

Regional geothermal exploration, example from the Province of Noord-Brabant, the Netherlands

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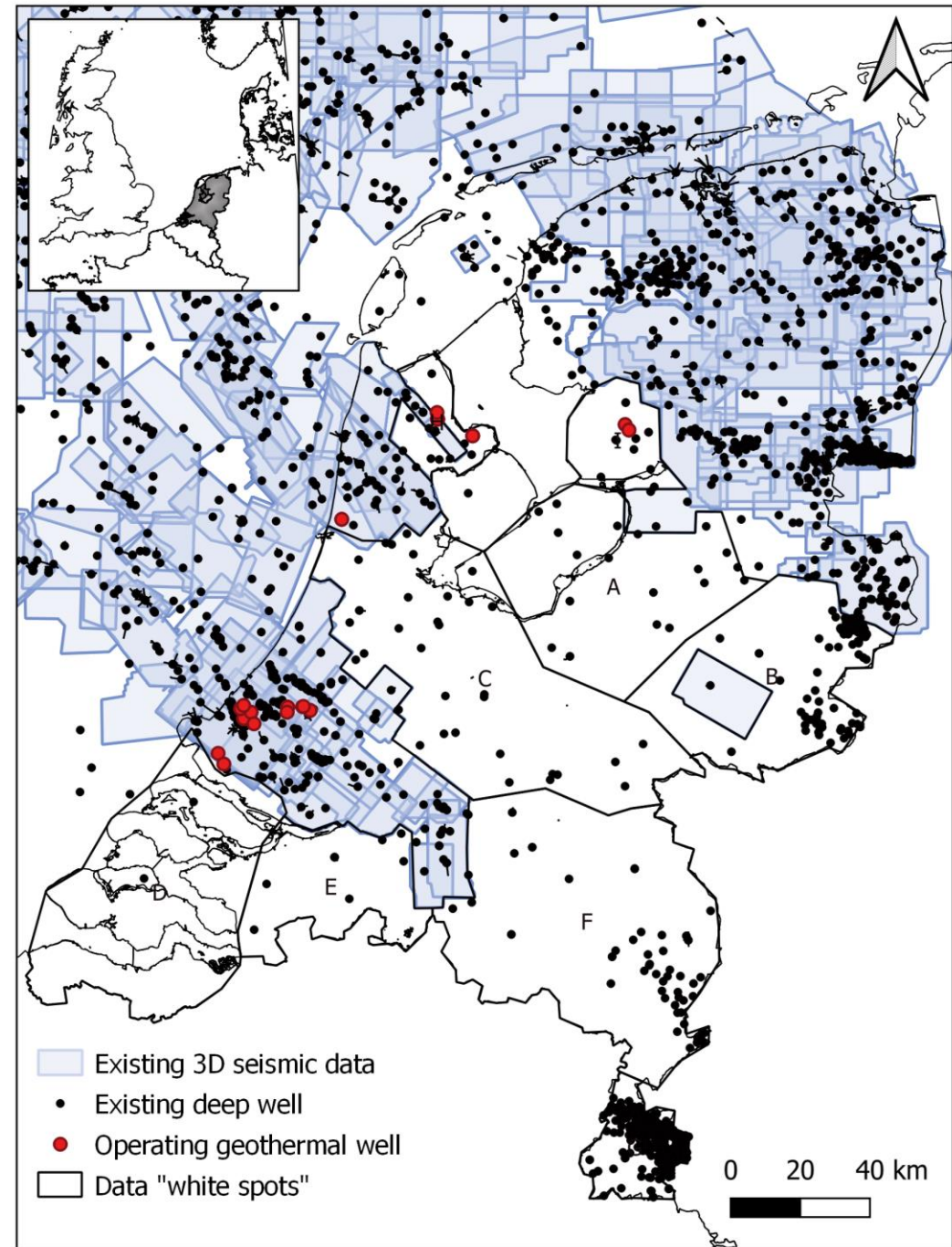
Key message

- EBN is actively paving the way for geothermal project development in The Netherlands
 - Illustration of EBN regional, play-based exploration activities in areas with limited historical subsurface activity

Geothermal projects in The Netherlands

- Geothermal in The Netherlands
 - ~30 operational doublets – mainly greenhouse heating
 - Direct heat, no electricity generation
 - Matrix-permeability
 - Mainly in areas with legacy data from E&P industry
- Data 'white spots' with major cities and significant heat demand

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Role of EBN

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- Dutch State Energy Company (sole shareholder Ministry of Climate and Green Growth)
- Sustainable heat system
 - Acceleration and enhancement of geothermal energy



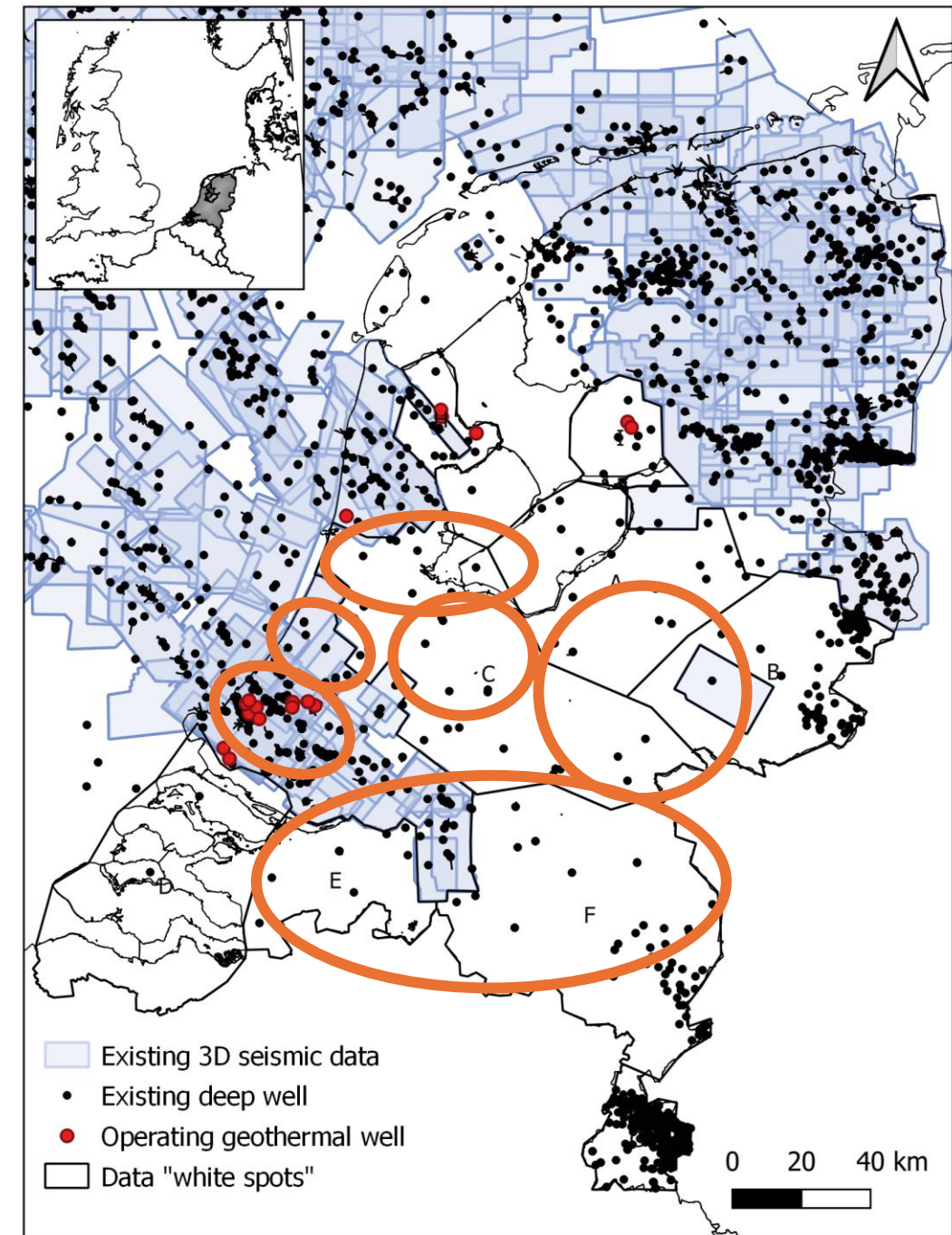
State Energy Company
of the Netherlands



Regional strategies

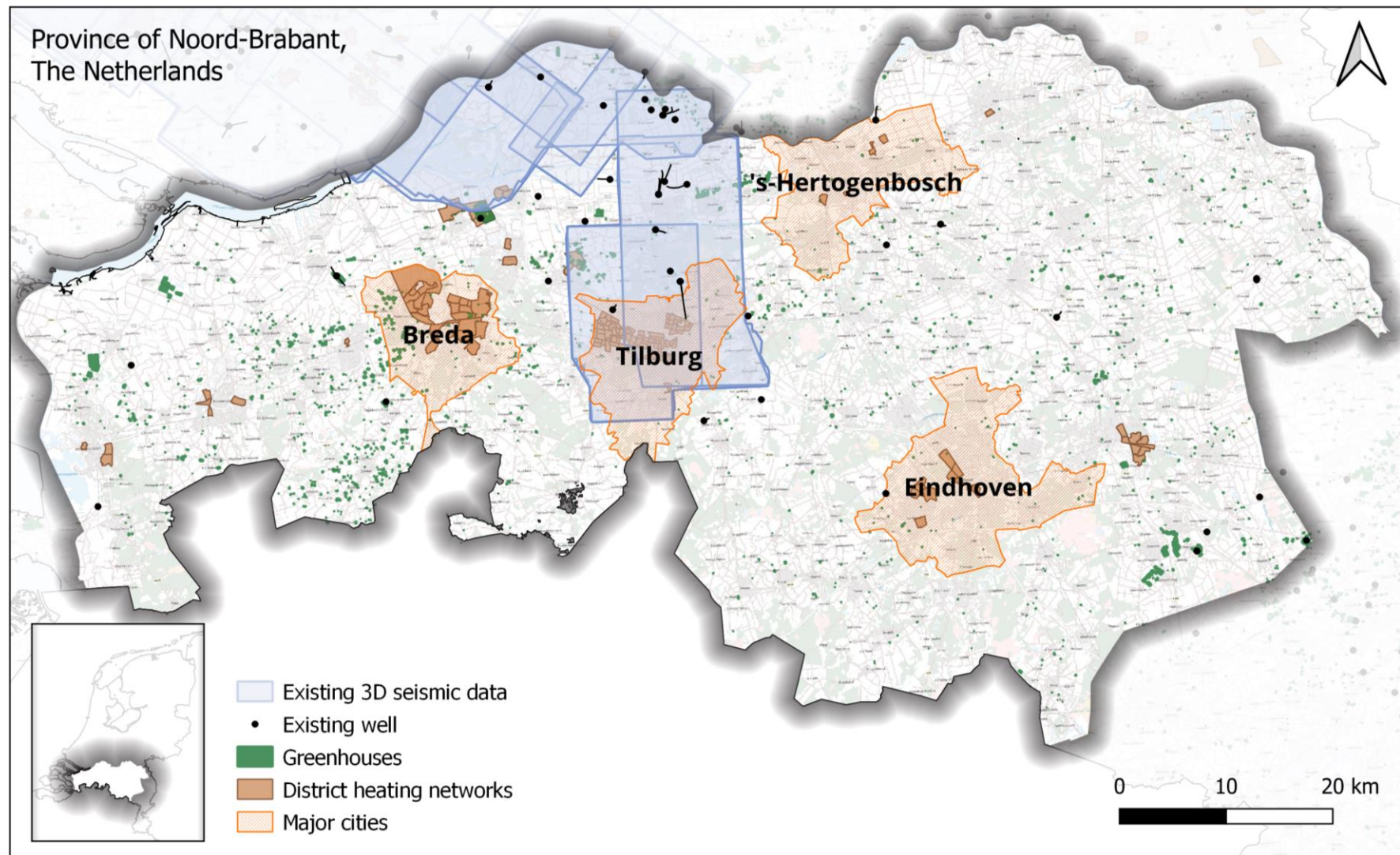
- EBN focus areas with region-specific strategies for geothermal development
 - Build regional partnerships
 - Pijnenburg and Evers poster (Wednesday)
 - Surface & heat demand
 - Exploration activities for subsurface de-risking
 - This presentation

Example: Noord-Brabant



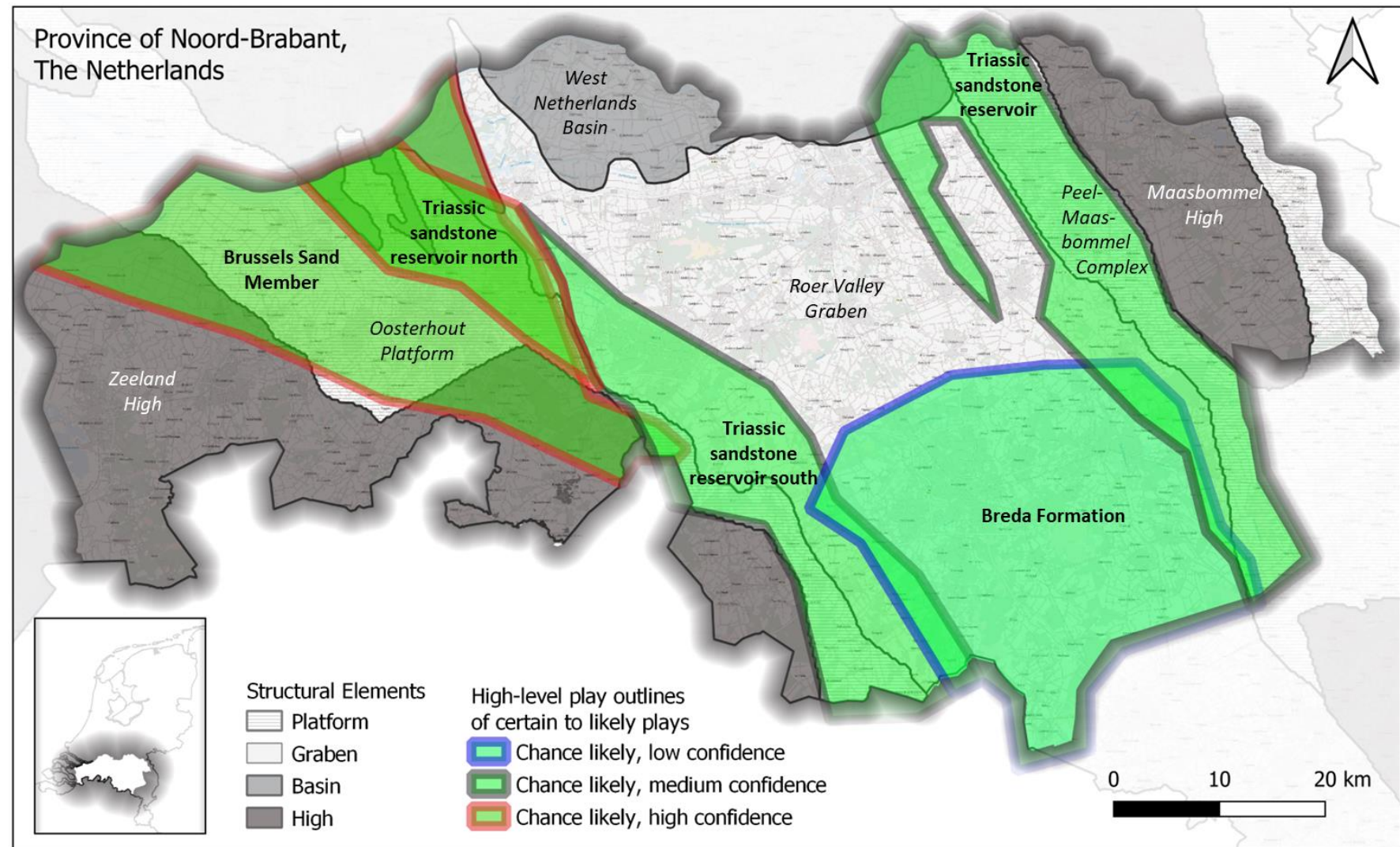
Focus area: Province of Noord-Brabant

- Population ~2.7 mln
- Major cities like Eindhoven, Tilburg, Breda and Den Bosch
- Existing heat networks and greenhouses
- Data 'white spot' with possible geothermal potential



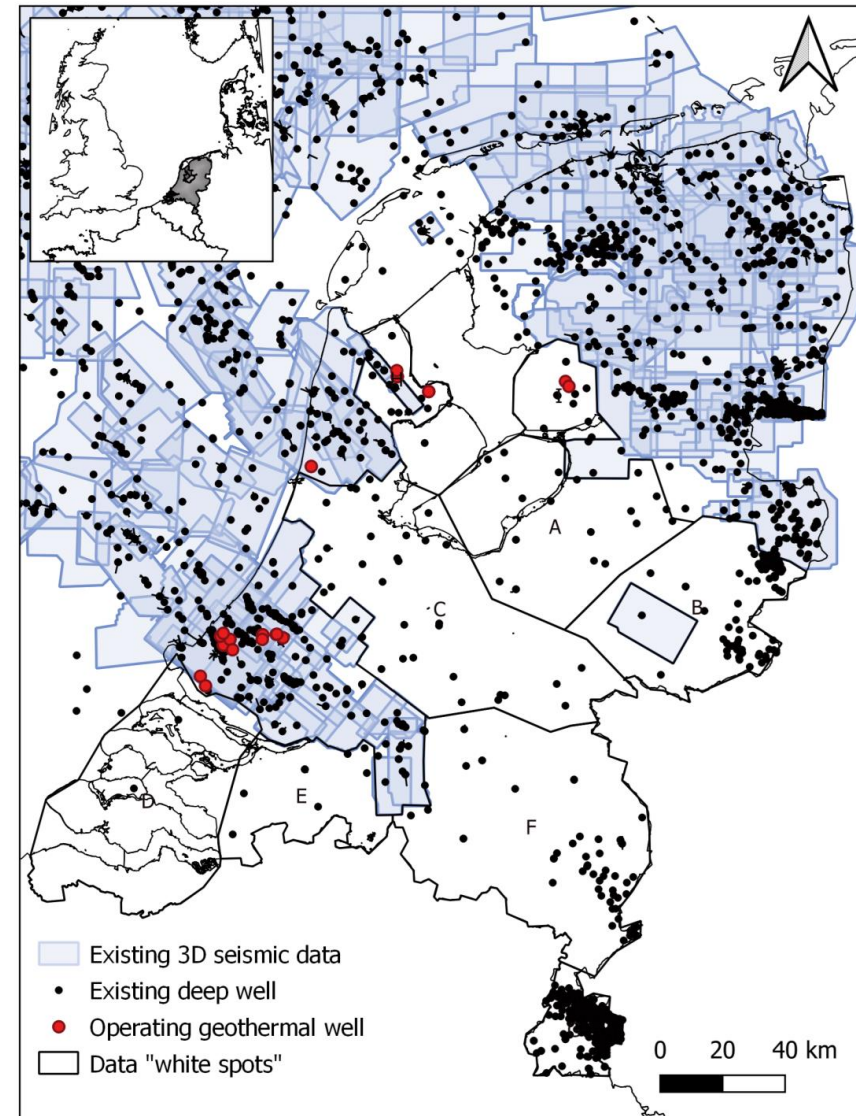
Potentially promising geothermal plays

- High-level potential geothermal plays, classified according to:
 - Likelihood / chance of the play being suitable for geothermal development (fill colour)
 - Degree of certainty (outline colour)



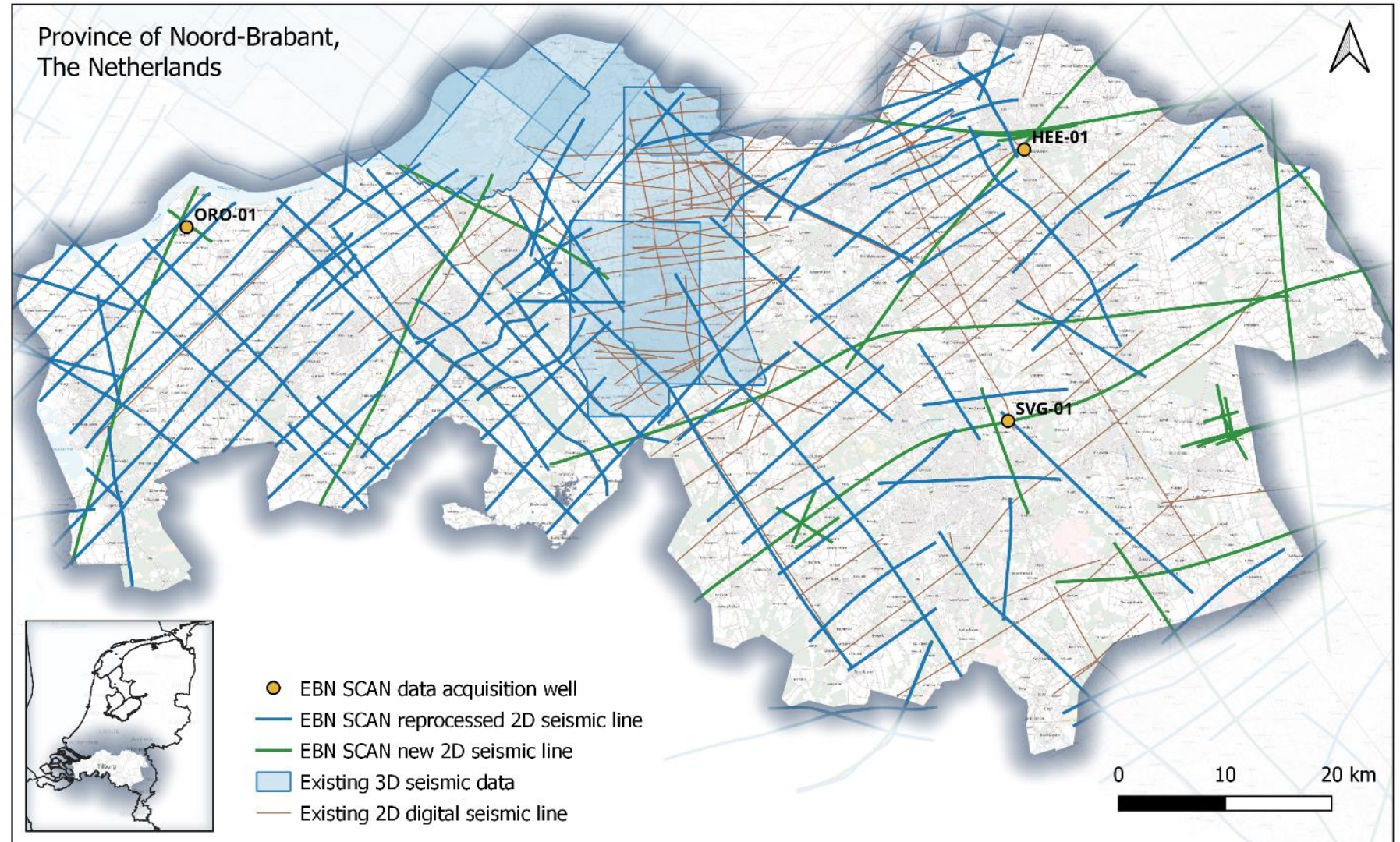
SCAN data acquisition program

- SCAN stands for **S**eismische **C**ampagne **A**ardwarmte **N**ederland
- Data acquisition where existing data insufficient for reliable estimation of geothermal potential
- Regional exploration dataset, for development of commercial projects more seismic and studies are generally needed
- All data made public (nlog.nl/scan)



SCAN in Noord-Brabant

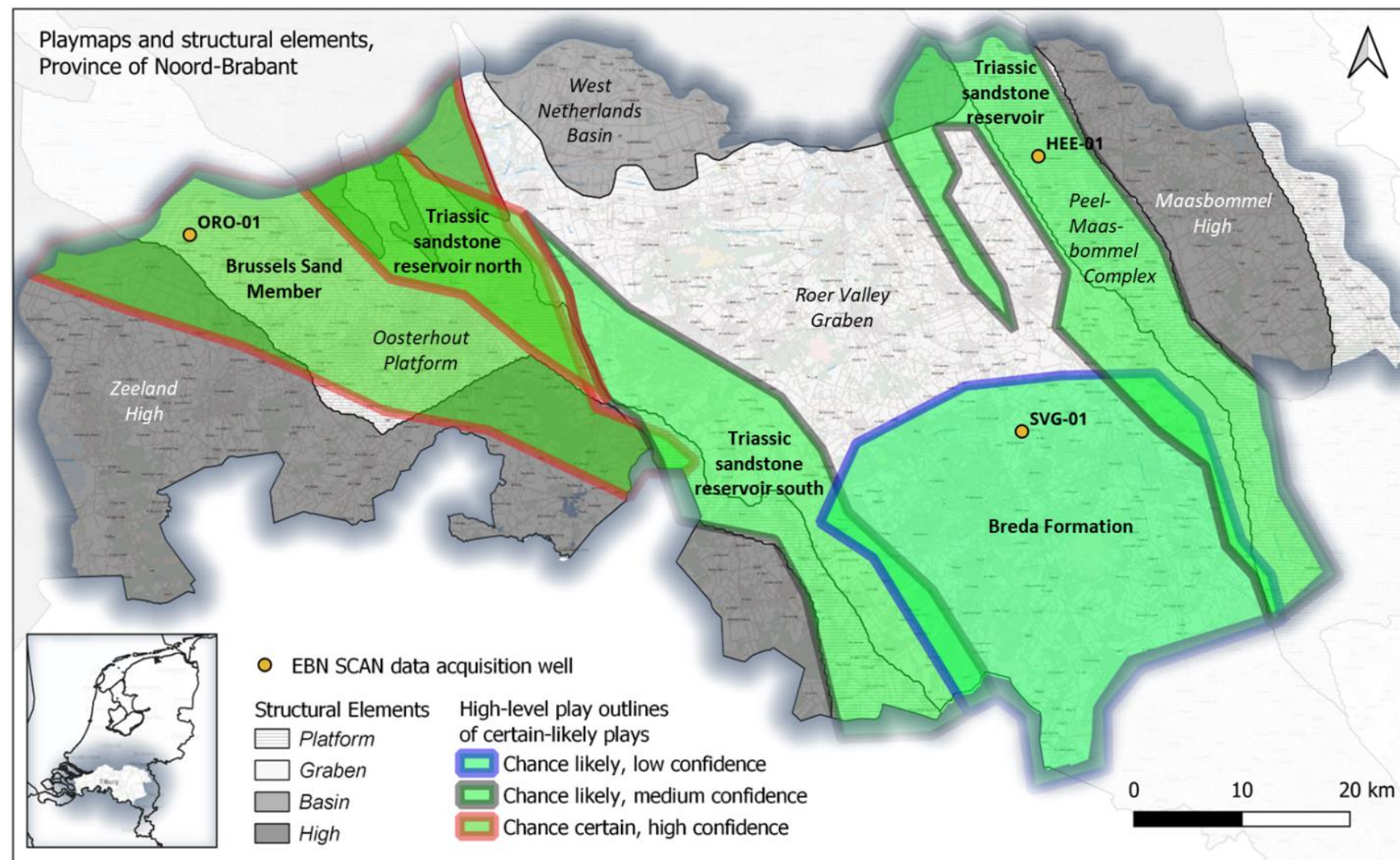
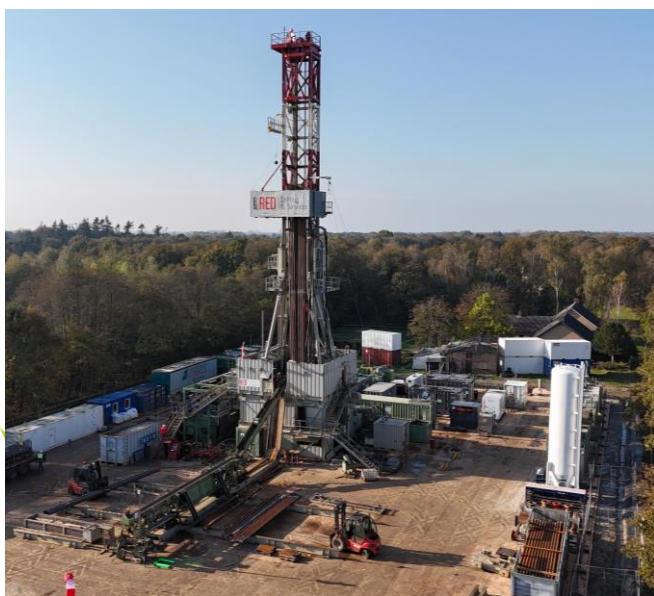
- Reprocessing of existing 2D seismic data
- New 2D seismic data
- Data acquisition wells



Regional Exploration Activities / Play de-risking

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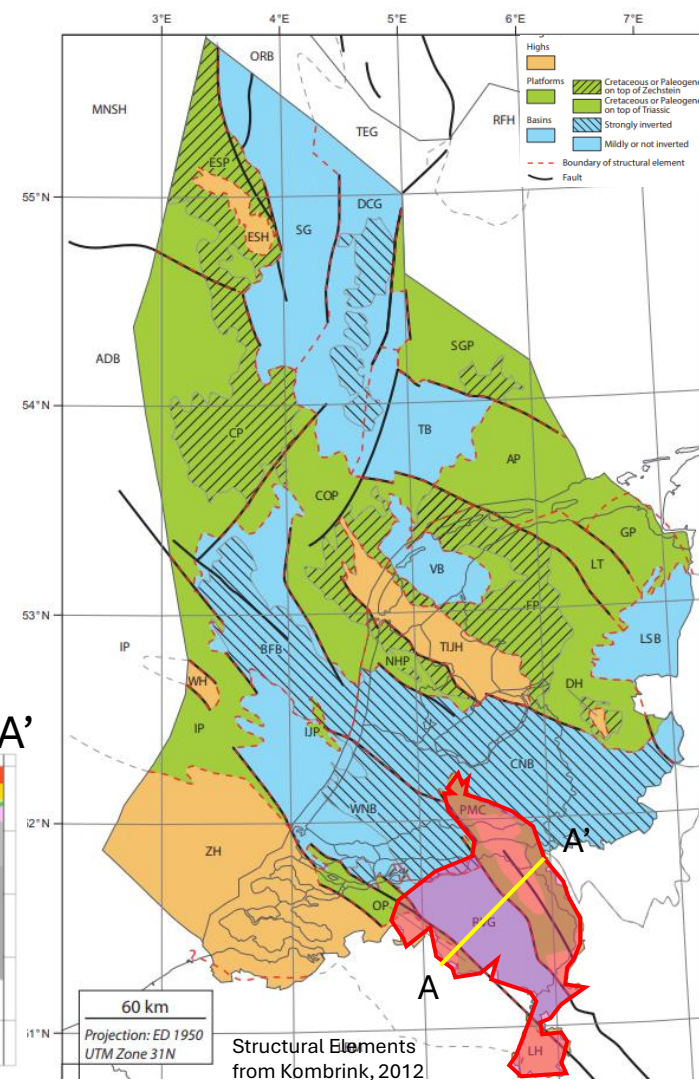
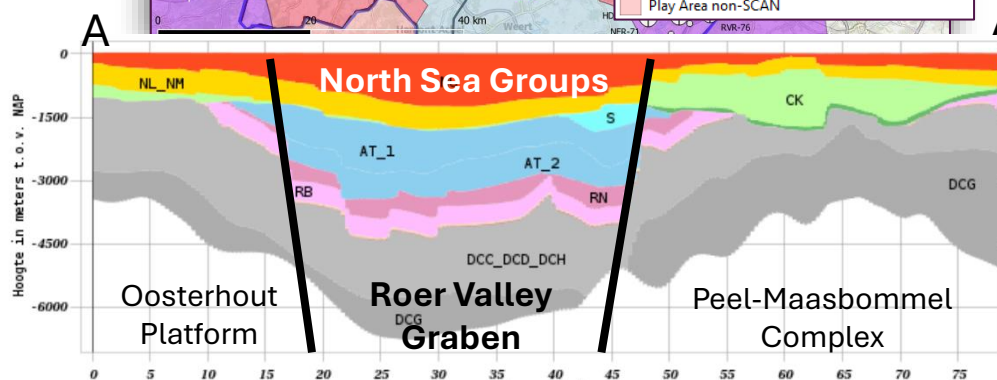
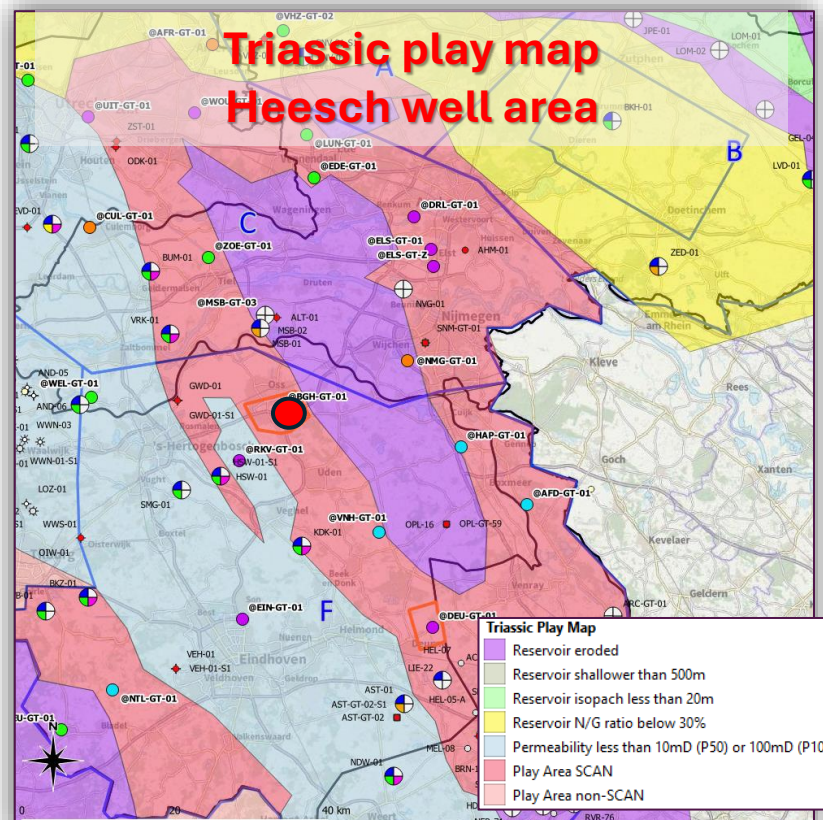
- Each of the wells targeting at least one of the potentially promising plays
- Extensive data acquisition



Regional Exploration Activities / Play de-risking

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- Other subsurface de-risking activities
 - Well implication studies
 - Geothermal potential studies
 - Jointly with regional stakeholders
 - Special topics, e.g.
 - Legacy core study
 - Study seismicity risk shallow formations
 - Buijze et al. poster (today)



Summary

- EBN is actively paving the way for geothermal project development in The Netherlands
 - Example from Province of Noord-Brabant
 - Illustration of EBN regional, play-based exploration activities such as seismic and well data acquisition, geothermal potential studies and special topic or play-related studies
 - Important basis for geothermal project development
 - Projects to perform further location-specific exploration activities

Thank you for your attention



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