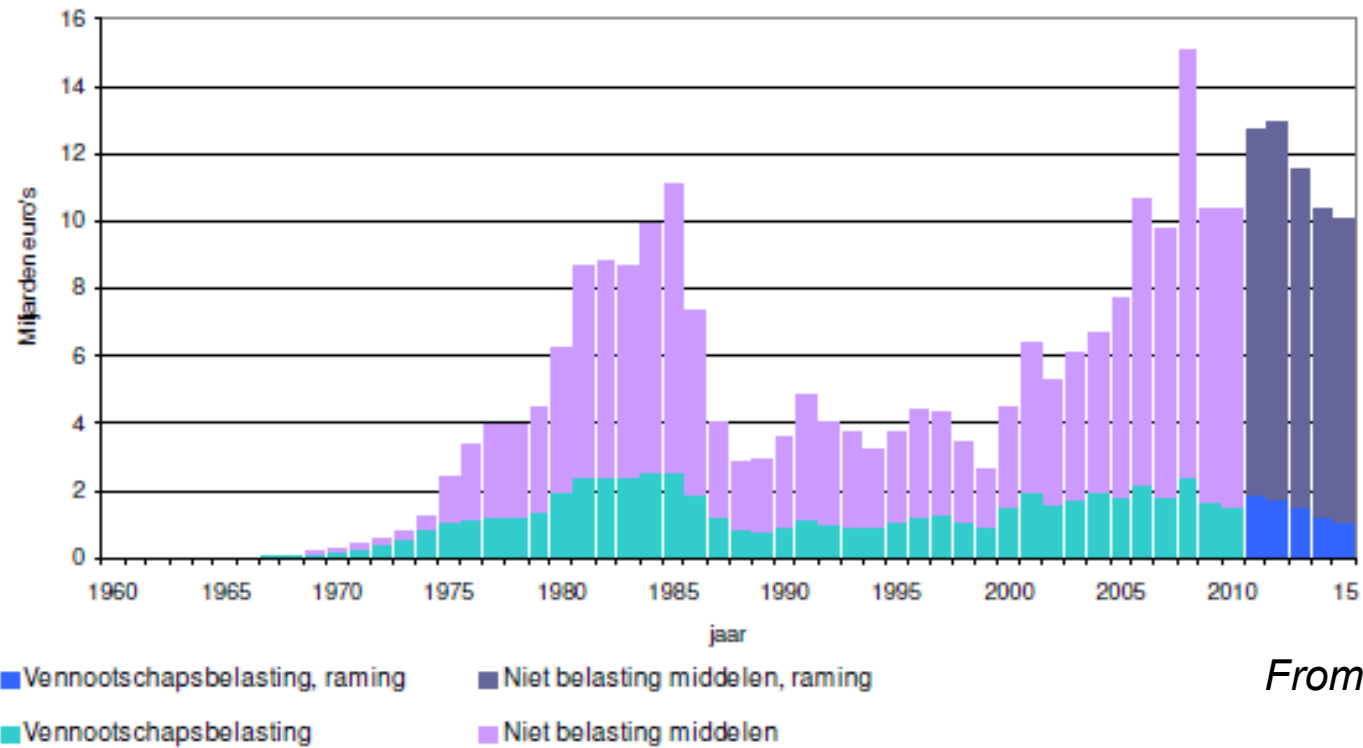
- Territoir
- Continentaal plat

From TNO: [www.nlog.nl](http://www.nlog.nl)

is voor NL?

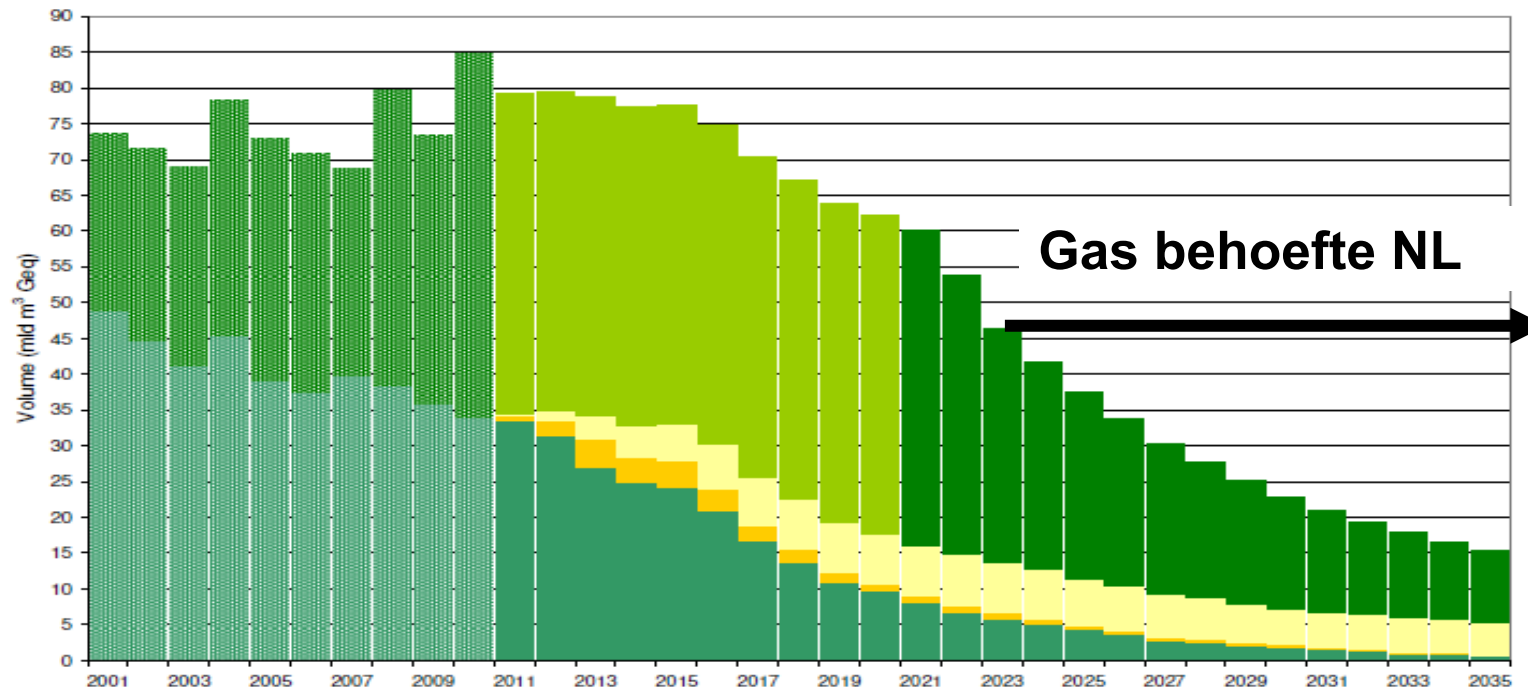


# Aardgasbaten in NL

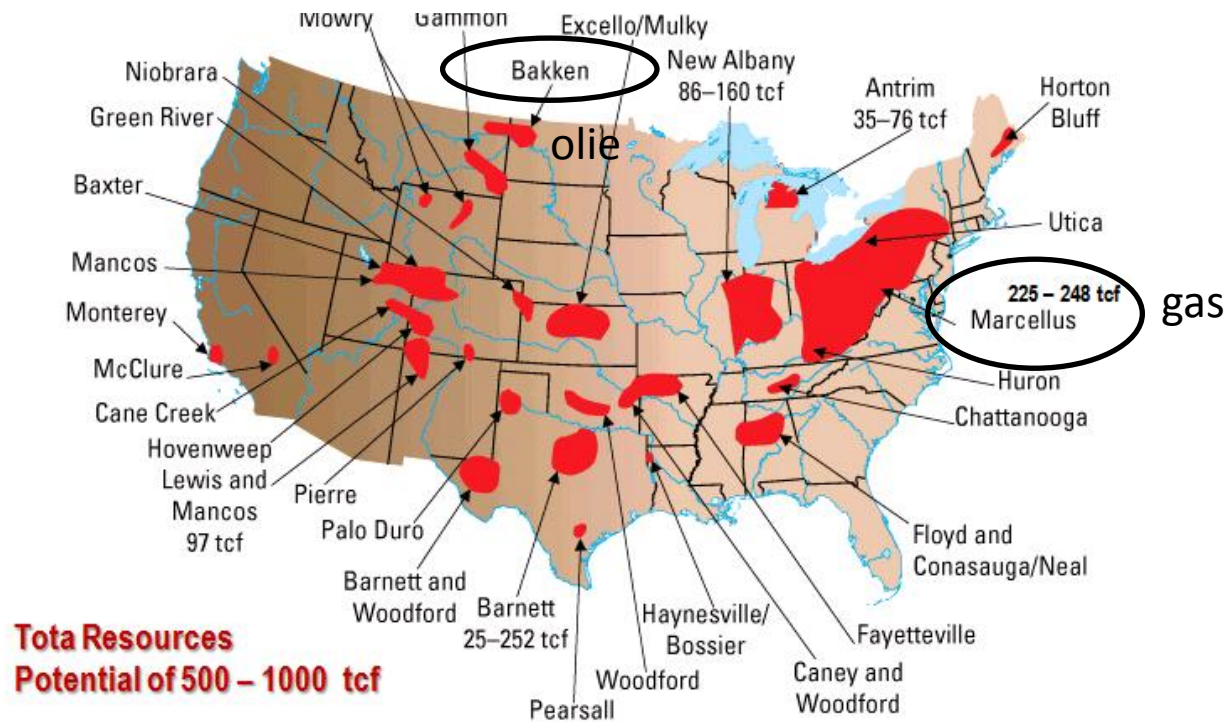


From TNO: [www.nlog.nl](http://www.nlog.nl)

# Toekomstige gasproductie NL



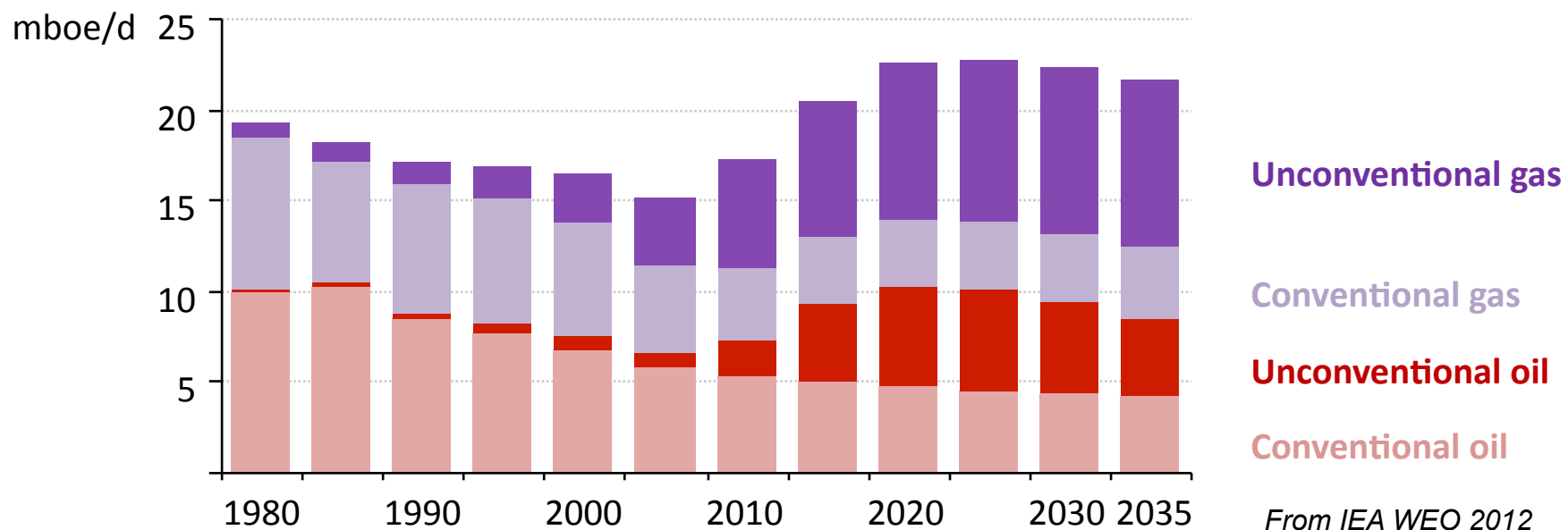
# Shaliegas revolutie in VS



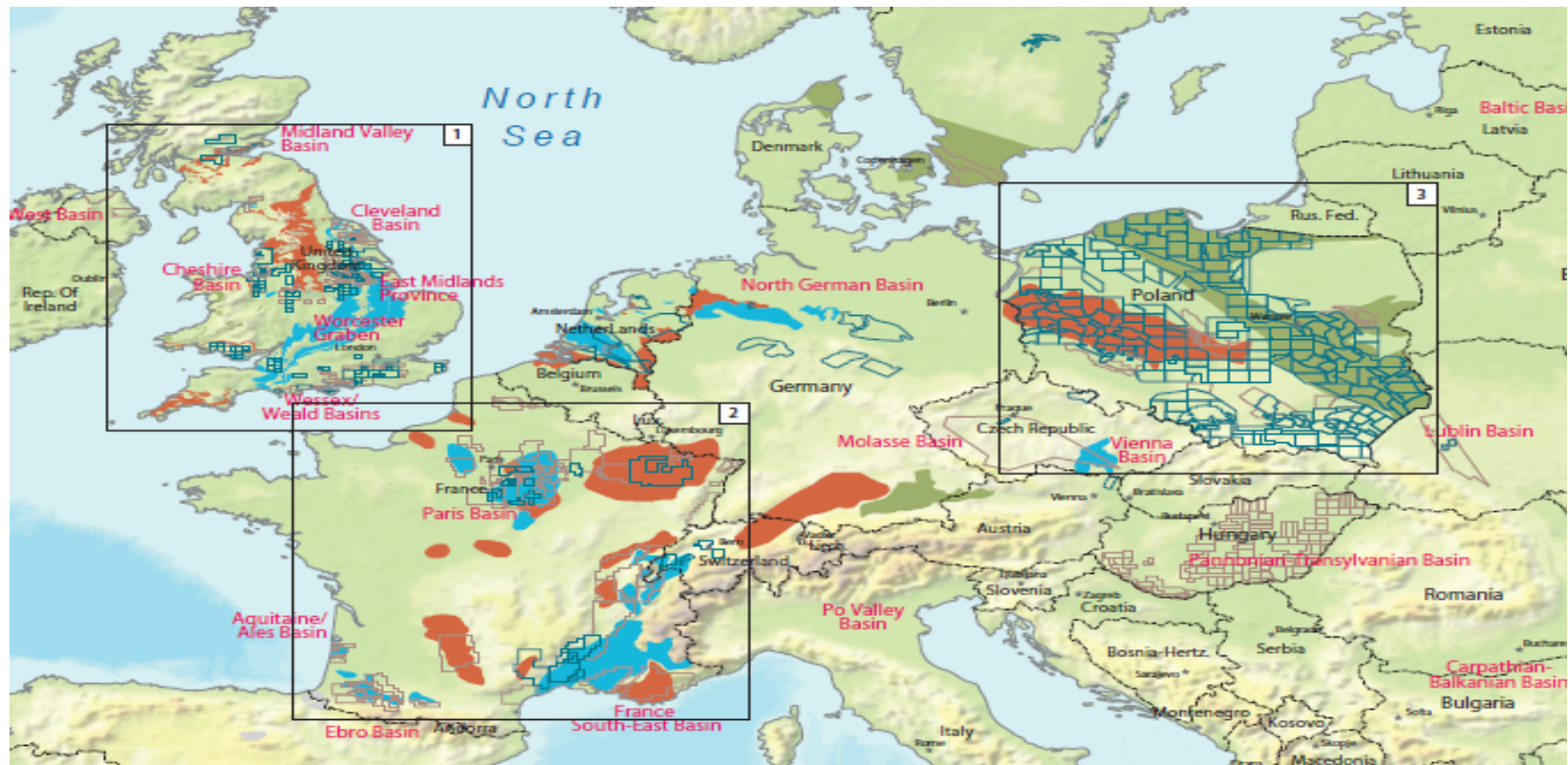


## Oil and Gas productie in de VS

IEA schattingen



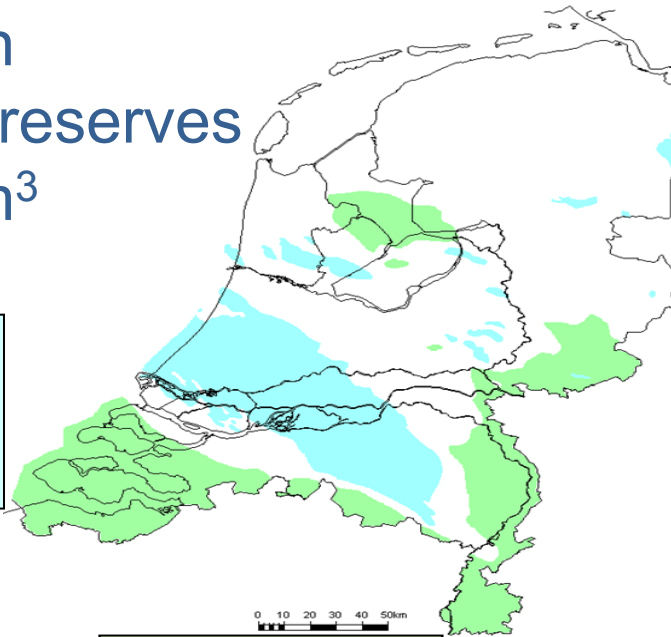
# Schaliegas velden in Europa



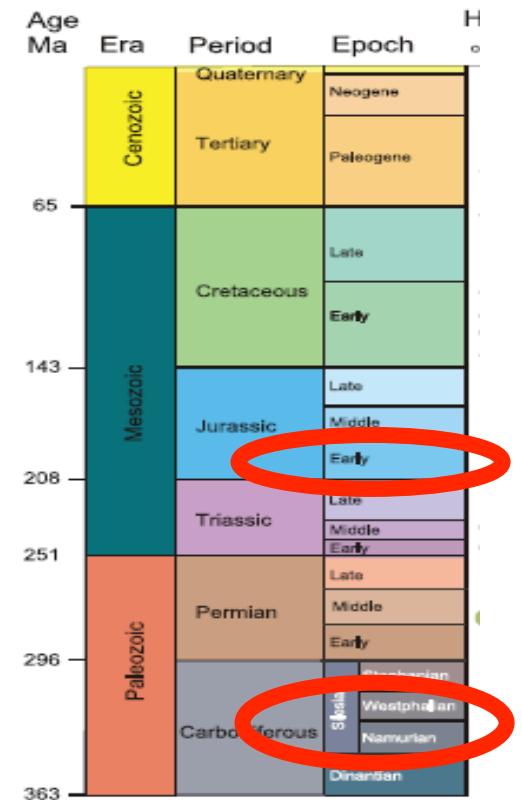
# Schaliegas reserves in Nederland

Huidige schattingen  
 Technisch winbare reserves  
 200 – 500 miljard m<sup>3</sup>

Jurassic  
 Posidonia  
 Shale Fm.

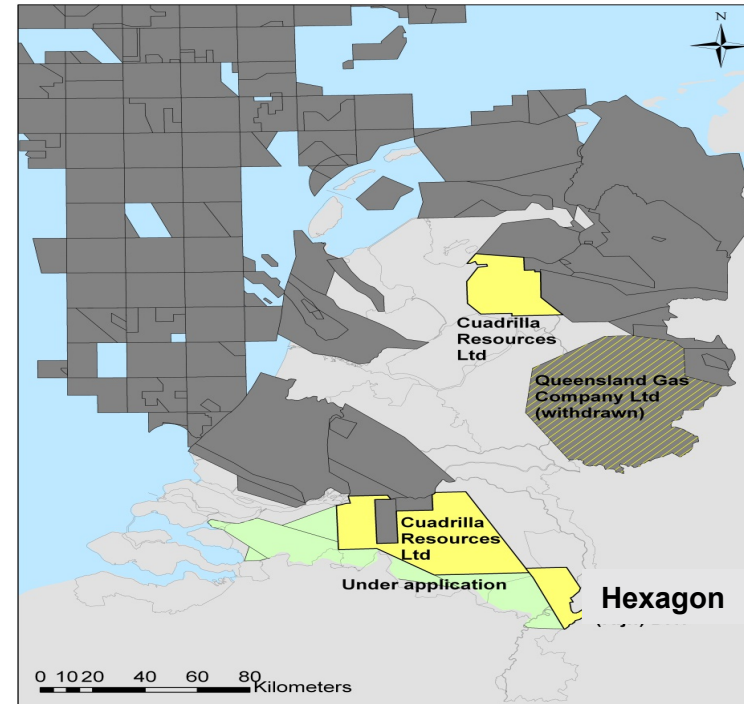


Carboniferous  
 Epen Fm.  
 <4500 m



# Status schaliegas in NL – exploratie vergunningen

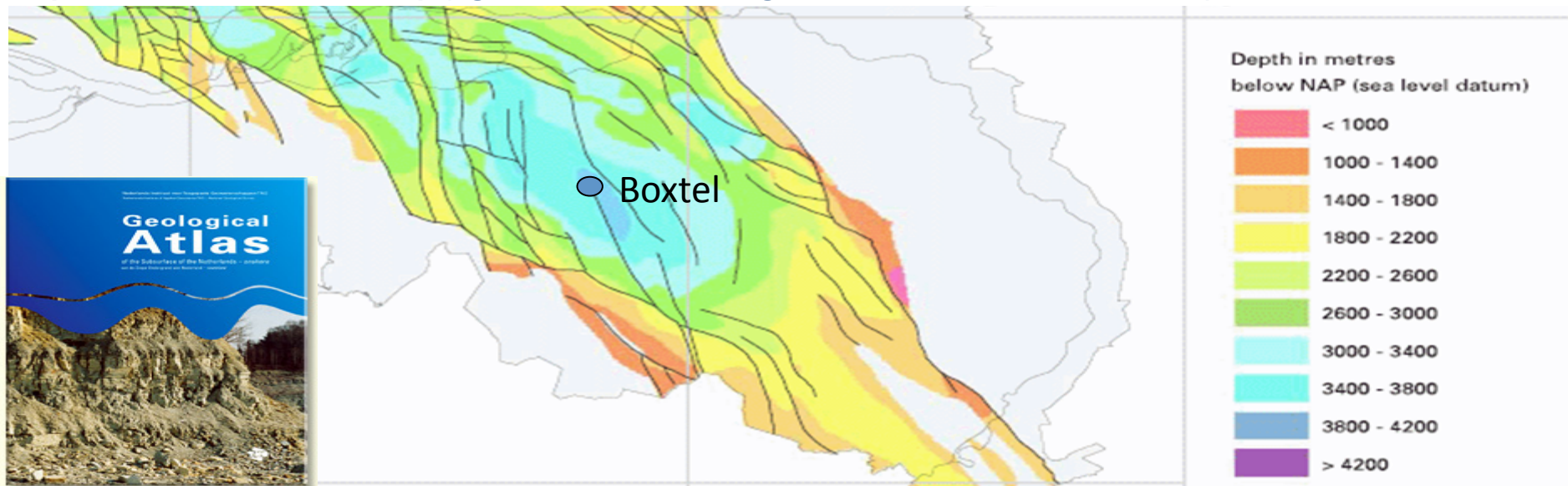
- › Cuadrilla heeft exploratie vergunning aangevraagd voor Noord Brabant en NO Polder
- › Queensland Gas heeft vergunningsaanvraag teruggegeven
- › BNK heeft een vergunning aangevraagd voor Utrecht.
- › Nieuwe concessie procedure loopt voor zuid NL en Utrecht
- › Onderzoek naar veiligheids en milieu aspecten van schaliegas (1 juli af) .



# Geologische kaarten van de ondergrond

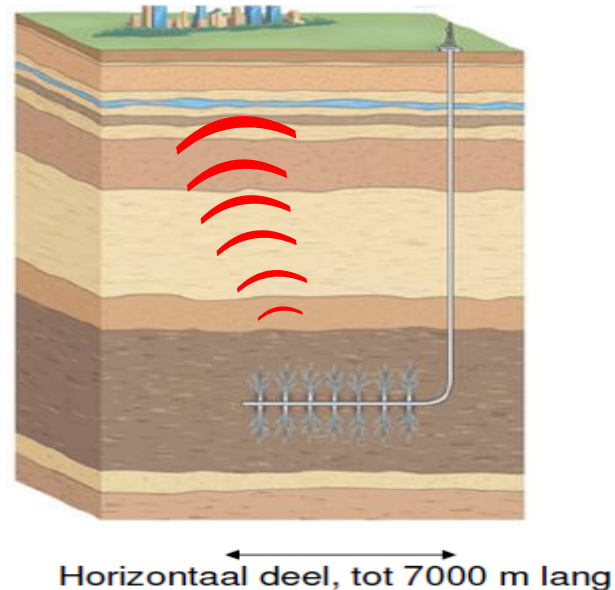
- Op basis van de beschikbare data heeft TNO dieptekaarten gemaakt
- Deze kaarten berusten deels op interpretaties, en bevatten onzekerheden
- Onzekerheden zijn het grootste in gebieden met beperkte data

Dieptekaart basis Altena Groep (~grens tussen afzettingen van Jura en Trias ouderdom)





## Schaliegaswinning: potentiële risico's



1. Lekkage van afvalwater naar het grondwater
2. Lekkage van methaan of radioactieve stoffen naar de atmosfeer
3. Seismische risico's
4. Bodemdaling
5. Watergebruik
6. Vervuild productiewater
7. Omgevingseffecten



# ARGUMENT MAP SHALE GAS PRODUCTION IN EU MEMBER STATES

**What is shale gas?**  
 Shale gas is natural gas that is "locked" in clay layers (shales) in the subsurface. Shale gas is produced using the technique of hydraulic fracturing, or 'fracking', to create fractures in the shales that allow the gas to flow out. Shale gas production requires more water, chemicals and more wells to be drilled compared to conventional gas production. Shale gas can be used in the same way as conventional gas without any modifications to existing gas infrastructure. Exploratory drilling is needed to assess how much gas is present and whether it can be profitably produced. The EU does currently not take a position that either hinders or promotes shale gas production.

**What are the arguments for and against production of shale gas for EU member states with shale gas resources?**

**For**      **Against**

This Argument Map summarises the arguments for and against shale gas production for EU member states with shale gas resources. The arguments for and against exploratory drilling, other than as an initial step in the production process, are not given consideration here. This map is based on literature study and input from experts from different backgrounds and member states. We thank all participants for their contribution.

**Energy**

- Shale gas production contributes to the country's energy supply**
  - Shale gas production helps to satisfy the growing demand for energy.
  - Shale gas can reduce gas imports or substitute (declining) conventional gas production.
- Shale gas can support other forms of energy production**
  - Shale gas can provide energy when renewable energy sources fail to meet peak demand.
  - Shale gas production generates knowledge for use in other forms of energy production (e.g. geothermal).

**Environment**

- Shale gas production and use are relatively environmentally friendly**
  - Shale gas combustion generates less greenhouse gas per unit of energy than coal and oil.
  - Technologies for reducing the environmental impact of shale gas production are available and improving.
  - Domestic shale gas production reduces long-distance transport of imported energy.
- Domestic shale gas production increases control over environmental impact of energy production**
  - High environmental standards for shale gas production in the EU can lead to better standards worldwide.
  - Domestic shale gas production may have less environmental impact than energy production elsewhere.

**Safety**

- Shale gas can be produced safely**
  - Shale gas production uses common technologies, which limits safety risks.
  - Shale gas production can lead to additional investments in the maintenance of the gas infrastructure.
  - Shale gas production can be monitored real time and adjusted if necessary, which limits safety risks.

**Economy**

- Shale gas production is financially profitable for the country**
  - The state benefits from the sale of shale gas, as shareholder, receiver of royalties or through taxes.
  - Use of the existing gas transport network will be extended so public investments are more profitable.
  - Shale gas production can lower gas and energy prices and increase people's purchasing power.
- Shale gas production strengthens the national economy**
  - Shale gas production decreases energy imports and thus improves a country's balance of payments.
  - The country can export knowledge and experience of shale gas production.
  - Lower energy prices due to shale gas production improve the competitiveness of energy intensive industries.
  - Shale gas gives the country more options for the distribution of gas, which can be profitable.
  - Shale gas production can attract foreign investors.
- Shale gas production boosts the local economy**
  - Shale gas production offers business opportunities to local companies close to the production area.
  - Shale gas production increases regional employment.
  - Infrastructure built to produce shale gas remains beneficial to the local community after production stops.

**Politics**

- Shale gas production strengthens the political position of the country**
  - Shale gas production strengthens the international negotiation power of the country.
  - Shale gas production reduces the dependence on gas supply from gas exporting countries.
  - Shale gas production strengthens the sense of independence and autonomy of citizens.

**Energy**

- Shale gas production hinders the transition to renewable energy**
  - Government investments in shale gas production cannot be spent on renewable energy.
  - Shale gas production increases the energy supply and thus delays the urgency to switch to renewable energy.
  - Shale gas production reduces fossil energy prices making renewable energy relatively expensive.

**Environment**

- Shale gas production harms the environment**
  - Shale gas production and post-production wells can lead to groundwater contamination.
  - Shale gas production requires water and thus competes with other demands for water.
  - Shale gas production can lead to methane emissions and thus add to the greenhouse effect.
  - Shale gas production negatively impacts air quality during well construction and production of gas.
  - Shale gas production uses chemicals which may harm the environment.
- Shale gas production restricts space and disturbs tranquility**
  - Shale gas production requires wells to be drilled, which are blots on the landscape and require space.
  - Shale gas production requires transport and drilling, which affect the environment and hinder residents.

**Safety**

- Shale gas production is a hazard to employees and residents**
  - Shale gas production poses a risk of earth tremors and reactivation of faults.
  - Harmful substances in the shale layer, like radioactive materials, may come to the surface.
  - Shale gas production has safety risks, while little is known about effective measures to address accidents.
  - The use of common technologies in unconventional conditions can lead to unpredictable outcomes.

**Economy**

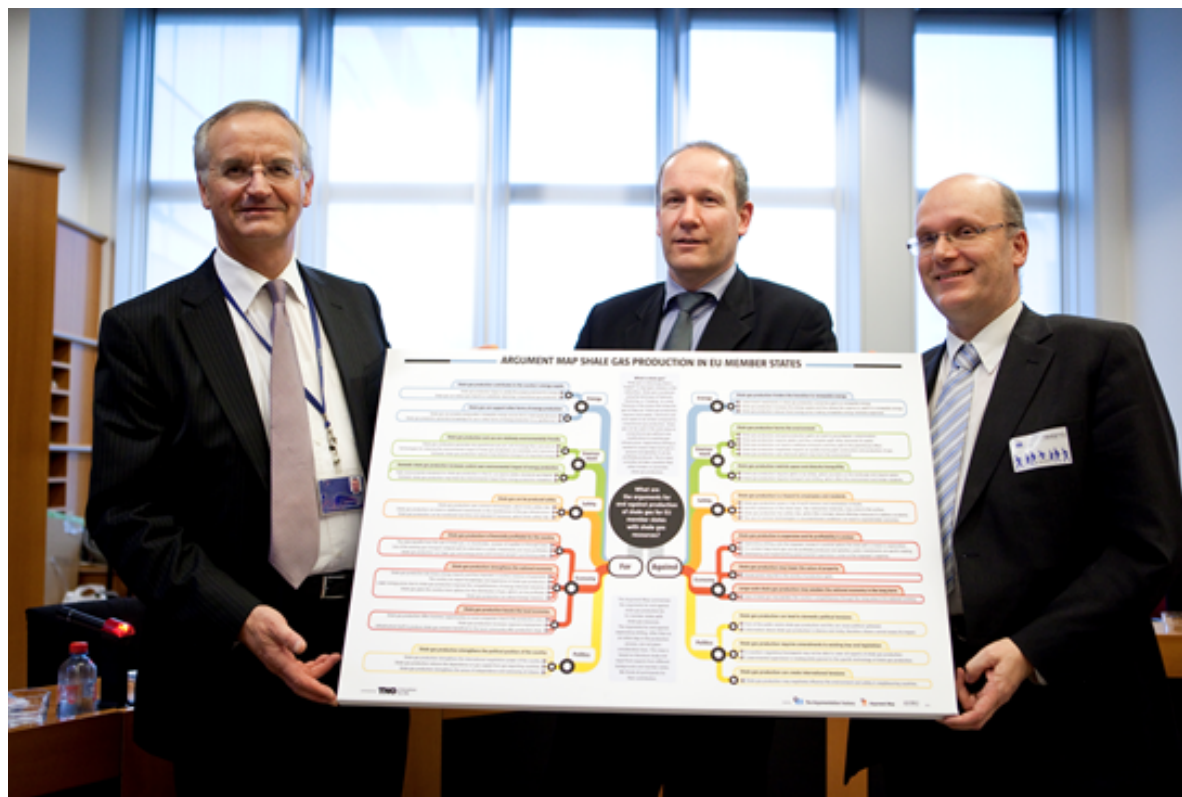
- Shale gas production is expensive and its profitability is unclear**
  - Exploratory drilling costs the taxpayer money in countries where the state will co-invest in exploration.
  - It is unclear how much gas can be profitably produced and whether public investments are worth making.
  - Developing and implementing governmental supervision comes at the taxpayer's expense.
- Shale gas production may lower the value of property**
  - House prices may fall in the vicinity of production wells.
- Large scale shale gas production may weaken the national economy in the long term**
  - Sale of shale gas may weaken the country's competitiveness through the rising value of its national currency.

**Politics**

- Shale gas production can lead to domestic political tensions**
  - Part of the public resists shale gas production and this can cause political upheaval.
  - Information about shale gas production is diverse and misty, therefore citizens cannot assess its impact.
- Shale gas production requires amendments to existing law and legislation**
  - A country's regulatory framework may not be able to cover all aspects of shale gas production.
  - Governmental supervision is inadequately geared to the specific technology of shale gas production.
- Shale gas production can create international tensions**
  - Shale gas production may negatively influence the environment and safety in neighbouring countries.



# Aanbieding Argumentenkaart aan Lambert van Nistelrooij - Brussel





# Argumentenkaart

## Argumenten voor



# Argumentenkaart

## Argumenten voor



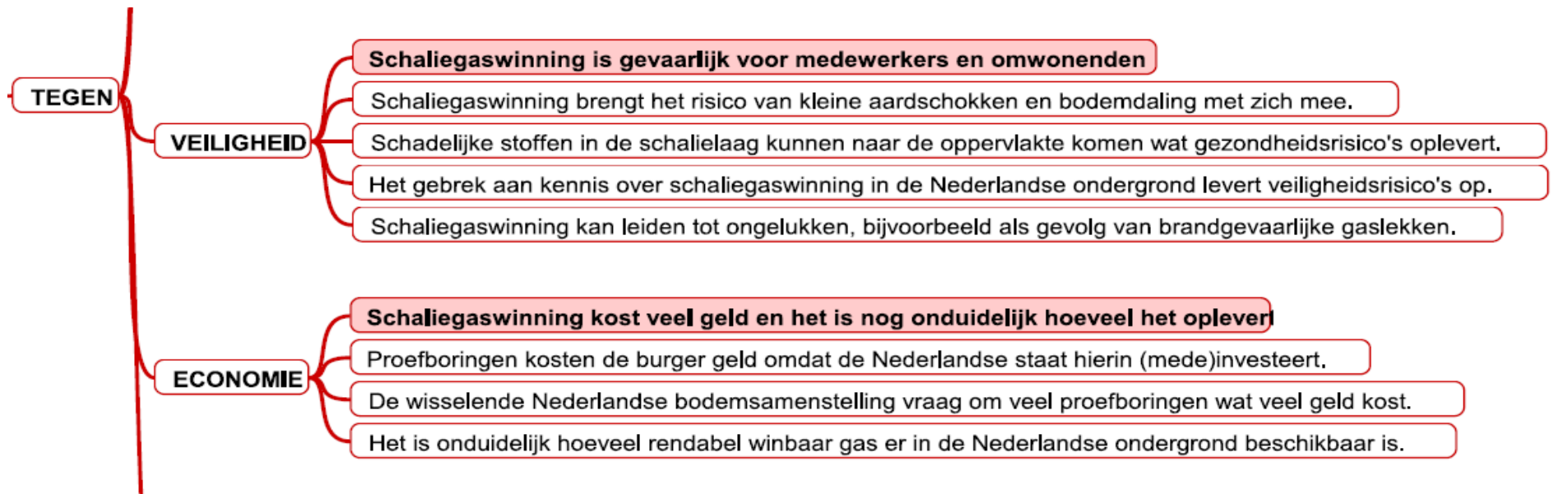
# Argumentenkaart

## Argumenten tegen



# Argumentenkaart

## Argumenten tegen



# Argumentenkaart

## Argumenten tegen

### POLITIEK

#### Schaliegaswinning vereist aanpassing van bestaand beleid

*De huidige Mijnbouwwet is nog niet toegesneden op schaliegaswinning.*

*Schaliegaswinning staat op gespannen voet met het Nederlandse beleid rond duurzaam bodembeheer.*

*Het toezicht op schaliegaswinning is nog niet voldoende uitgewerkt.*

#### Schaliegaswinning stuit op weerstand bij het publiek

*De boringen en het transport rond schaliegaswinning leiden tot geluidsoverlast voor omwonenden.*

*Er is angst en weerstand bij bewoners, onder meer vanwege het risico dat lokale huizenprijzen dalen.*

*Informatie over schaliegaswinning loopt erg uiteen, burgers weten niet wat ze kunnen geloven.*

*Schaliegaswinning is een stap terug: grotere afhankelijkheid van gas in plaats van duurzame energie.*

# Wat adviseert TNO t.a.v. Schaliegas?

- › Nederland heeft nog 10 jaar voldoende eigen productie capaciteit om in de eigen gasbehoefte te voorzien, daarna moet gas worden geïmporteerd.  
Dit geeft voldoende tijd om schaliegaswinning te onderzoeken
- › Gedegen onderzoek naar reserveschattingen voor schaliegas in NL
- › Degelijk onderzoek naar de specifieke Nederlandse situatie wat betreft risico's van geïnduceerde seismiciteit tgv fracking
- › Omdat de data over de laag waar het schaliegas zit beperkt is, adviseren we onder gecontroleerde condities een exploratieboring uit te voeren waarmee veel meer informatie over de schalielaag beschikbaar komt voor verder onderzoek
- › Deze exploratie boring moet gepaard gaan met een permanente monitoring van bodem beweging en volledig transparant zijn wat betreft het gebruik van water, chemicalien en proppants.
- › Resultaten van de exploratie boringen moeten ter beschikking komen voor onafhankelijk onderzoek .

# Hartelijk dank voor uw aandacht

Meer info?

- [www.tno.nl/schaliegas](http://www.tno.nl/schaliegas)

Of neem gerust contact op:

- [rene.peters@tno.nl](mailto:rene.peters@tno.nl)
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