Tight Gas in the Netherlands

What is the Prize?

Jaap Breunese
Oil and Gas in the Netherlands
Development rate  Netherlands onshore

- Connected
- Unconnected non-commercial
- Unconnected commercial

Year: 60 64 68 72 76 80 84 88 92 96 00

Volume (bcm): 0 200 400 600 800
Development rate  Netherlands offshore

- **Year**: 68, 72, 76, 80, 84, 88, 92, 96, 00
- **bcm range**: 0 to 800
- **Graph Legend**:
  - Unconnected non-commercial
  - Unconnected commercial
  - Connected
The Netherlands

• Blessed with a wealth of natural gas
  • able to export about half of domestic production
  • and still keep a lot in store

• Small fields policy very successful:
  • onshore: 98% of technical reserves developed
  • offshore: 90+% of technical reserves developed
  • little (commercial and policy) incentive to go for tight gas

• Yet
  • some 130 ‘stranded fields’ (discov’d > 5 jr ago and no FDP)
  • prospect portfolio of several 100’s with only 10 E wells/year
  • aging infrastructure (WOB !)
Productivity of wells in undeveloped gas fields

- Initial well productivity (mln.m³/d)
  - 2.0 excellent
  - 1.2 good
  - 0.6 moderate
  - 0.4 poor

- Rule of thumb: \( \text{IWP} = 1.4 \times Q50 \)
Productivity of wells in undeveloped Dutch gas fields

Test rates of wells in undeveloped Dutch gas fields
*sorted sample set of 111 wells*

[Graph showing test rates of wells in undeveloped Dutch gas fields with x-axis labeled with numbers 1 to 111 and y-axis labeled in terms of [1000 m³/d]]
Rotliegendes Q50 distribution

Legend
- Q50_datapoints_public domain
- Rotliegend Q50 grid public domain data

- Major faults
Rotliegendes porosity distribution
The size of the prize?

• Ref.

Reservoir quality distribution as tool for better exploration prospect evaluation and estimation of the Resource base of the Netherlands

F.F.N. van Hulten (EBN), this workshop
### The tight gas size?

| Region                | Estimated 
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Western Europe</td>
<td>10,000 bcm</td>
</tr>
<tr>
<td>Europe ‘potential’</td>
<td>5,500 bcm</td>
</tr>
<tr>
<td>Germany ’potential’</td>
<td>50–100 bcm</td>
</tr>
<tr>
<td>The Netherlands</td>
<td></td>
</tr>
<tr>
<td></td>
<td>discovered</td>
</tr>
<tr>
<td></td>
<td>developed</td>
</tr>
<tr>
<td></td>
<td>undeveloped</td>
</tr>
<tr>
<td></td>
<td>undiscovered</td>
</tr>
</tbody>
</table>
The size of the prize?

- The numbers strongly depend on:
  - Geological scale: basin, play, prospect/field

- The implied constraints
  - In Place no technology, no economics
  - Resource no economics
  - Reserves

- Time window
  - Proven technology, present day economics OR ?

- Statistical significance / reliability of assessment
  - Proven, expected, upside, potential

- Risked / unrisked for presence, feasibility, accessibility, …