Breaking the lock-in
Transitioning beyond gas

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Outline of the presentation

- The Dutch: Gas addicts? A short history;
- Renewable energy targets & earthquakes;
- Policy around district heating;
- Groningen as front-runners?
The Dutch: gas addicts?
Groningen gas field
Groningen gas field

- Discovery of the Groninger gas field in 1959;
- Largest field in Europe, ca. 2800 BCM;
- Policy much focused on a rapid depletion of the field (substitution by nuclear);
- Low cost export of gas (e.g. Italy);
- Transition to natural gas: 75% of households connected within 10 years, currently 98%;
- District heating remained small (5%) in relation to individual gas-fired heating systems
Gas accounts for 40% of national energy supply
Trouble in paradise
Replacing fossil fuels

- Climate change;
- International agreements to cut down CO2 emissions;
- Progress not on track.
We are not doing too well!

Note: The dark blue bars show the RES shares in 2005. The tops of the light blue bars show the levels that the RES shares reached in 2013.

Earthquakes

- Induced earthquakes since 1986;
- A large number of light earthquakes (on a daily basis);
- Strongest in 2012, 3.6 on the Richter scale;
- Damage on constructions, psychological impact;
- A big challenge for people, gas industry and government.
An incentive for energy transition?

Where to begin?

- Lowering gas production
  - What is a ‘responsible’ production level?
  - From 54 BCM in 2013 to 24 BCM in 2016
- Finding heating alternatives
  - what is the plan for replacing natural gas?

Chicken & egg problem!
An incentive for energy transition?
Heating transition: policy
We never responded to an energy crisis like Denmark (oil crisis) or Germany (nuclear);
Discussion is very recent, policy needs to be developed;
Traditionally, the energy market is highly centralized, district heating is local;
Low public support (end-users);
Gas is considered a transition fuel;
Investments issue of DH.
National energy agenda

- Focus on CO2 emission savings;
- Decreasing the dependency of natural gas;
- Large role for sustainable heating, in particular district heating with waste heat and renewable heat sources.
Policy developments

District heating law:

- Regulated market, price cap regulation (since 2014);
- Tariffs based on natural gas price (not more than otherwise principle);
- Currently under revision.
Policy developments

Municipal heating plan:

- Legal possibility to exempt from the obligation for gas infrastructure in new constructions;

- Limited competition of heating alternatives through obliged connection.
Other developments:

- Market design, including third party access;
- Making district heat competitive with gas, e.g. increasing taxes on natural gas;
- Socialising the district heating networks;
- New stakeholders & cooperation in the value chain.
Groningen as front-runner?
Groningen region

EARTHQUAKES + DEMOGRAPHIC DECLINE + UNEMPLOYMENT = BREEDING GROUND FOR CHANGE!
Groningen region

LOW DENSITY REGION!
Groningen region

THE RURAL
Groningen region

THE INDUSTRY
Groningen region

THE CITY
SMART DISTRICT HEATING

GEOTHERMAL DISTRICT HEATING
Groningen region

THE RURAL
SAFE & SUSTAINABLE VILLAGES

INDIVIDUAL SOLUTIONS + LOCAL ENERGY INITIATIVES
Groningen region
Groningen region

- Hybrid energy systems
- Interactions between energy carriers
- Examples:
  - Cold recovery in LNG regasification
  - Heat recovery in P2G stations
  - Flexible heat & power in CHP plants
Questions:
What would you consider as key elements of an approach to break the lock-in of fossil fuels?
In conclusion

- Policy: creating a level playing field;
- Technical: smart & sustainable DH systems embedded in the overall energy system;
- Local: organization of projects.