Overview of the developments in The Netherlands

Frank Schoof
April 3, 2013

Frank.schoof@fpp-management.nl
1. Overview and legal framework
   – Scope
   – History & development
   – Permits
   – Future

2. Example: Aardwarmte Den Haag
Various concepts

Ground Source Heat Pump

H/CS

Doublet

2 – 150 m

30 – 150 m

1500 – 3000 m
Drilling depths comparable to Oil & Gas industry (±3,000 deep boreholes)

Temperatures (NL) 65 °C to 110 °C.

Water is re-injected in formation

- No pressure drop
- no risk of seismic activity

Doublet

1500 – 3000 m
Stichting Platform Geothermie

Background & History

• Early attempts 1975 – 2000 unsuccessful
• 2002 Establishment Platform Geothermal Energy

Early development 2005 - 2009

• Feasibility studies (horticulture/district heating)
• Mine water project first geothermal project under the ‘Mining Act’
• 2008 first Direct Use project (Horticulture)

Acceleration 2009 - 2012

• 100 license applications
• Action Plan Geothermal Energy: 11 to 14 PJ in 2020
• Guarantee scheme for exploration risk
• Feed-in tariff ‘SDE+’ (budget 2012: 800 mln) & opposition of ‘wind-lobby’
Exploration permits 2012
Production permits 2012

Status Quo 2013
• 9 deep wells/ doublets
• 40 MWth (end of 2012)
• 720 GJ per year (2013)

www.nlog.nl ‘aardwarmte’
Permits can be close to each-other...

Permits necessary from:

- Mining Act (Ministry)
- Wabo/ environment & health (Ministry or municipality) In two phases:
  - Underground
  - Production-units at surface
- Others (mostly municipal)
Outlook and ‘Legal framework’ aspects

- ‘Cap’ for SDE+ on larger projects reduces potential (40%?)
- Larger (= deeper) projects will suffer
- Increasing safety focus will affect small projects
  - Tolerance for ‘first-time users’ decreasing
  - Geothermal Handbook coming out soon…

Conclusions in Legal Framework domain

- Excellent Mining Act, excellent availability of data
- Guarantee scheme could be improved (costs, ceiling, budget)
- Unpredictable and inconsistent Feed-in scheme ‘SDE+’
Stichting Platform Geothermie

Aardwarmte Den Haag
- Final investment 45 million
  - Wells 10 million
  - Distribution 25 million!
- 500 clients → 4,000 in 2020?
- Currently six participants:

Distribution pump

Warmtecentrale

Gemeente Den Haag
Haag Wonen
VESTIA
Staedion
E.ON
Eneco
Costs for grid and availability of houses determine feasibility!

Exploration permit: Municipality

Production permit:
- ADH: no (no legal entity)
- Municipality: no (no knowledge)
- Operator = completely responsible, must have quality-system, knowledge and experience

Other permits: ADH
Energy from the earth: the sky is the limit

Stichting Platform Geothermie
Jan van Nassaustraat 75
2596 BP Den Haag

www.geothermie.nl
Info@geothermie.nl