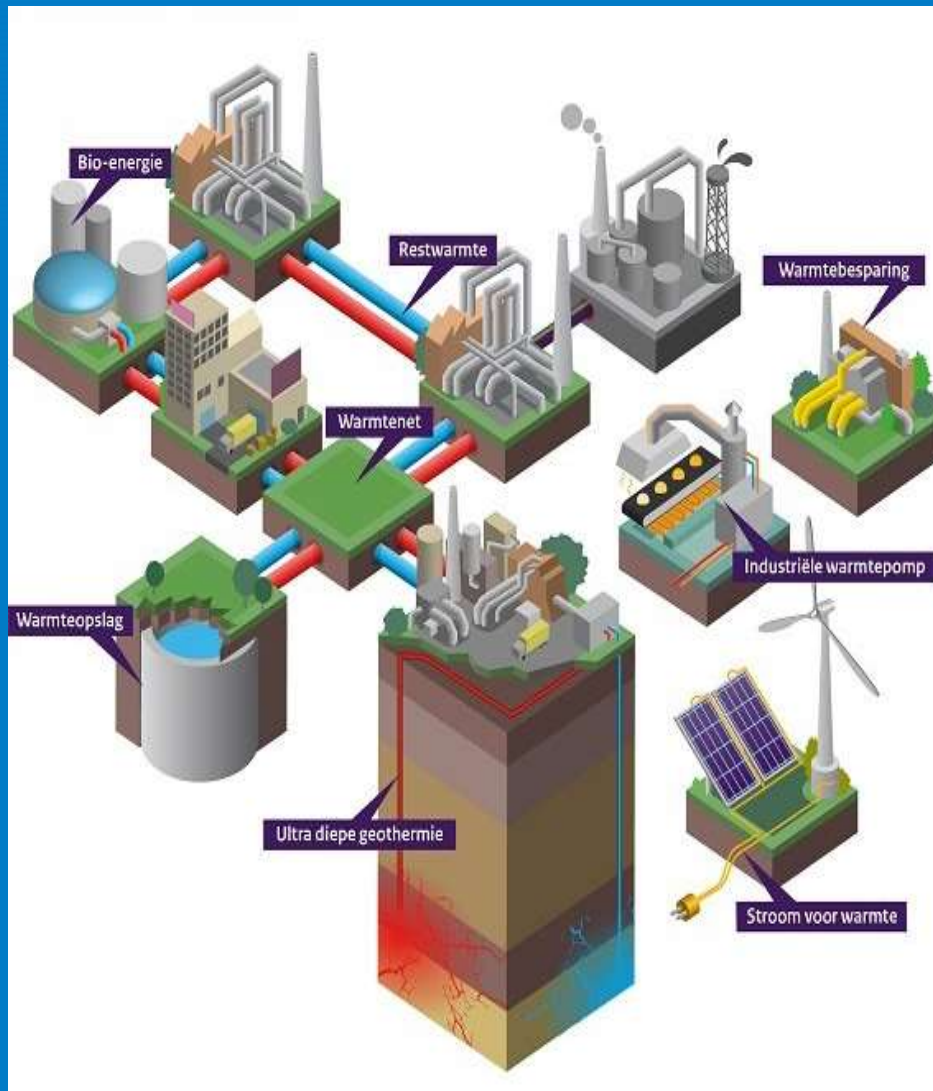




Ministry of Economic Affairs
and Climate Policy



Geothermal energy in district heating

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Content

- Climate Agreement
- Outlook district heating in the Netherlands
- Revision Dutch Heat Act
- Geothermal energy as a source of heat
- Main policies to accelerate
- Challenges



More than 100 parties will reduce CO₂-emissions of the Netherlands by **49%** from 1990 levels via the

Climate Agreement



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- In 2030 1½ mln houses have made switch away from natural gas (8 mln. in 2050)
- District by district approach, municipalities are in charge, heat plans ready in 2021
- Learning by doing: 27 pilots in 2019, 100 in 2021 (total) → 350+ municipalities



National analysis: 5 strategies (incl. insulation)



S1: heat pump



**S2: district heating
(~70 °C)**



**S3: district heating
(low temperature)**



**S4: renewable gas +
heat pump (hybrid)**



**S5: renewable gas +
conventional heating unit**



Outlook district heating in the Netherlands

2017

- › Market share households **5,6%**
- › Main heat source: waste incineration plants (high temperature)
- › 31 companies have license to deliver heat



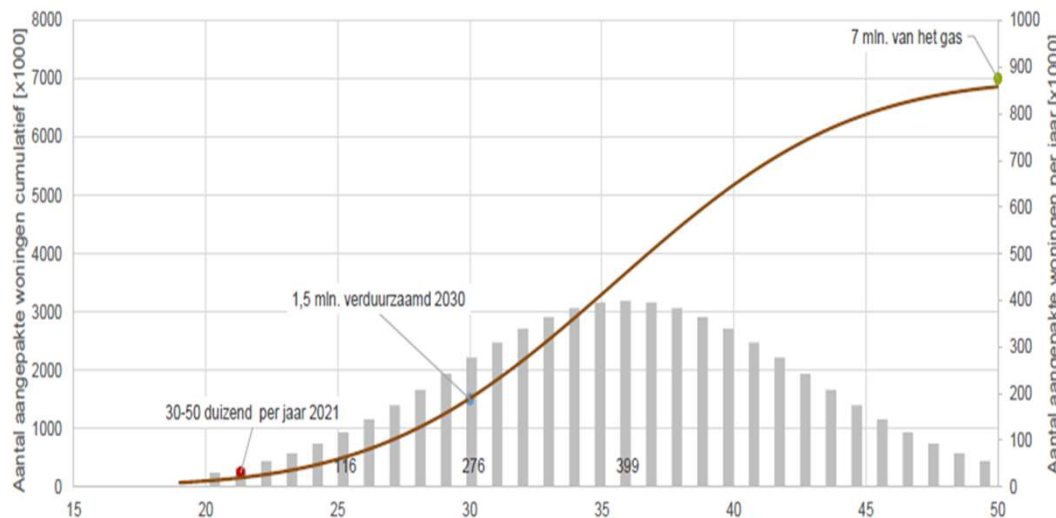
2030 (Climate Agreement)

- › 1,5 mln. (existing) buildings off natural gas
- › Geothermal energy as a important source for district heating
- › Moving towards low heating systems



2050

- › All 8,5 mln. buildings CO2 neutral
- › Estimate **15-45%** will be connected to district heating





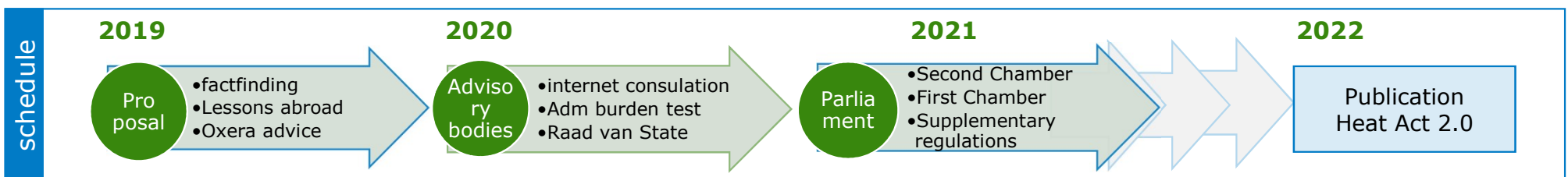
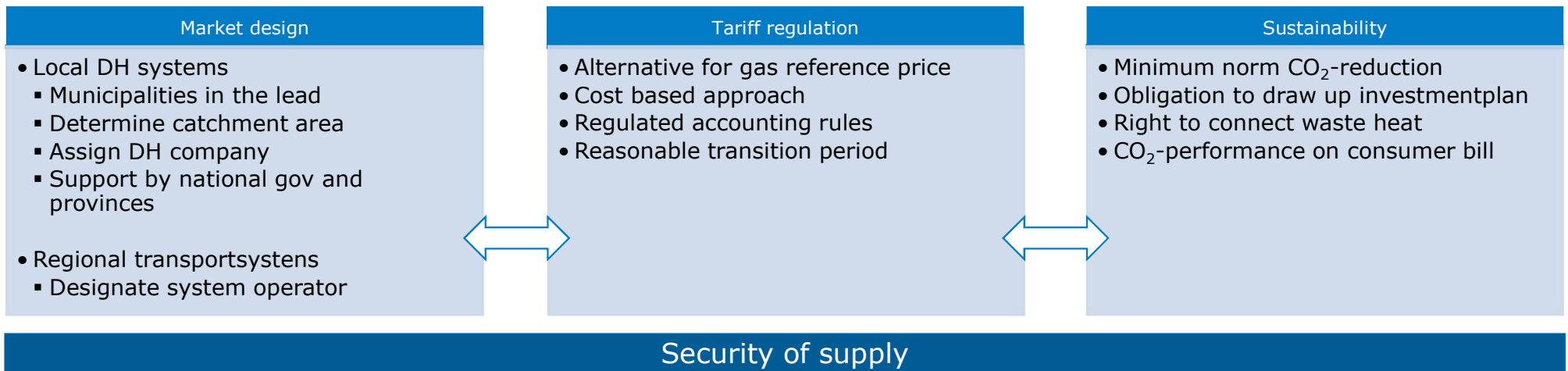
Major revision of Dutch Heat Act (in a nutshell)

Climate goals and Groningen

Regulatory framework in order (public interests)

Facilitating decision making and investments

Developing trust in collective heat systems





Geothermal energy as a source of heat

Users of geothermal energy

TUINBOUW
KASSEN

INDUSTRIE

WONINGEN
& KANTOREN

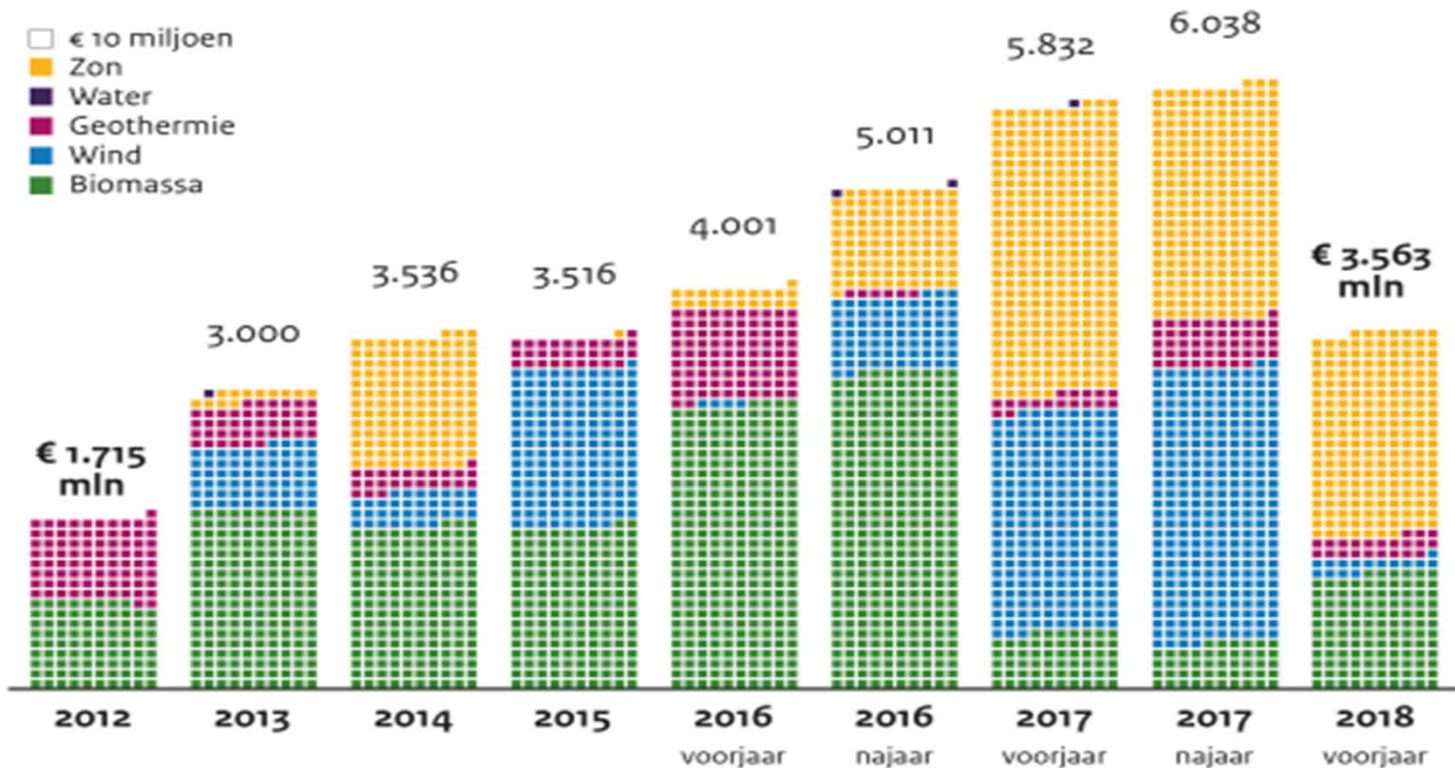
- 24 projects in use ($\approx 5,6$ PJ/)
- Depth 2000-3000 meters
- Temperatures 70 – 90 C

	2030	2050
Letter to Parliament	15 PJ	110 PJ
Climate Agreement	20 PJ	135 PJ
Masterplan (sector)	50 PJ	200 PJ



SDE+ Production Subsidy

Verplichtingenbudget
per technologie in de verschillende SDE+ -rondes



(New) categories SDE++

- Renewables: wind, solar, biomass, geothermal
- CO2 reduction industry
- CO2 Capture and Storage
- Waste heat
- Electric boilers
- H2 electrolysis

(New) geothermal categories SDE++

- Undeep, deep, ultra deep
- Geothermal for DH



Guarantee scheme

To address geological risk

- At P90
- 7% premium
- 8 rounds, starting 2010
- 29 projects submitted,
- 10 projects realized within scheme
- **M€ 146** cumulative reservation
- **4** claims, 7,2 mln paid to awarded claims





Main policies to accelerate*

- Special legislation for geothermal (before equal to oil and gas): mining act
- Exploration of subsurface: SCAN
- Innovation Roadmap
- Participation of EBN (state participation)

* *On top of regular subsidy and guarantee schemes*





Mining Act

New licensing system (subsurface)

I Search area permit:

- first assessment applicant (business case)
- exclusive economic right
- area appropriate to demand (preliminary sales agreement)
- procedure for competitive applications

II Starting license:

- technical and financial assessment operator / license holder
- safety (environment / seismic hazard)
- sales agreement

III Continuation license:

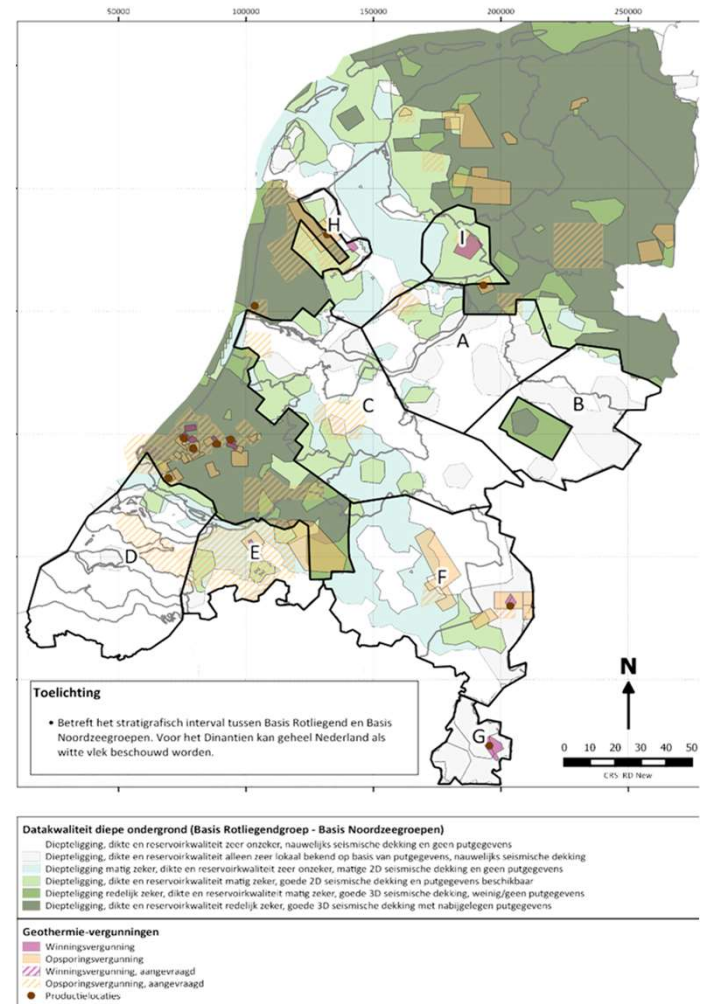
- delimitation of area and duration (sphere of influence)
- further prescriptions for safe exploration





Knowledge & exploration

- SCAN: Seismic survey to increase knowledge of the subsurface
- Ultra Deep Geothermal exploration
- NLOG: central database





Innovation

- National Innovation Roadmap for geothermal energy
- National Innovation subsidies, European Innovation programs
- OICW: Rijswijk Center of Sustainable Geo-Energy





State participation EBN

Public task:

- Geothermal market insufficiently mature
- Challenges regarding accumulation of knowledge and innovation
- Social importance of geothermal heat in the built environment

Goal is to build a portfolio in which:

- EBN is able to share knowledge and experiences:
- EBN as public partner can join discussions regarding durability and quality,
- EBN accumulates knowledges in favor of other projects
- EBN aggregates experiences in favor of cost reduction, innovation and public knowledge of the subsurface
- EBN can advice the Ministry on policy and instruments

Effective by adjustment of the Mining Act (foreseen 2021)



Challenges

Still a lot of challenges ahead....

Lets learn from each other...





Thank you for your attention!

Ans van den Bosch
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