

London, December 14, 2011
Prospex 2011, Harmen Mijnlief

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Hydrocarbon resources, data and E&P in the Netherlands

a status update. Harmen Mijnlief

ebn



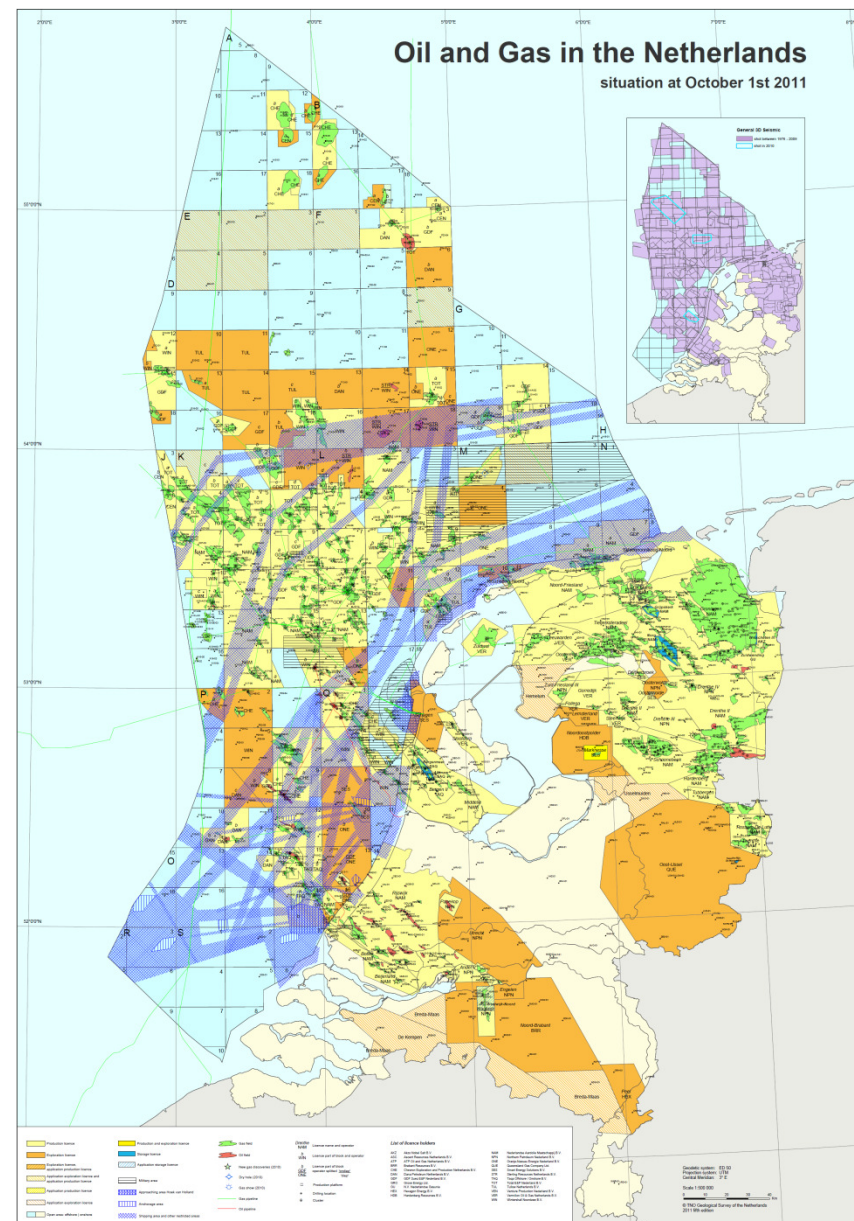
Ministry of Economic Affairs,
Agriculture and Innovation

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Present day E&P map

- › Outline of the presentation
- › Status report on resources
- › Fiscal & regulatory incentives.
- › View on additional resources
- › Data position

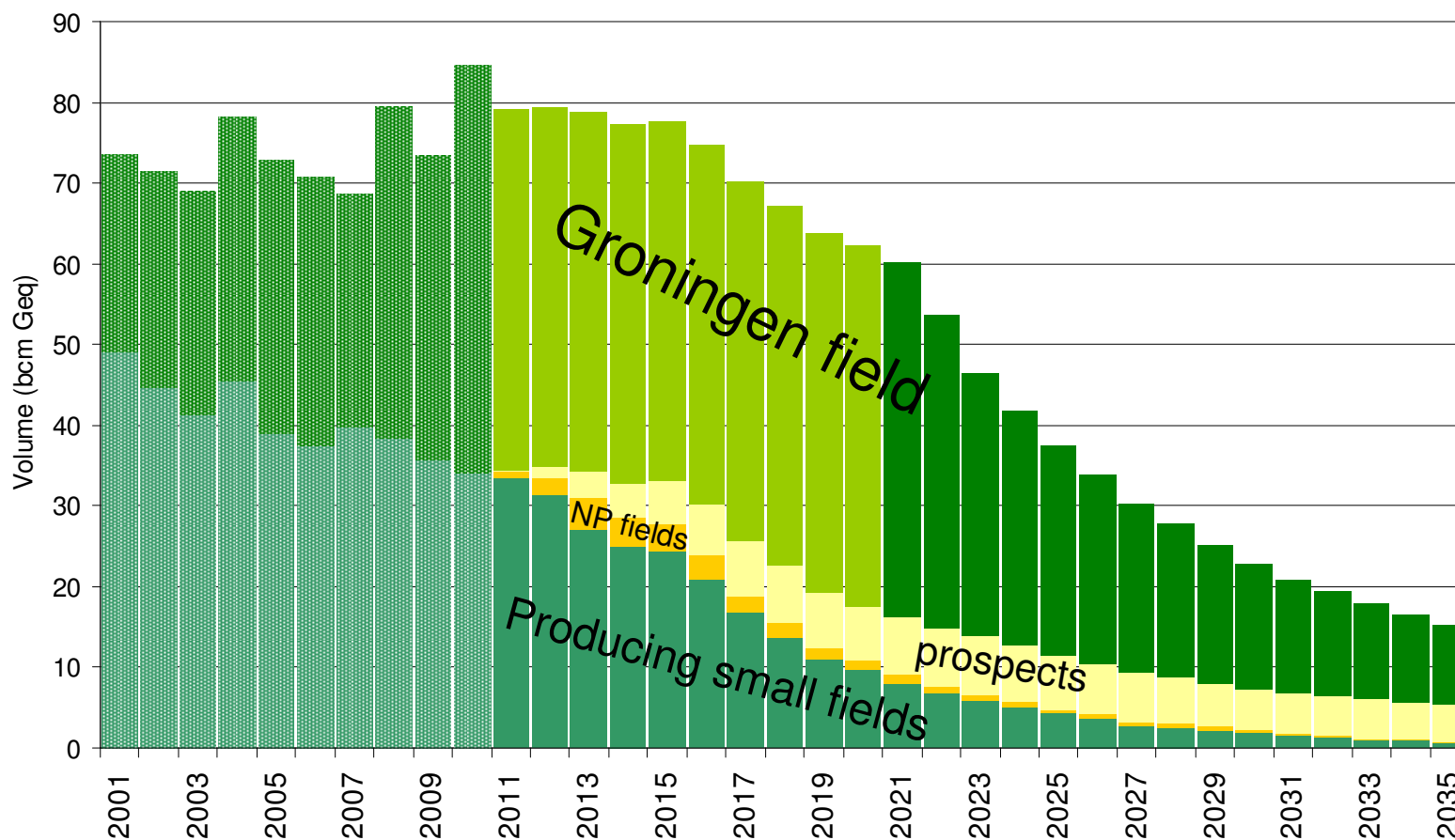


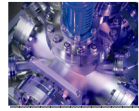
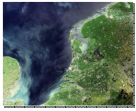


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Documented Dutch resources

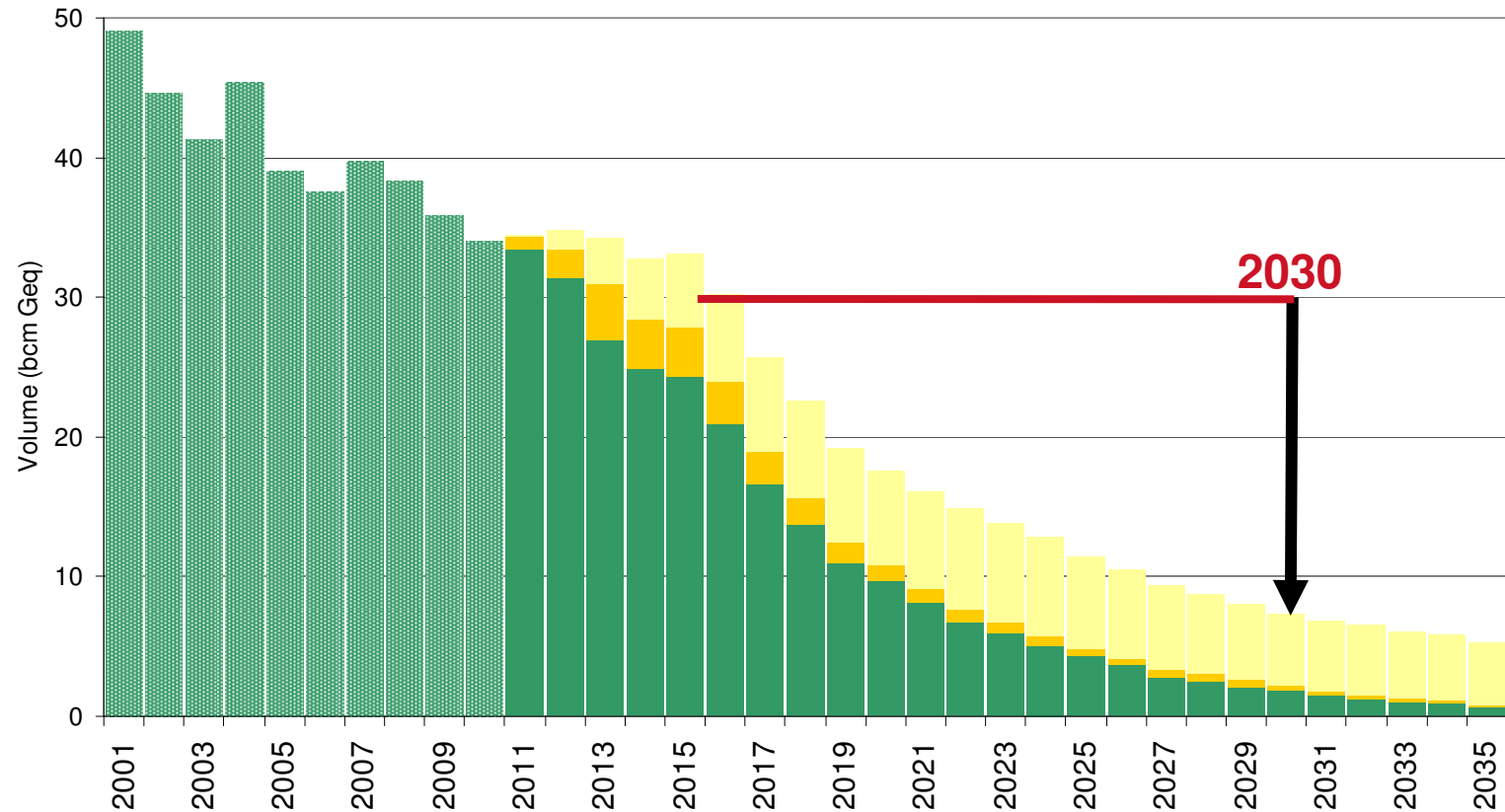


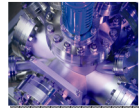
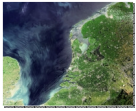


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Ambition for small field production:

Maintain yearly production @ 30bcm till 2030

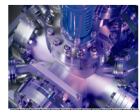




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How to reach the ambition

- › Tax incentives
- › Gas in under-explored areas
- › Gas in new plays
- › Challenging reservoirs
 - › Tight reservoirs
 - › Shallow gasreservoirs
- › Unconventional reservoirs
 - › Shale gas
 - › CBM
- › Tail end production



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Fiscal and regulatory incentives and framework

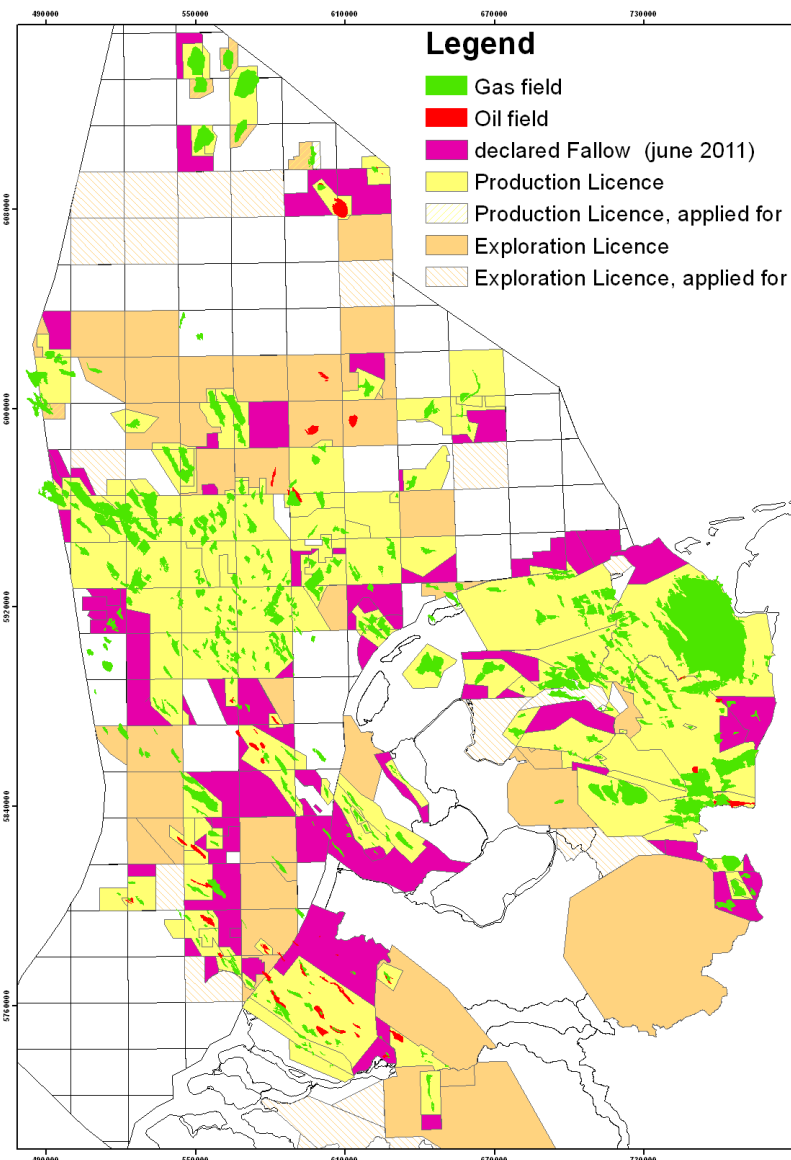
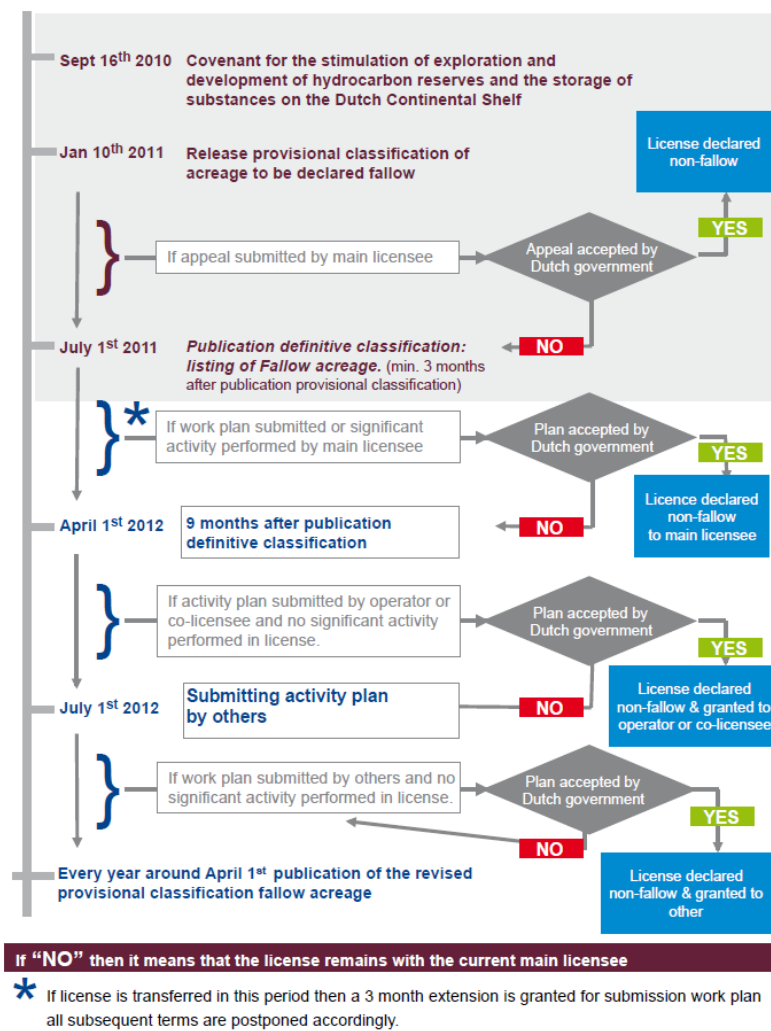
- › Marginal fields and prospects incentive (2011)
- › Research & development incentive (2012)
- › Small fields policy (long standing successful strategy)
 - › Guaranteed off-take (GasTerra)
 - › Guaranteed transport (Gas-Transport-Services)
- › 40% Participation of EBN in exploration and production ()
- › Update of the mining act (2003)
- › Fallow acreage incentive (2011)

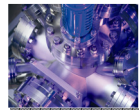
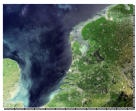


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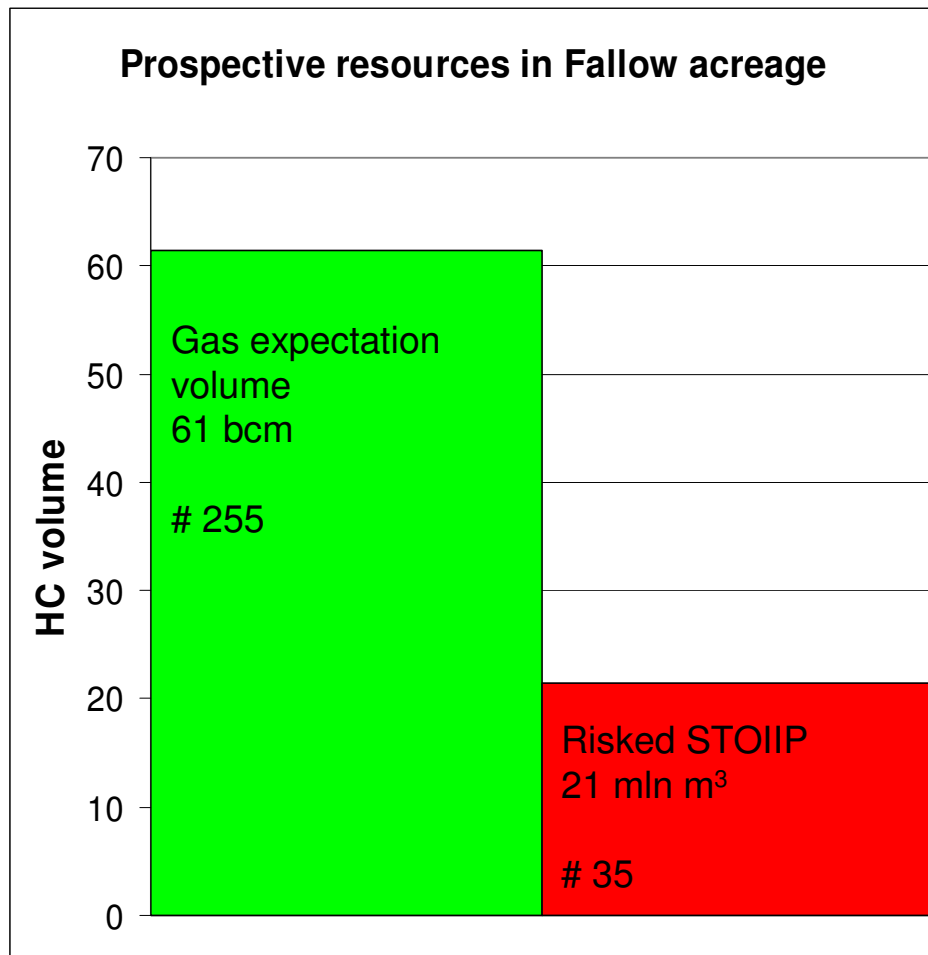
Fallow acreage incentive

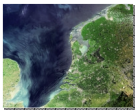




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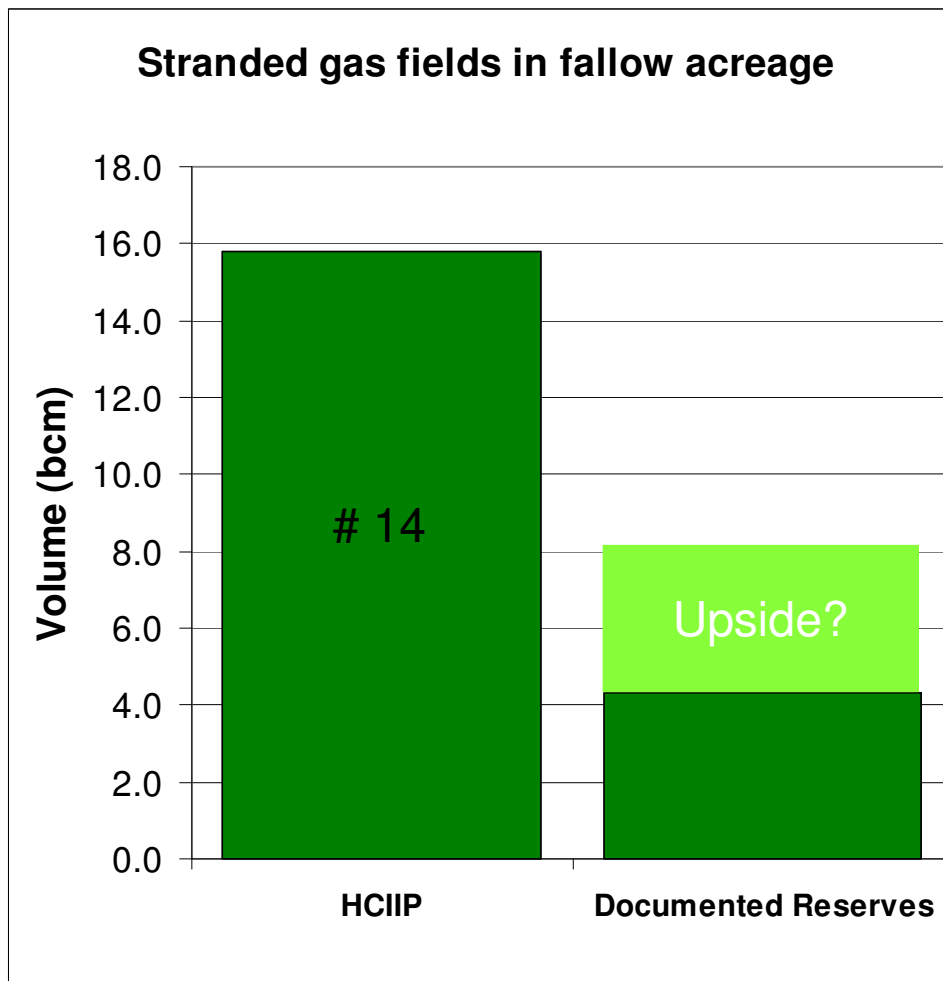
Resources in fallow licences





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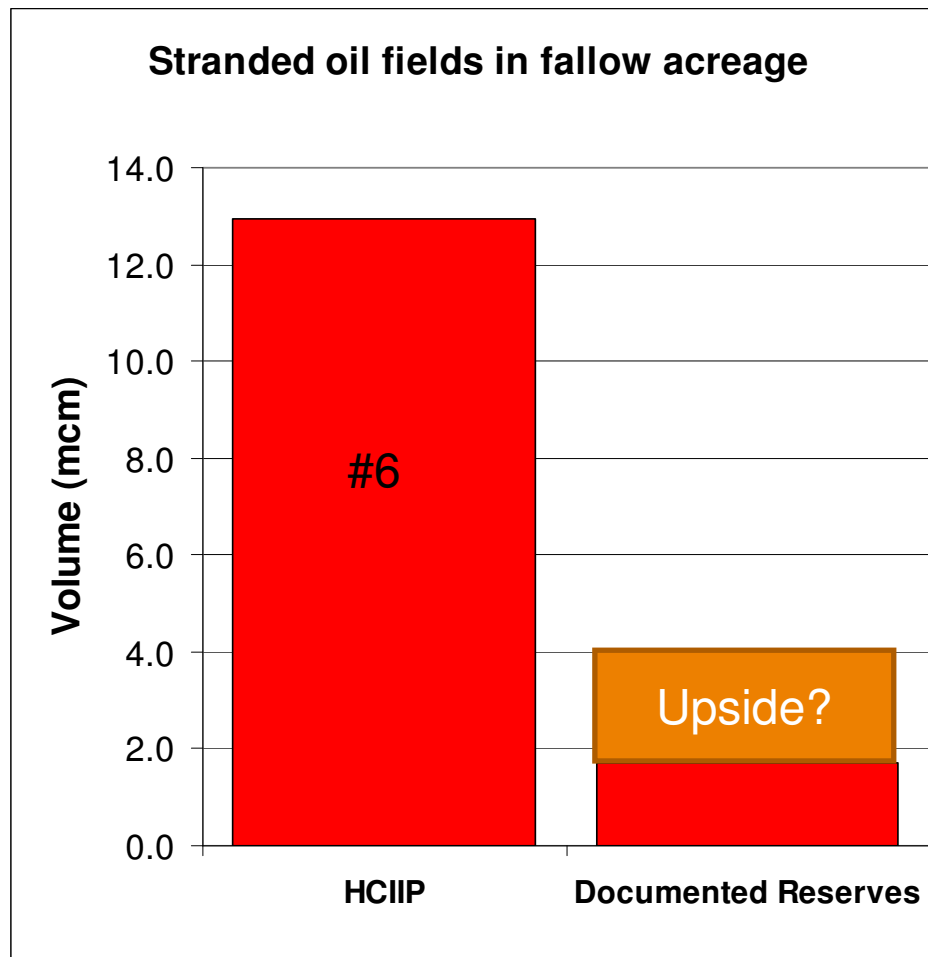
Resources in fallow licences

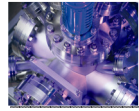
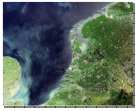




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Resources in fallow licences



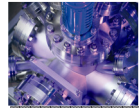
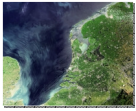


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Marginal fields/prospect incentive

- › A gas field or prospect is marginal when:
 - › Volume,
 - › Productivity and
 - › Distance to infra structure
- › are below a threshold.

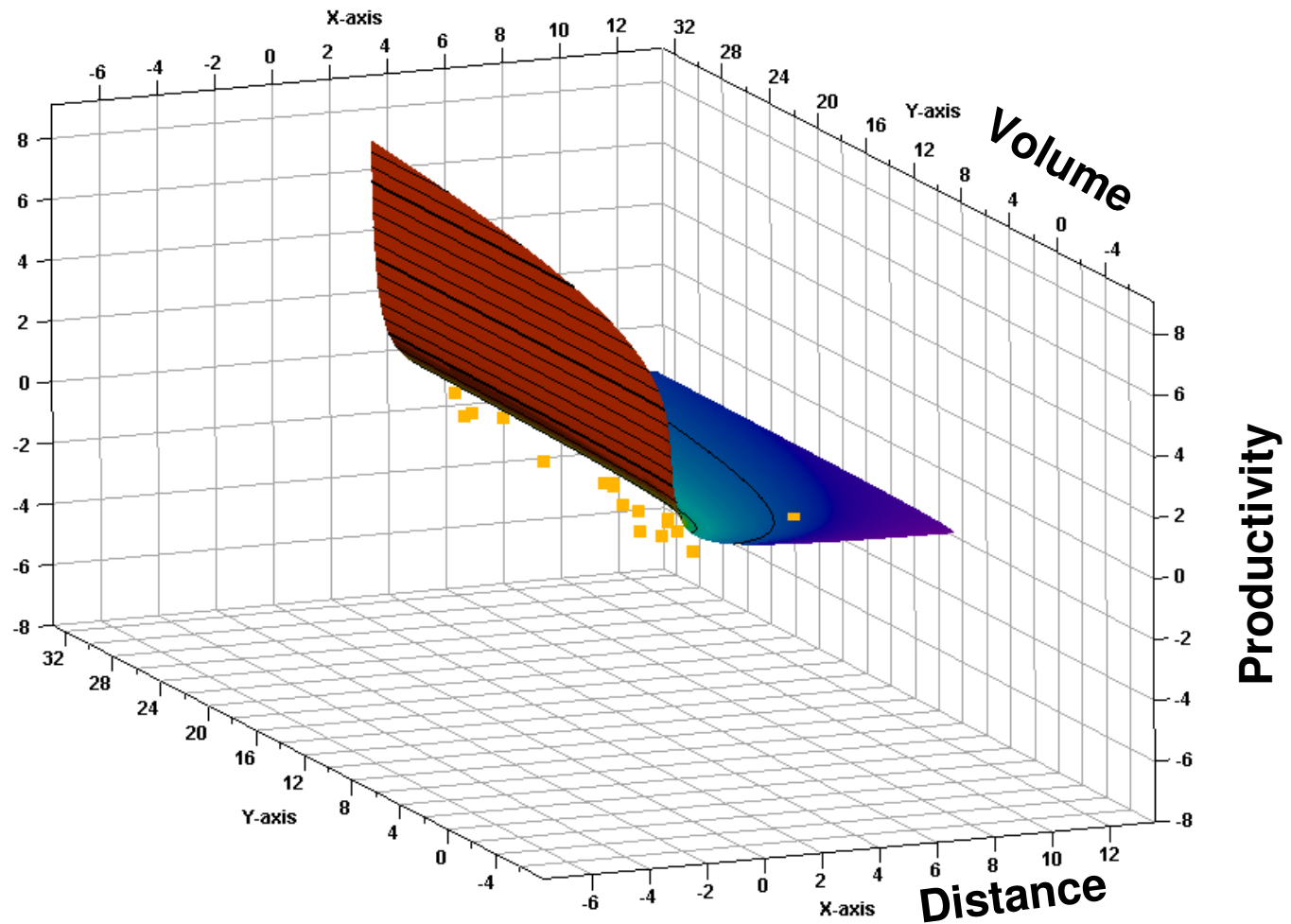
- › Then project screens for **25%** uplift.

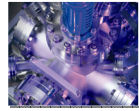
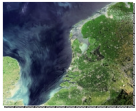


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This years results of the marginal fields/prospect incentive



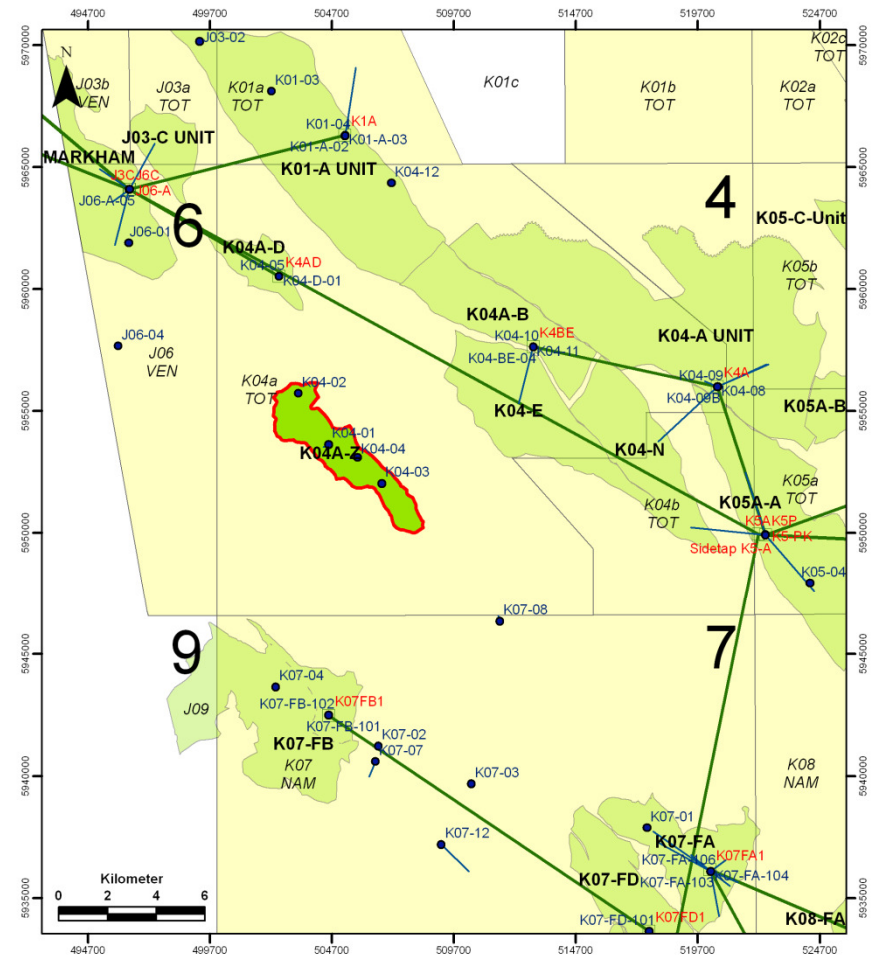


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Example

- › Stranded field K4-Z
 - › Discovered in 1974
 - › 1 discovery well
 - › 3 appraisal wells
 - › Stranded for 37 yr
-
- › Now being developed aided by the marginal field incentive



Legenda

- Boring
- Boortraject
- Platform
- Pijpleiding
- K04A-Z
- Gasvoorkomen
- Winningsvergunning





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Stranded gas

Resource Group	number	GIIP (bcm)	Reserves (bcm)
Stranded gas fields	67	90	40-50

http://www.nlog.nl/en/reserves/reserves/stranded.html

OG NL Olie- en Gasportaal

- Boreholes
- Seismic surveys
- Fields
- Production
- Infrastructure
- Licences
- Publications and Data sets
- Legislation
- Administrative procedures
- Fees, taxes and state participation
- Seismicity and subsidence
- Contacts
- Links
- Home
- Disclaimer
- Contact
- (in het Nederlands)

Stranded (fallow) gas and oil fields

Within the Netherlands and the Netherlands sector of the Continental Shelf a number of oil and gas accumulations have been discovered which for a variety of reasons have not been taken into production. A brief analysis made in 2010 of 67 stranded fields showed that on average they contain 1.4 bcm of GIIP, resulting in an estimate of about 90 bcm in total. It is estimated that the corresponding total reserves could range from 40 to 50 bcm, given fair to good economic conditions for development.

More information on specific fields can be found in the fact sheets below. Once the relevant wells have been identified, the available well information can be downloaded or ordered from TNO (see [Boreholes](#)).

Since 2010 specific fiscal measures are in place to stimulate the production of marginal fields.

[Regeling investeringsaftrek marginale gasvoorkomens Nederlands continentaal plat \(Staatscourant 13093, 25 augustus 2010\)](#)

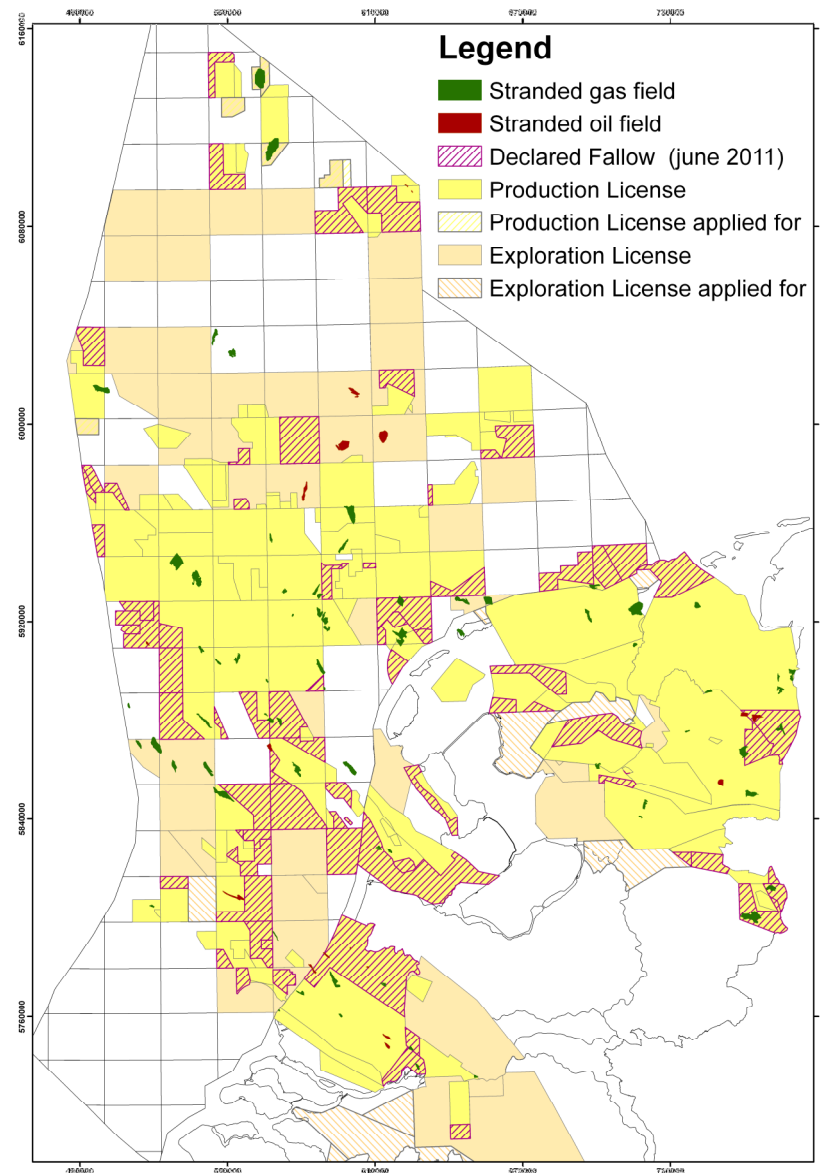
Fact sheets have been compiled on behalf of the Ministry of Economic affairs, Agriculture and Innovation. These fact sheets are to inform interested parties about the main characteristics of the accumulations.

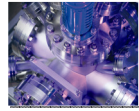
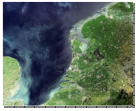
Overview stranded fields

[Stranded gas and oil fields in the Netherlands \(April 2010\) \(excel sheet\)](#)

Listing fact sheets of stranded fields (April 2010)

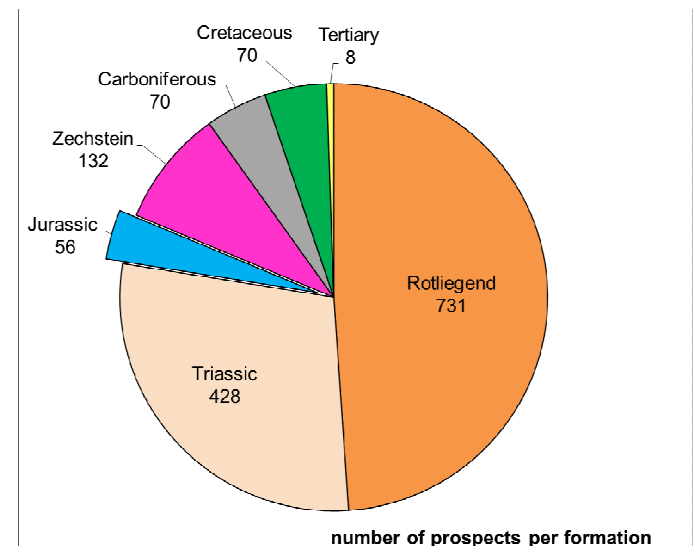
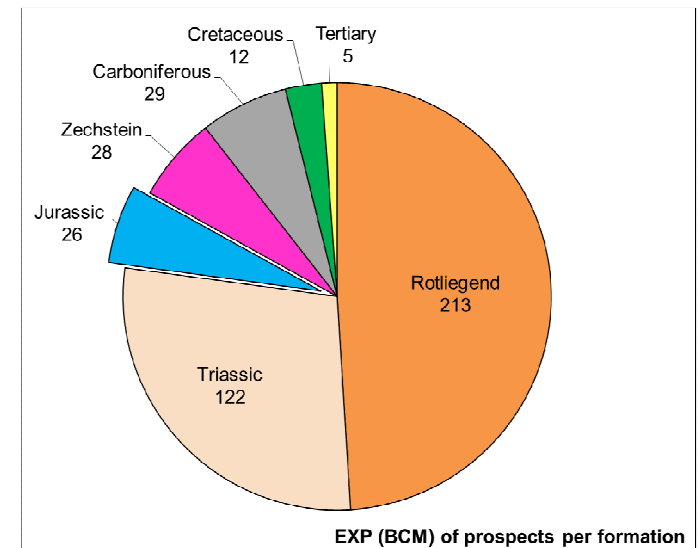
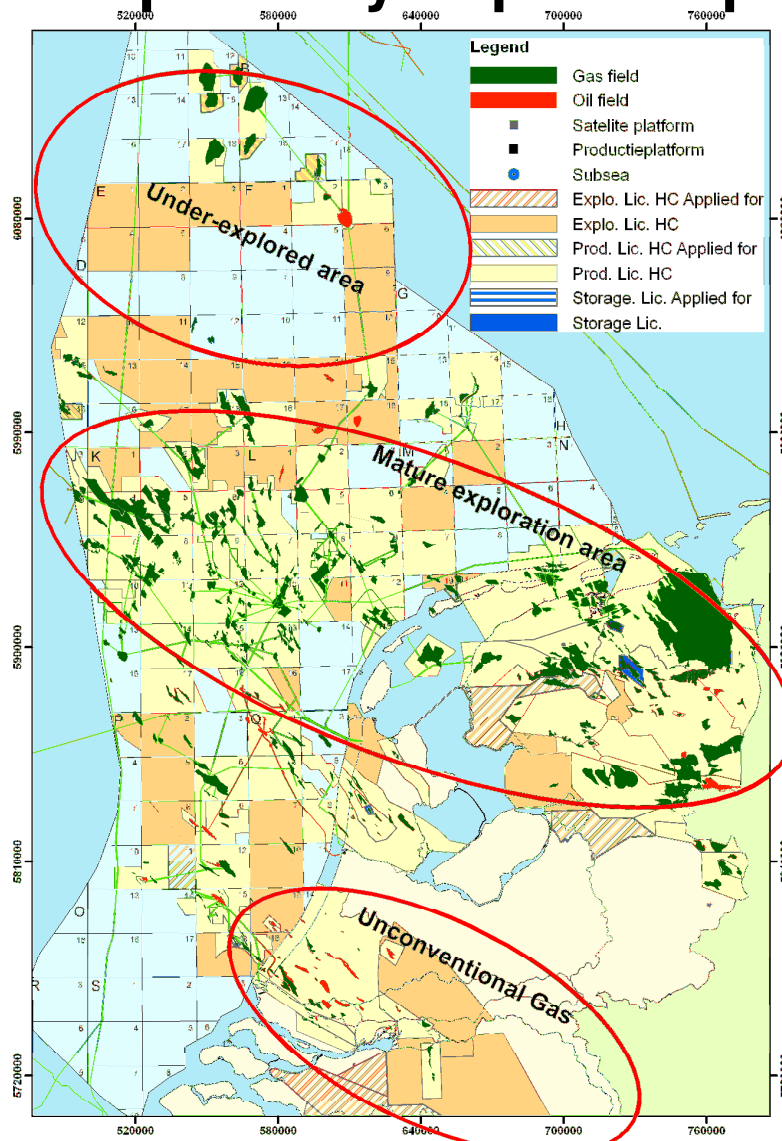
Onshore	Offshore
Field	Field
Ablasserdam	B18-FA
Beerta	E12 Lelle
Licence type	Licence type
Production licence	Production licence
Production licence	Open area

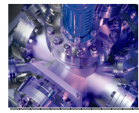
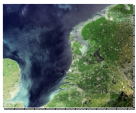




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Prospectivity in proven plays



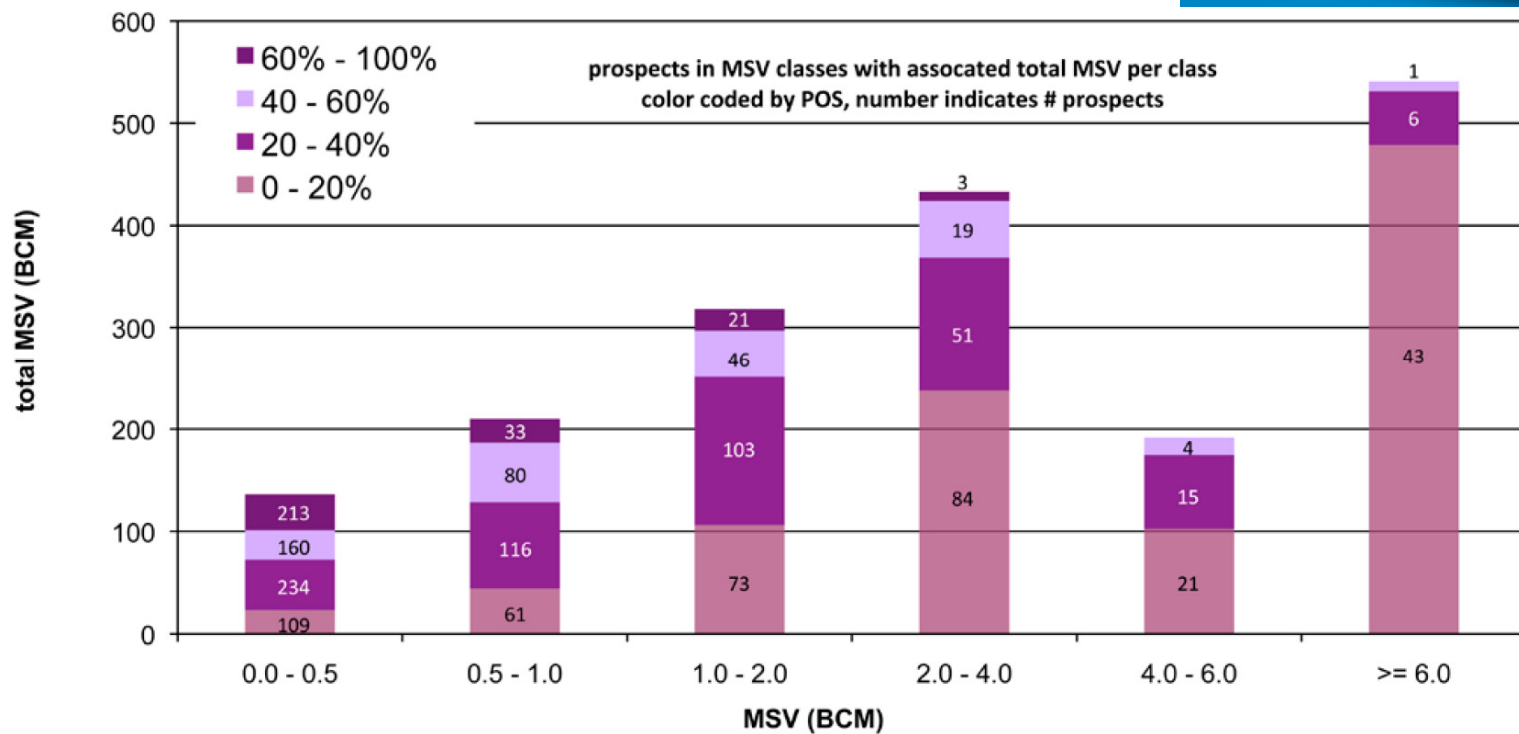
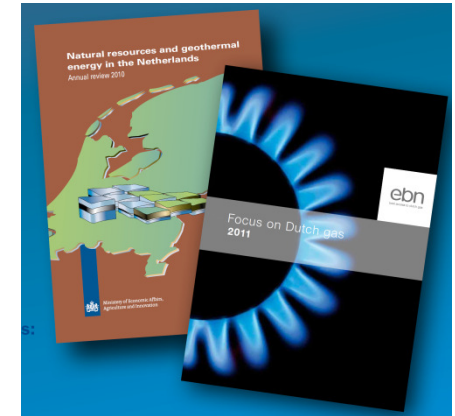


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Prospectivity in proven plays

► Prospect portfolio fingerprint as reported =>

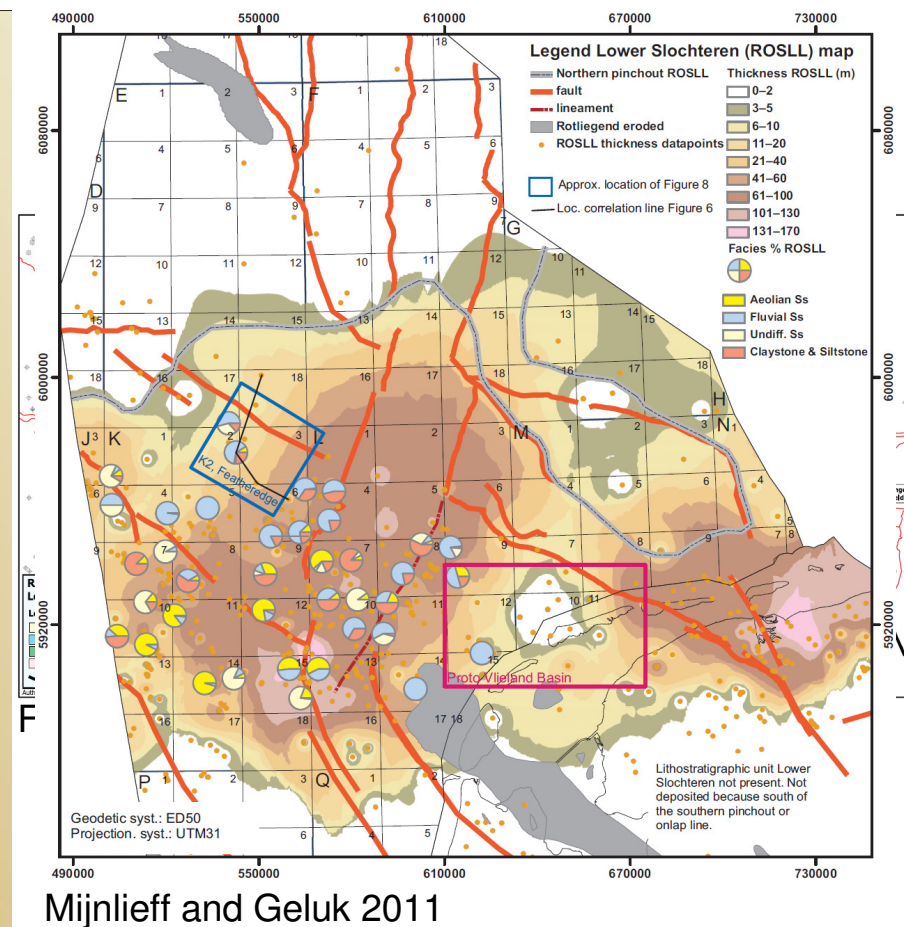
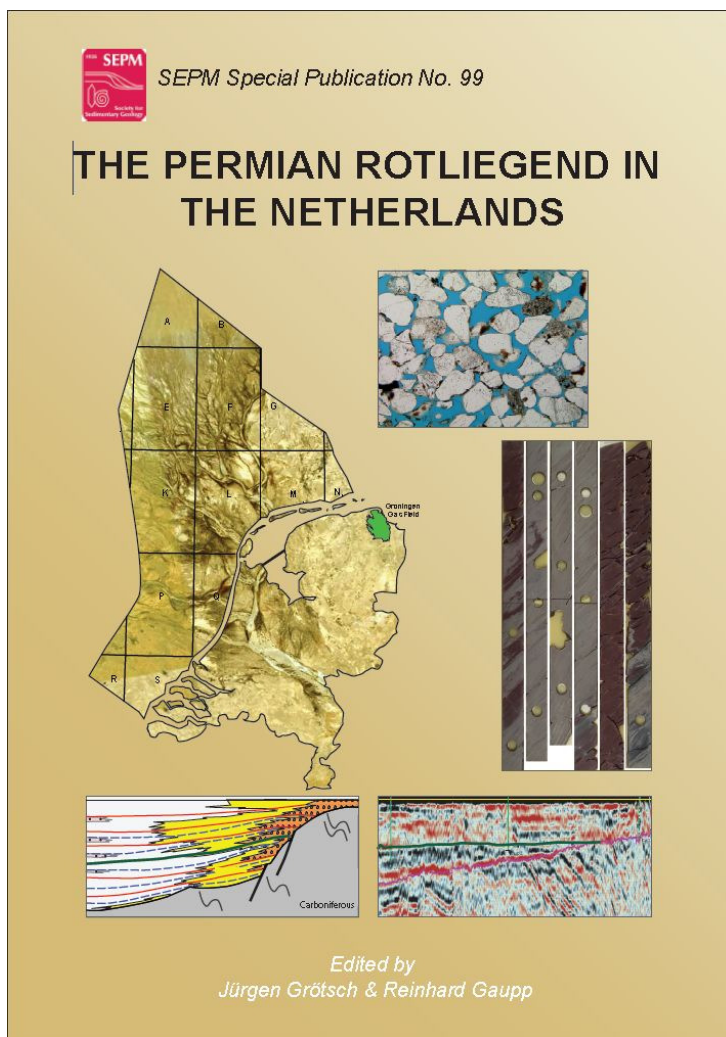




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Rotliegend: main carrier of Dutch resources



Mijnlief and Geluk 2011

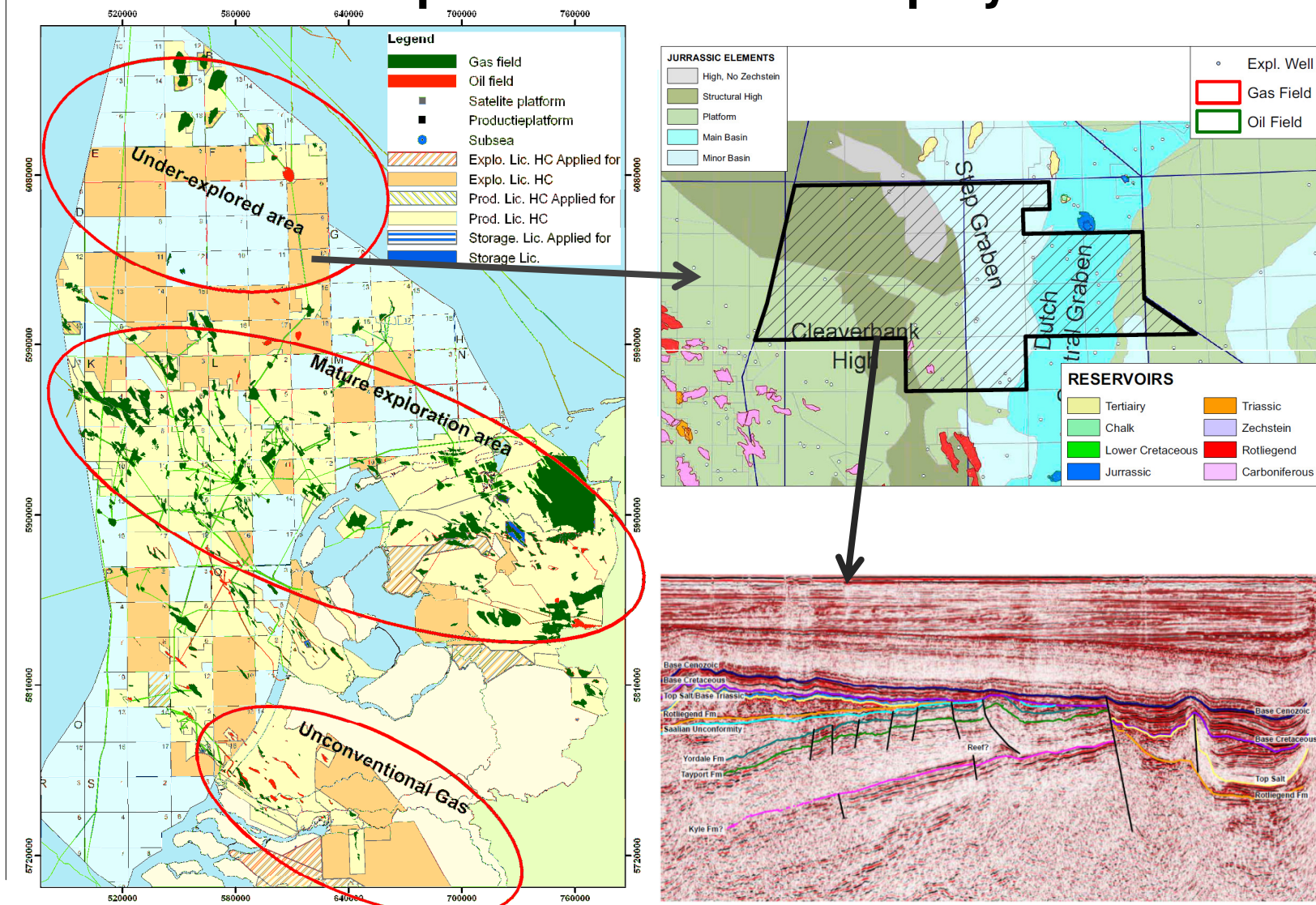
www.sepm.org

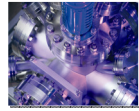
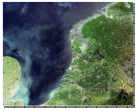


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Gas in under-explored areas & new plays





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Shallow Gas

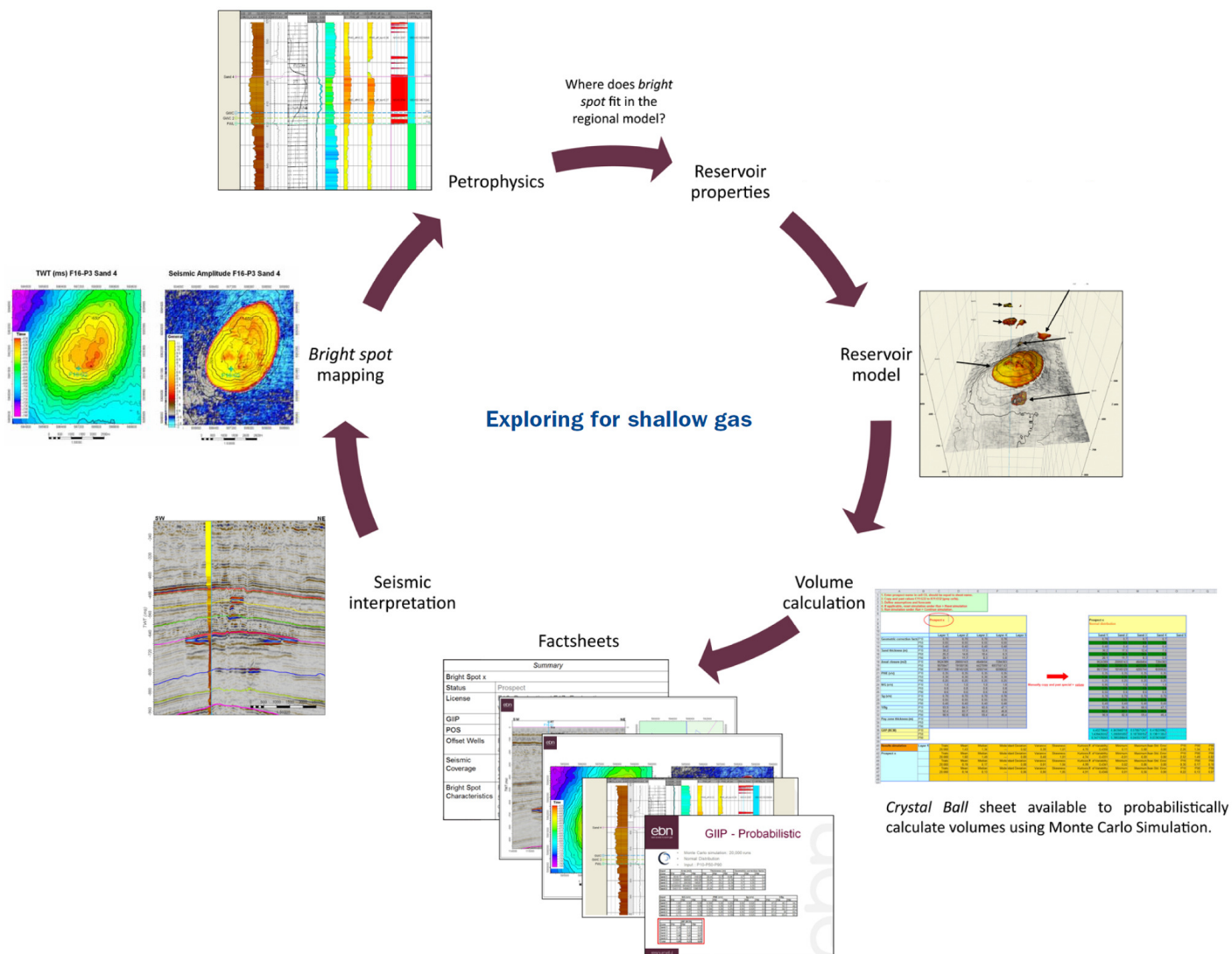
- › Shallow Gas: gas in Tertiary unconsolidated strata at max 1000m depth
- › Why now?
 - › 1. First shallow gas fields in production
 - › 2. New 3D seismic 2012
 - › 3. Marginal field tax incentive always applicable
 - › 4. Significant shallow gas potential in northern offshore

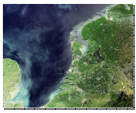




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Shallow Gas bright spot evaluation

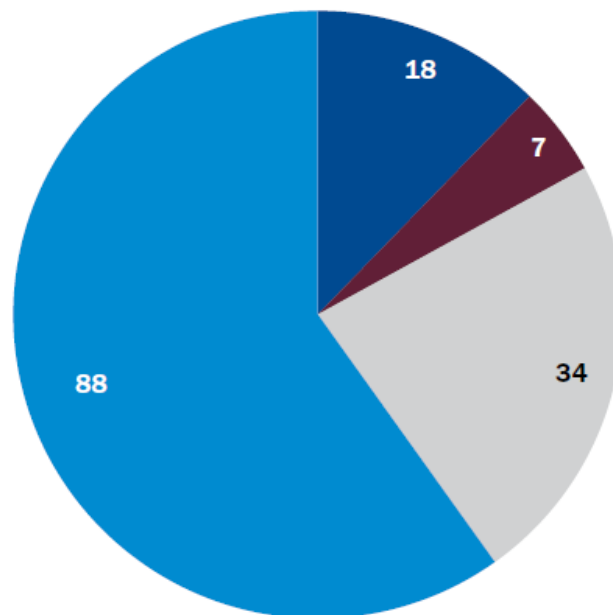




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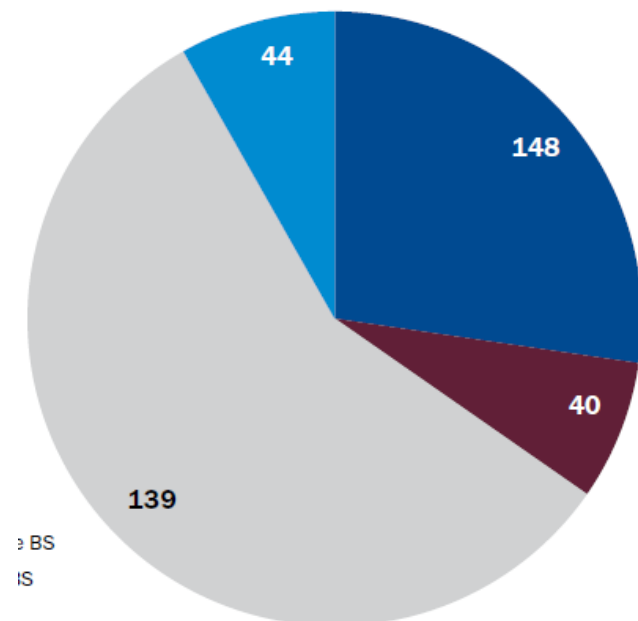
Bright spot evaluation results

Nr. of bright spots



- A12-FA type BS
- F02a-Pliocene type BS
- Flat medium size BS
- Flat small size BS

Bright spot area (km²)



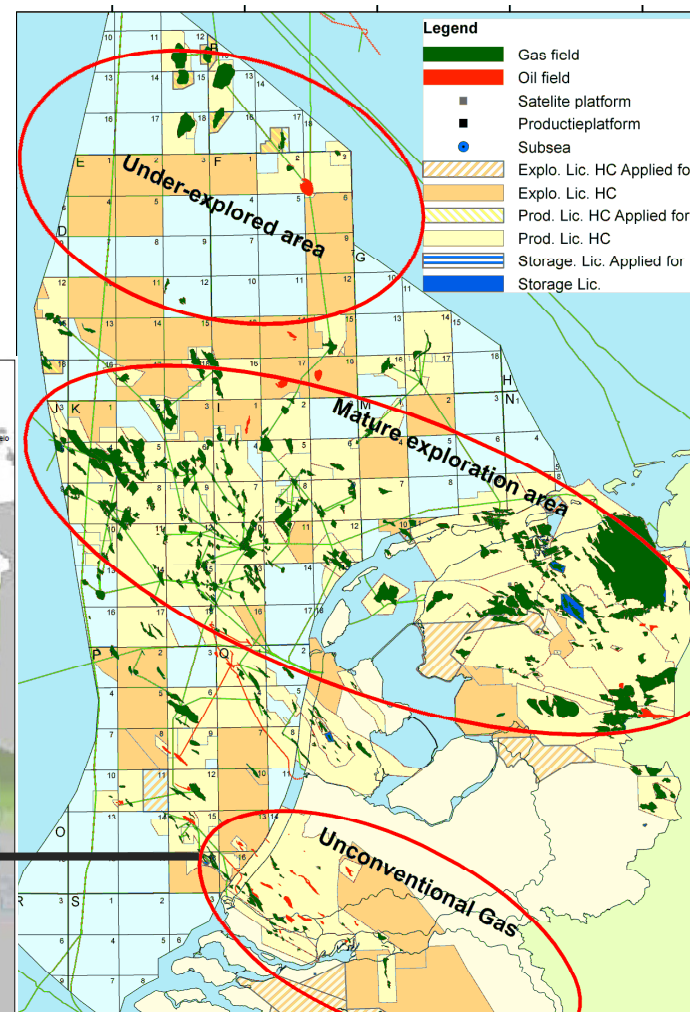
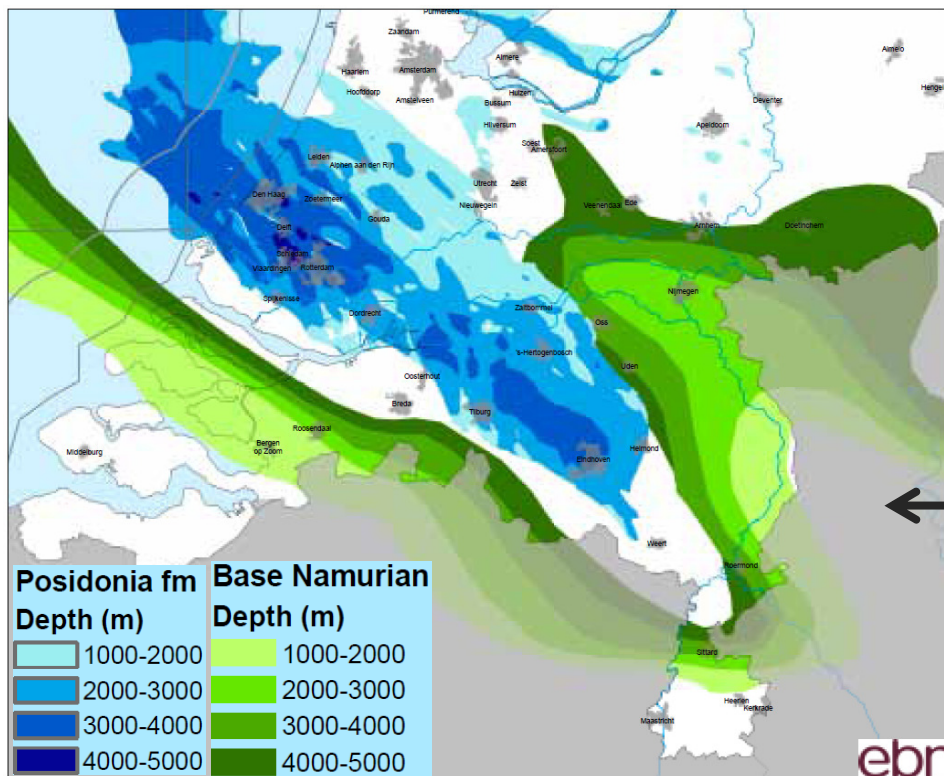


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Unconventional reservoirs

- › Shale gas in:
 - › Posidonia
 - › Basal Namurian hot shales



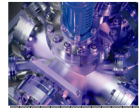
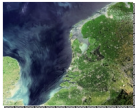
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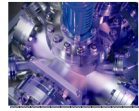
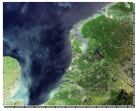
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E&P and Geothermy

- › 5 doublets drilled in the Netherlands
- › 4 have seen hydrocarbons=> very low saturations
 - › 3 gas
 - › 1 oil
- › Anticipated flow ~~150m³/c~~
 - › Solution gas 1 -1.5 Nm³/m³ of gas=> 3600m³ gas/d
 - › Traces of oil 0.00005m³/m³ ? of oil=> 0.18m³ oil/d ≈ 1 barrel/day
- ~~› Solution gas 1 -1.5 Nm³/m³ of gas=> 150m³ gas/d~~
- ~~› Traces of oil 0.001m³/m³ oil of oil=> 0.15m³ oil/d ~barrel/day~~
- › Interesting opportunity for win-win situation
 - › Economic project evaluation with upfront risk-integration
 - › One system two energy carriers
 - › Shared investors
 - › Tail-end production from the start



Subsurface Data

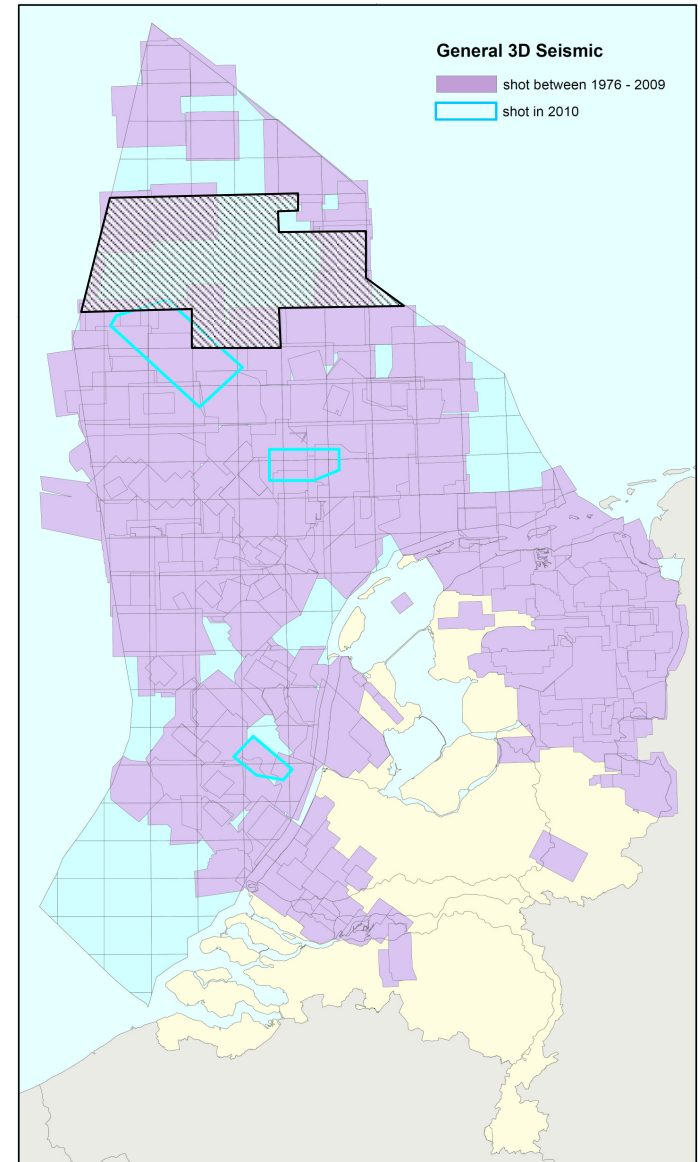


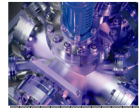
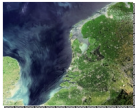
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Seismic Data position

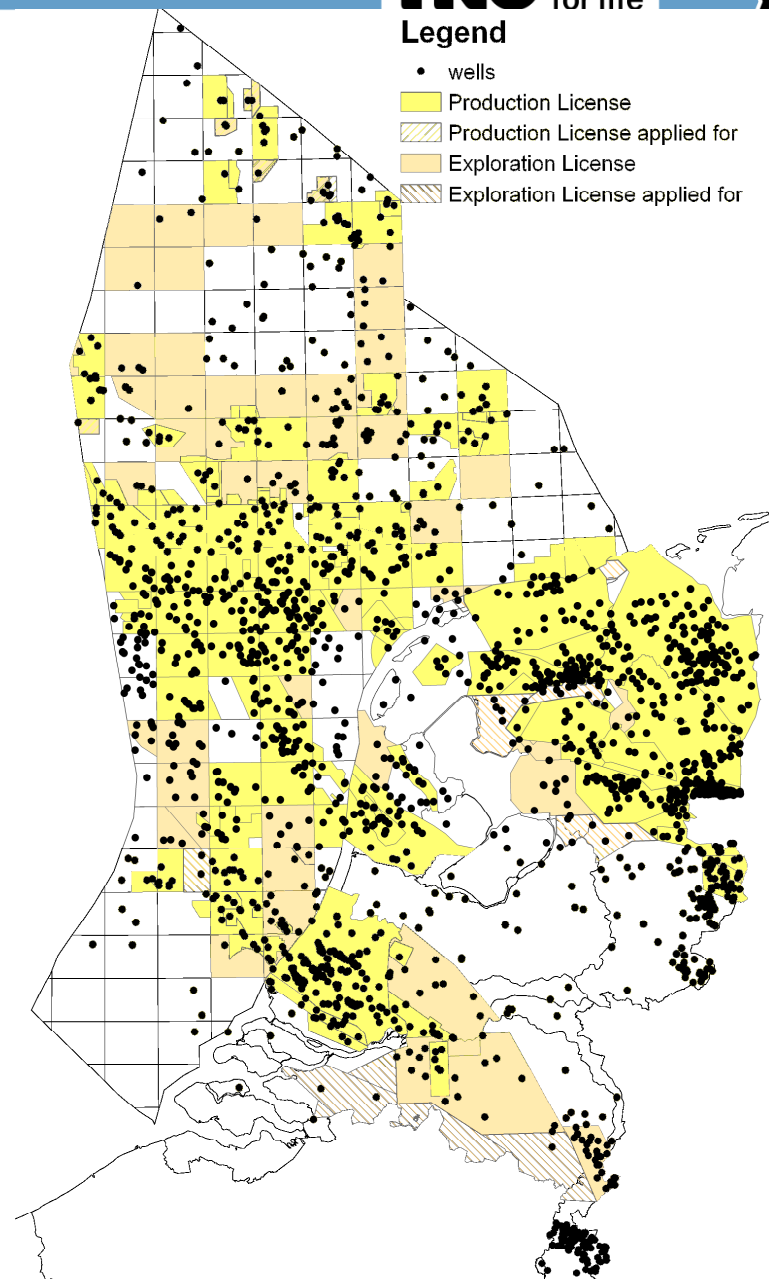
- › 3D-seismic coverage
 - › 75% of the offshore
 - › 40% of the onshore
- › Still improving
 - › eg DEF spec survey of FUGRO





Well Data position

- › Some 4500 wells
- › of which 1452 exploration wells





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Prospect 2011 Hydrocarbon resources

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Data availability

- › All public domain data freely available through:
 - › The Dutch (NL) Oil & Gas Portal
 - › **www.nlog.nl**

The screenshot shows the 'Welcome to the NL Oil and Gas Portal' website. The browser window title is 'Welcome to the NL Oil and Gas Portal - Windows Internet Explorer'. The address bar shows 'http://www.nlog.nl/en/home/NLOGPortal.html'. The page features a navigation menu with categories like Boreholes, Seismic surveys, Fields, Production, Infrastructure, Licences, Publications and Data sets, Legislation, Administrative procedures, Fees, taxes and state participation, Seismicity and subsidence, and Contacts. There are also links for Home, Disclaimer, and Contact. The main content area includes a welcome message, a description of the site's purpose, and a list of recent changes and other topics. The TNO logo and 'innovation for life' tagline are visible in the bottom left corner.

Welcome to the NL Oil and Gas Portal

This site provides information about oil and gas exploration and production in the Netherlands and the Dutch sector of the North Sea continental shelf.

It aims to help users access information furnished by the Dutch government in an easy, comprehensible fashion.

This site was produced at the request of the Dutch Ministry of Economic Affairs, Agriculture and Innovation and is being managed by TNO, Geological Survey of the Netherlands.

Recent changes

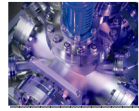
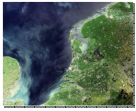
We keep this site continually up-to-date. Click [here](#) for an overview of recent changes.

Other topics

- [Salt production](#)
- [Underground gas storage](#)
- [Geothermal Energy](#)
- [Geological storage of CO2](#)

News

- 05-12-2011 | [The English Translation of the Dutch "Mijnbouwregeling" has been updated \(December 2011\)](#)
- 24-11-2011 | [Text version of NW-European Gas Atlas \(1998\) online](#)
- 14-11-2011 | [Letter on the Progress Report Dutch gas hub 2011 by Minister Verhagen \(in Dutch\)](#)
- [The English translation of the Dutch "Mijnbouwbesluit" has been updated \(October 2011\)](#)
- [The English translation of the Dutch "Mijnbouwwet" has been updated \(September 2011\). The document will be followed within the next few weeks by an update of the translation of the Mining Decree \("Mijnbouwbesluit"\).](#)



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Conclusion

- › Lot of exploration and production potential in the Netherlands
 - › Stable fiscal and regulatory environment
 - › Fit for purpose tax incentives
 - › Extraordinary data-position
-
- › Visit us in booth 56