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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?

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The Dutch: gas addicts?

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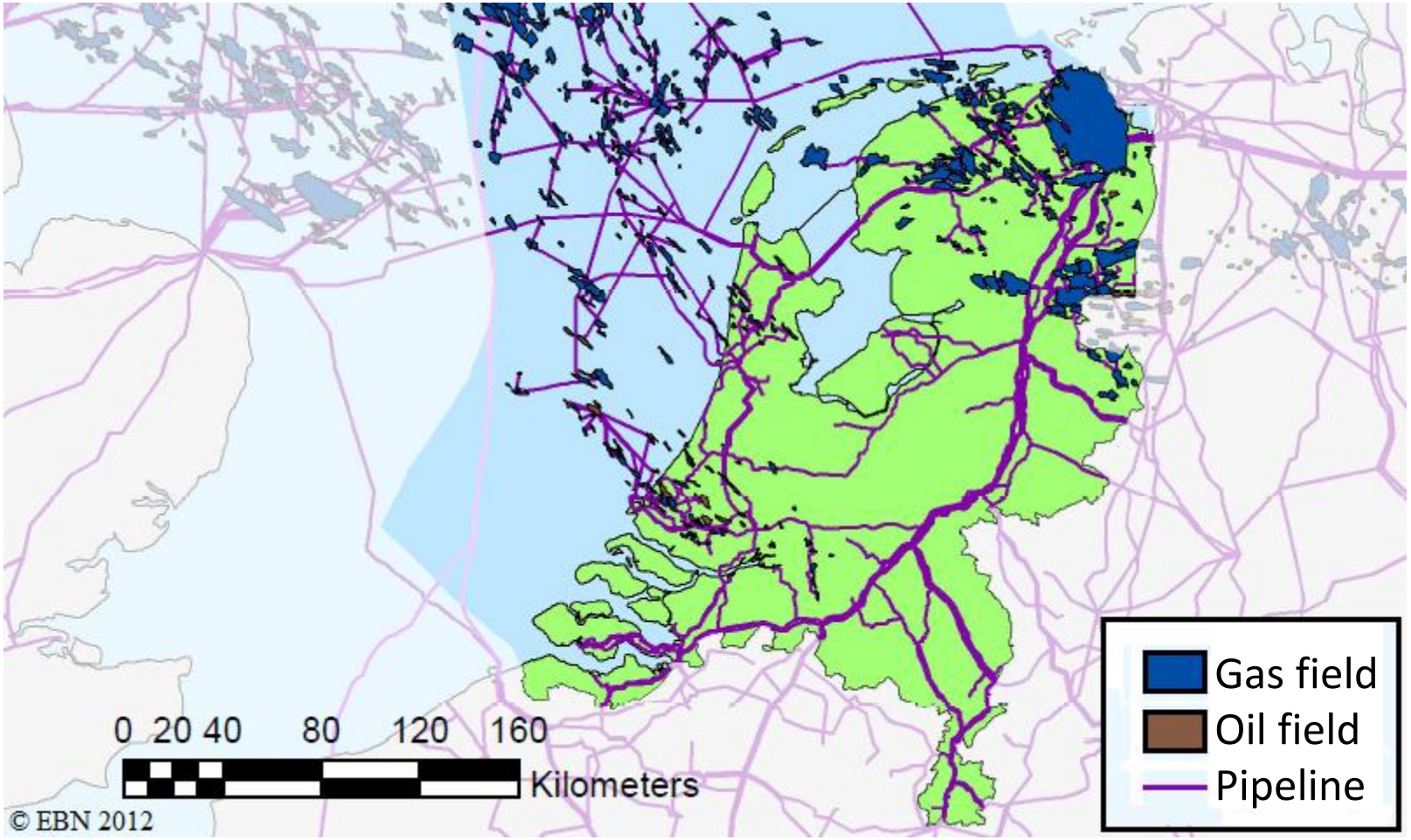
Groningen gas field

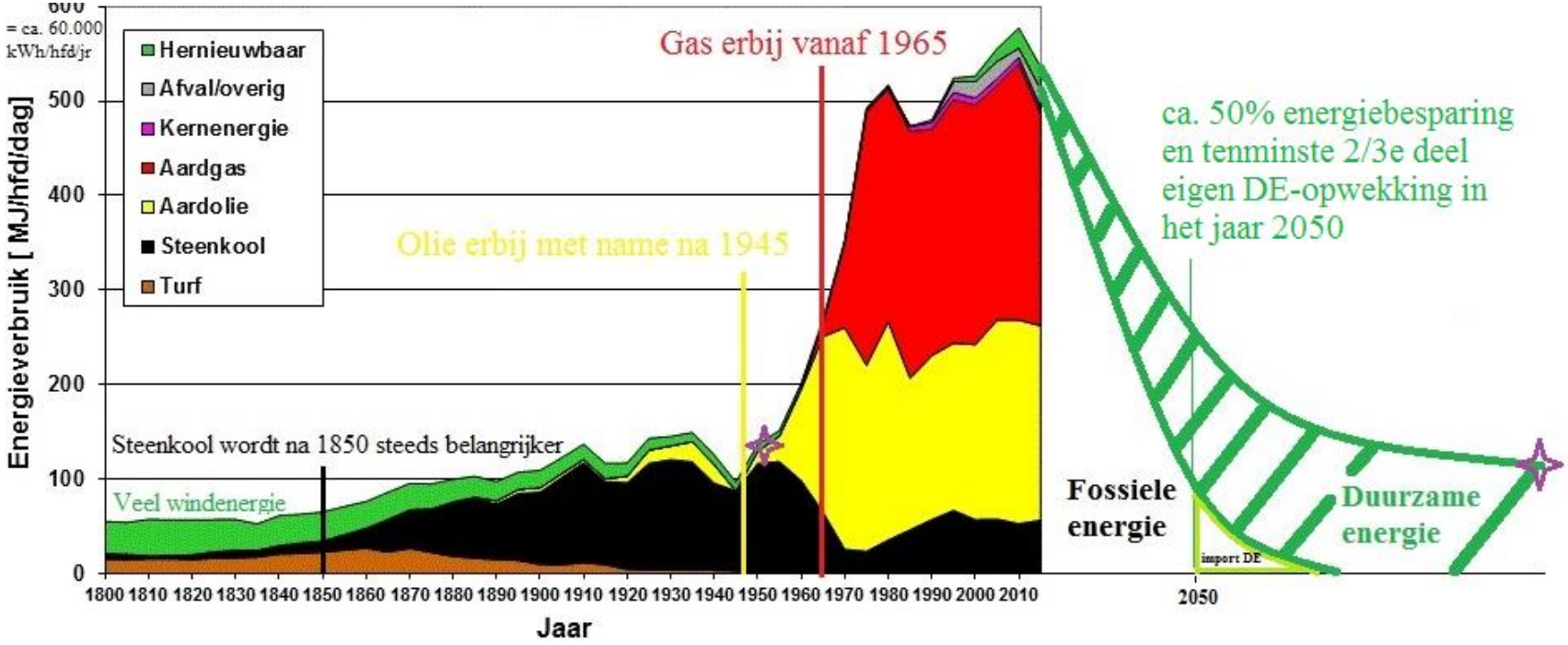


Groningen gas field

- Discovery of the Groninger gas field in 1959;
- Largest field in Europe, ca. 2800 BCM;
- Policy much focussed 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

Historic energy use

- Gas accounts for 40% of national energy supply



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Trouble in paradise

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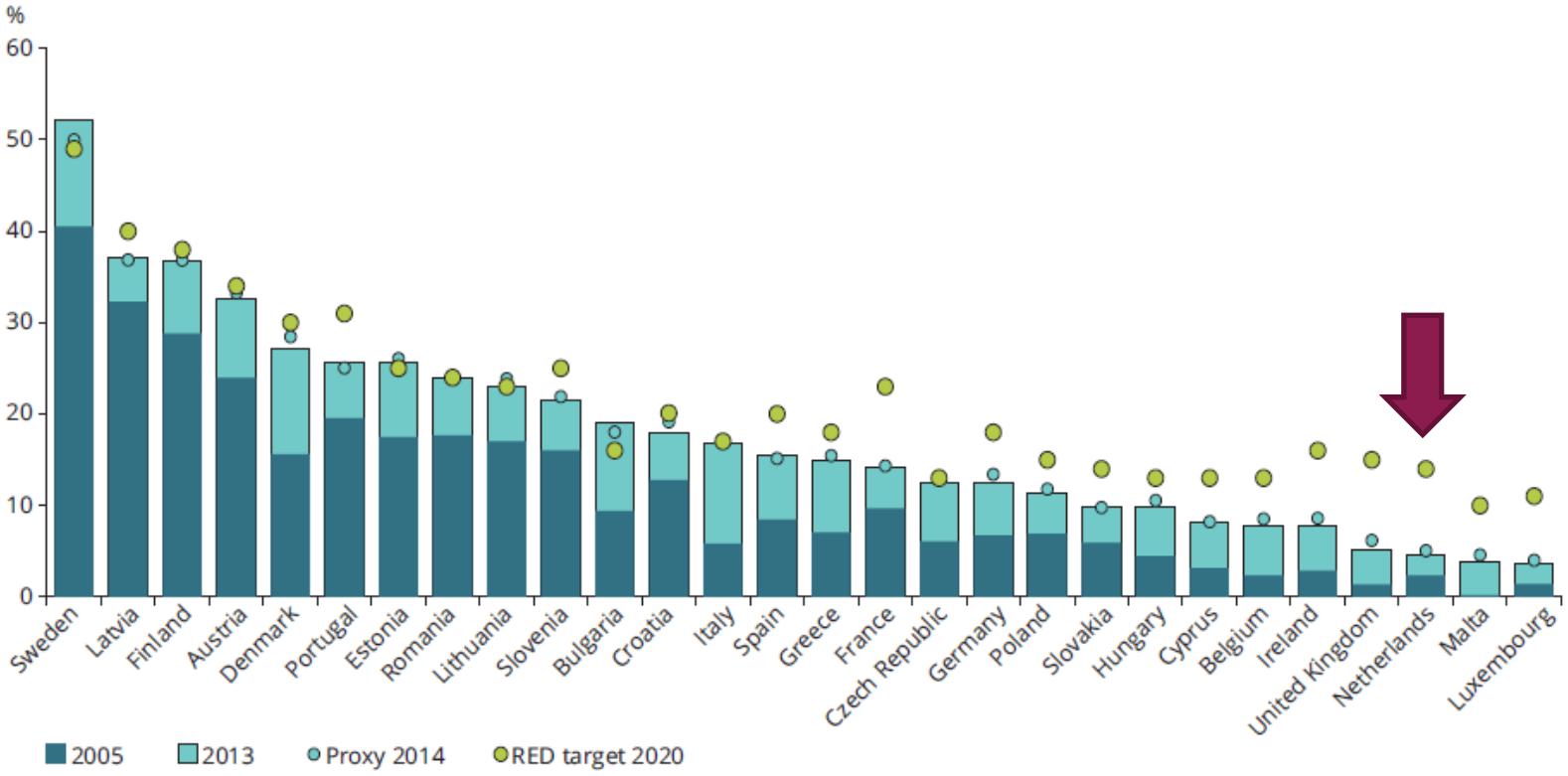
Replacing fossil fuels

- Climate change;
- International agreements to cut down CO_2 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.

Source: EEA (based on data from Eurostat and the Renewable Energy Directive (2009/28/EC)).

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!

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An incentive for energy transition?

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Heating transition: policy

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Breaking the lock-in

- 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.

Policy developments

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.

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Groningen as front-runner?

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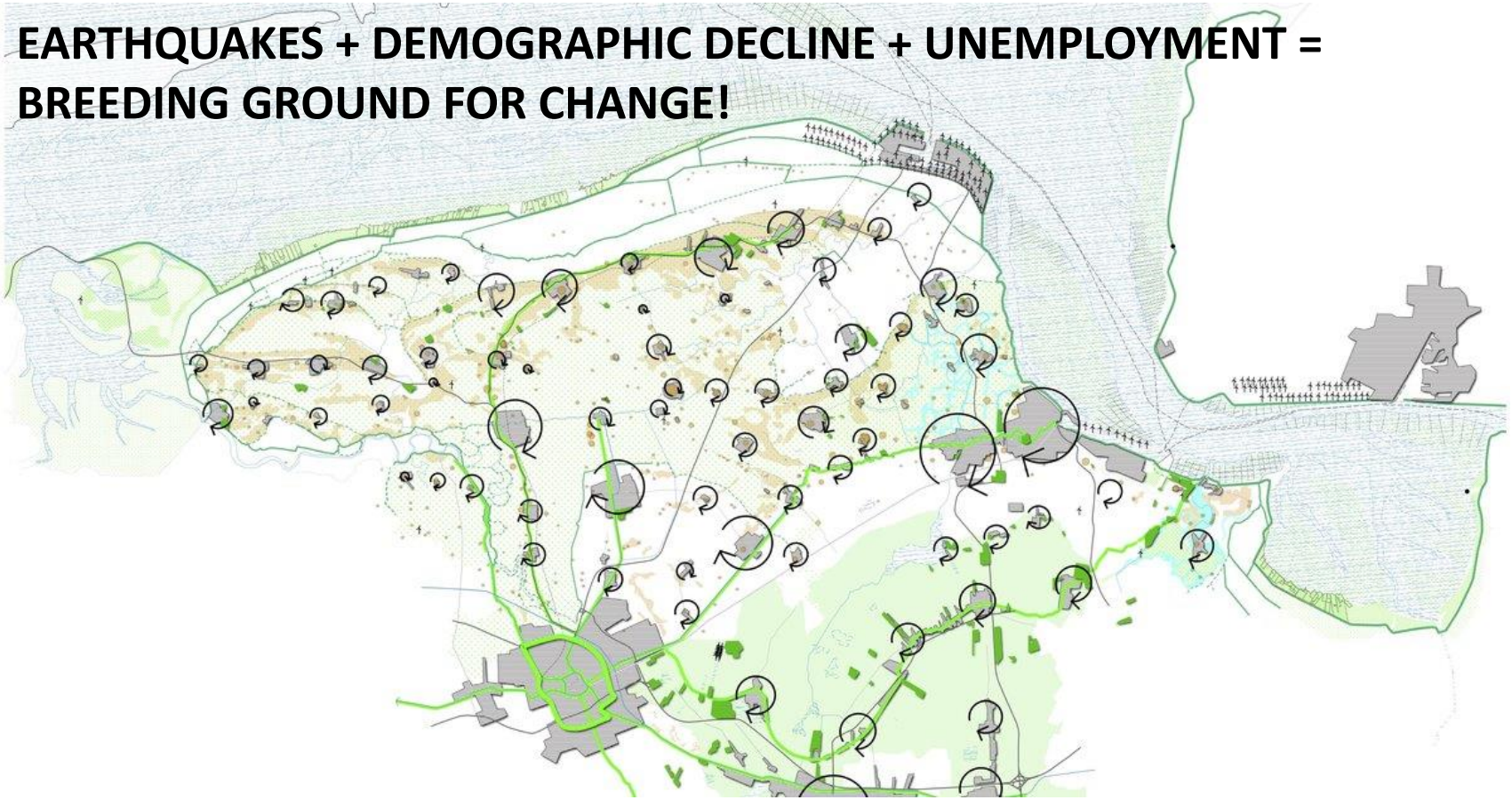
Groningen region



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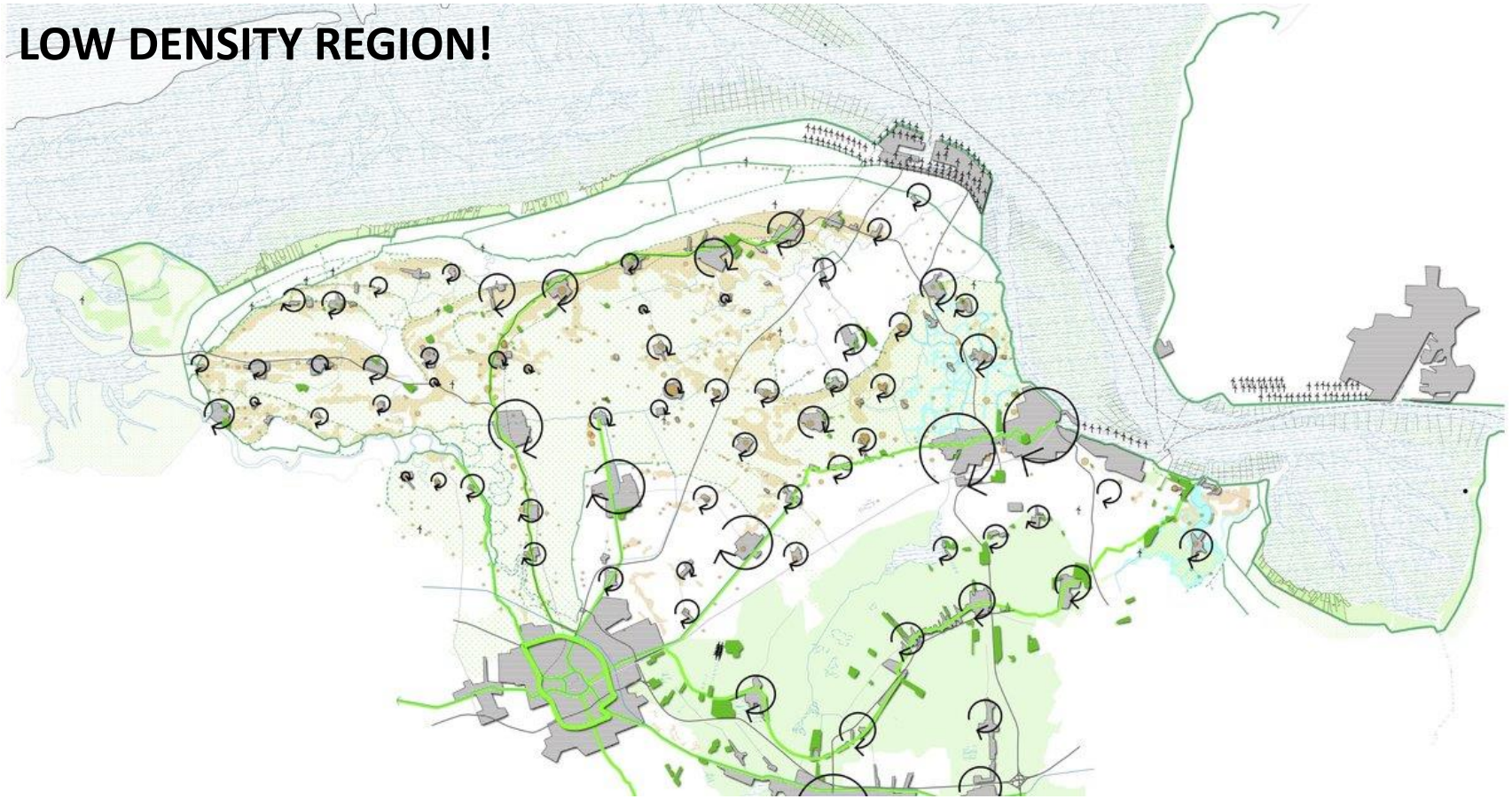
Groningen region



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Groningen region

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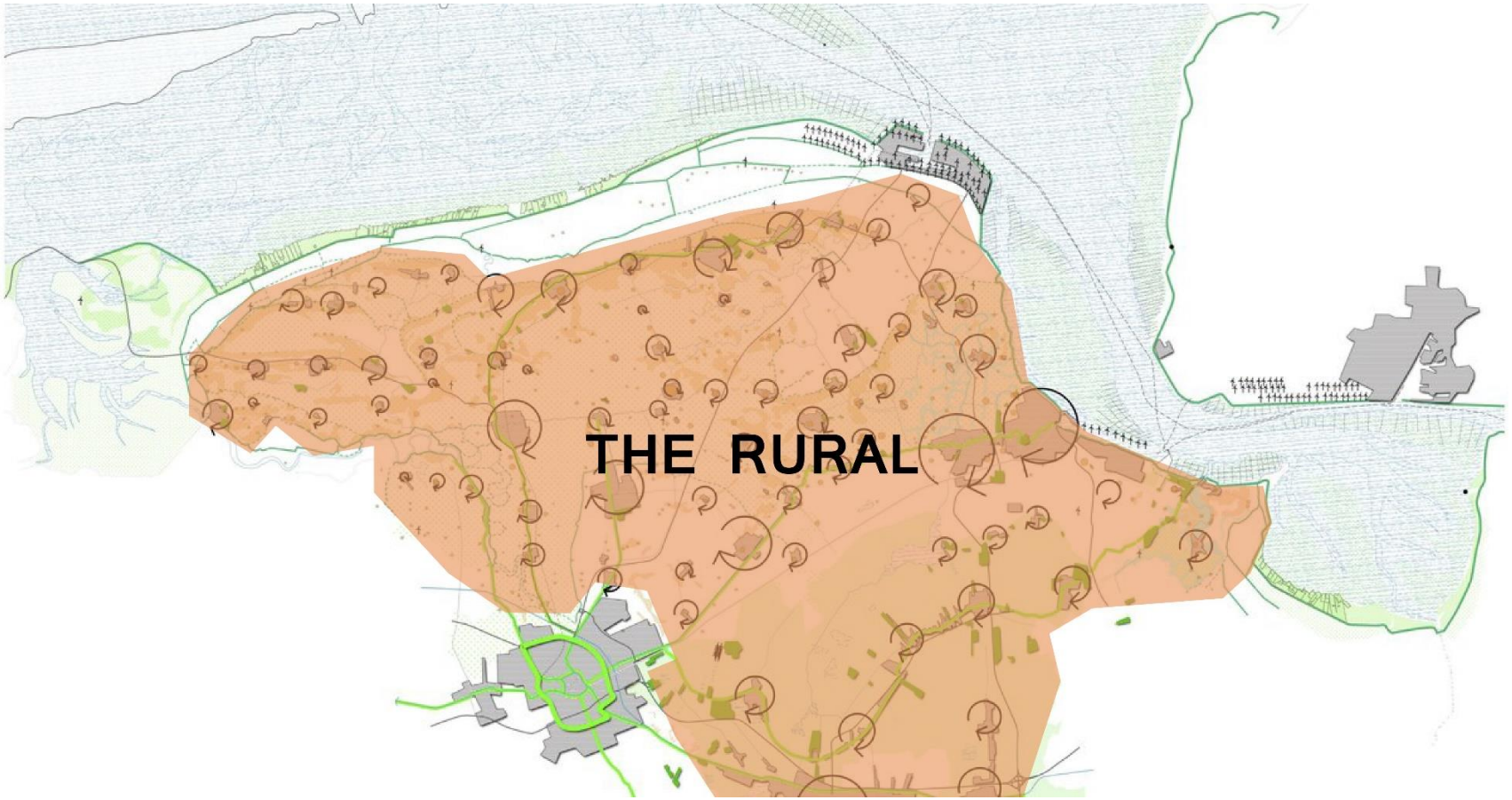

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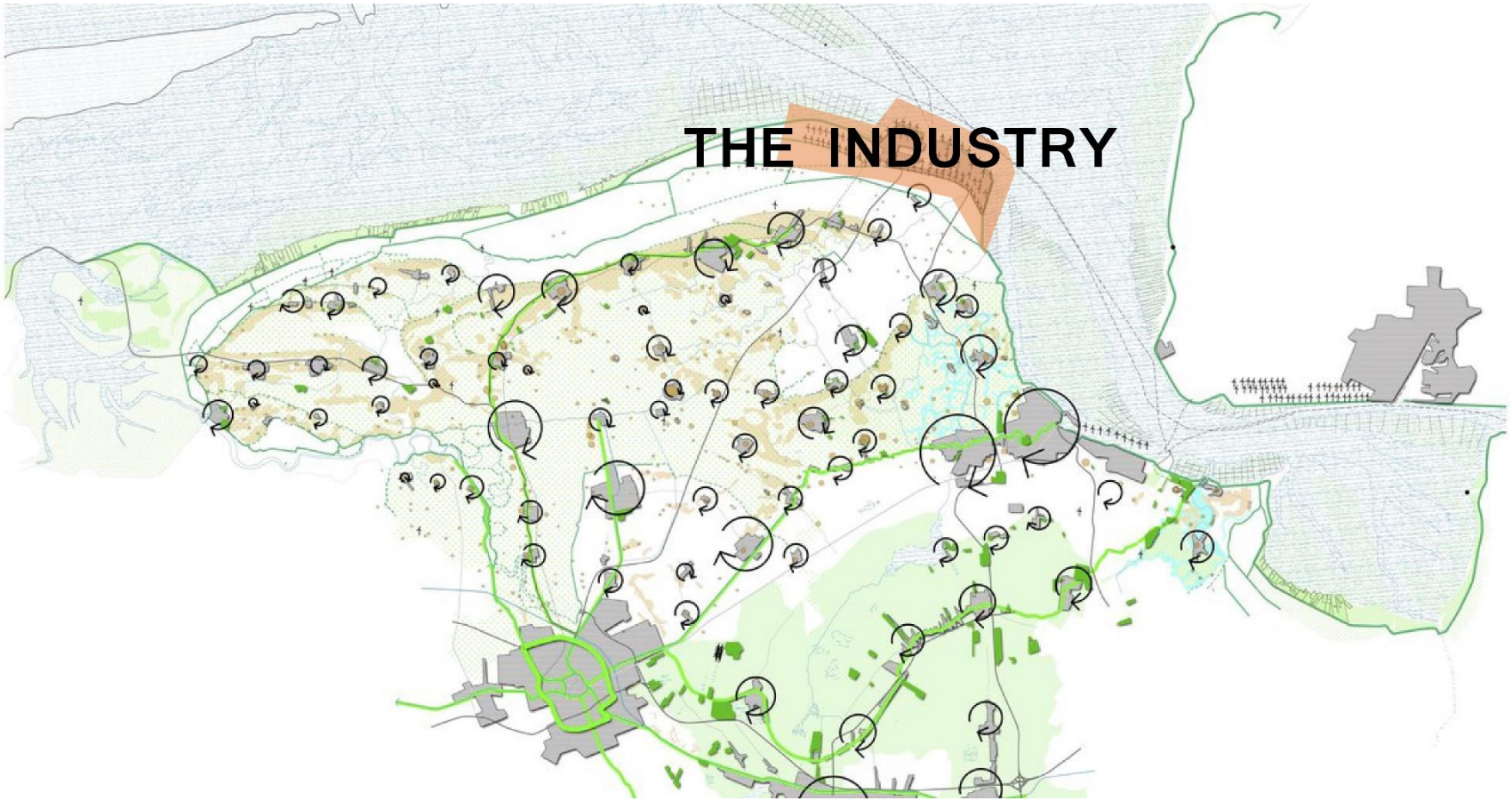

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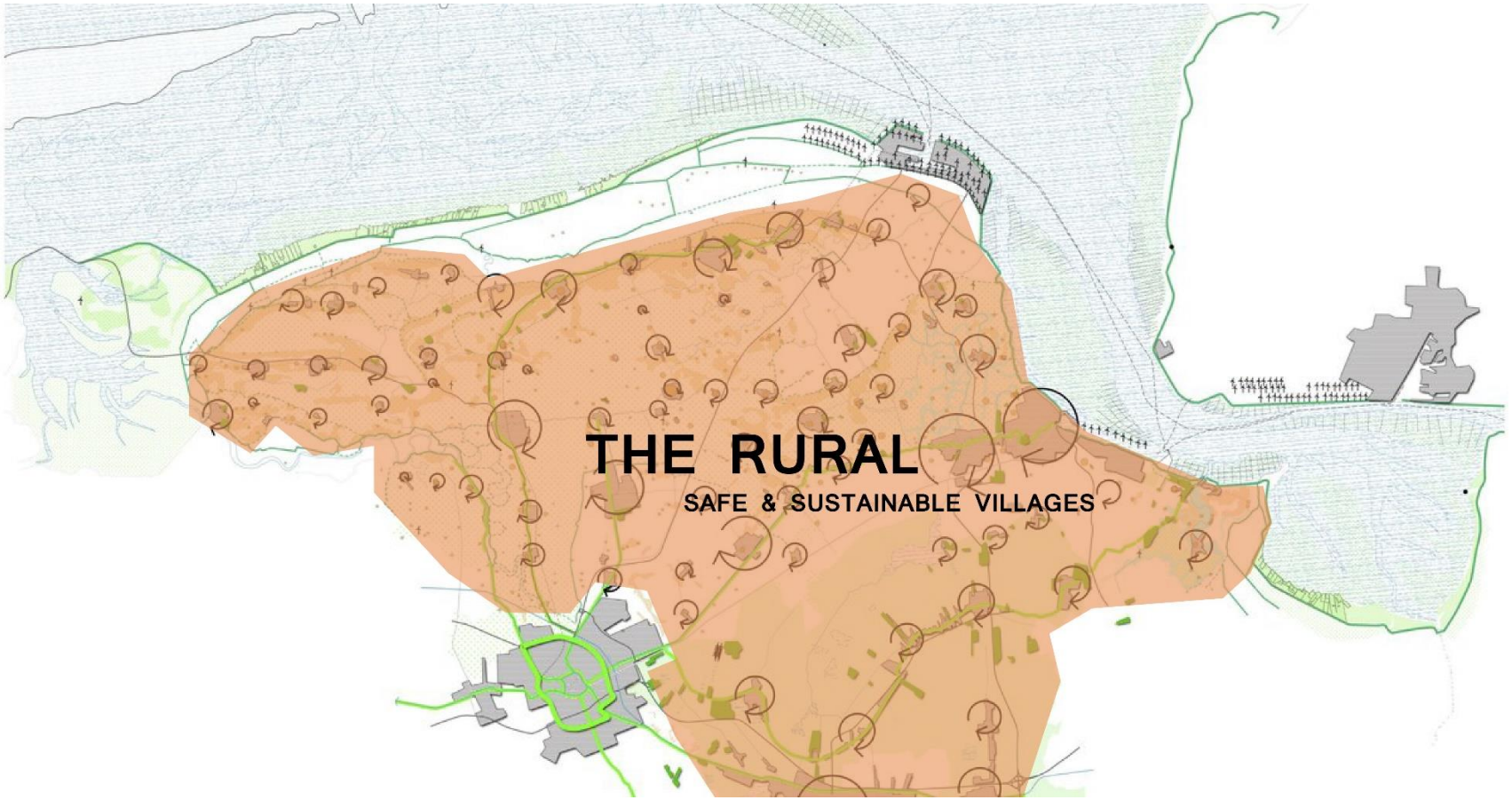
Groningen region

GEOTHERMAL DISTRICT HEATING

Groningen region



INDIVIDUAL SOLUTIONS + LOCAL ENERGY INITIATIVES

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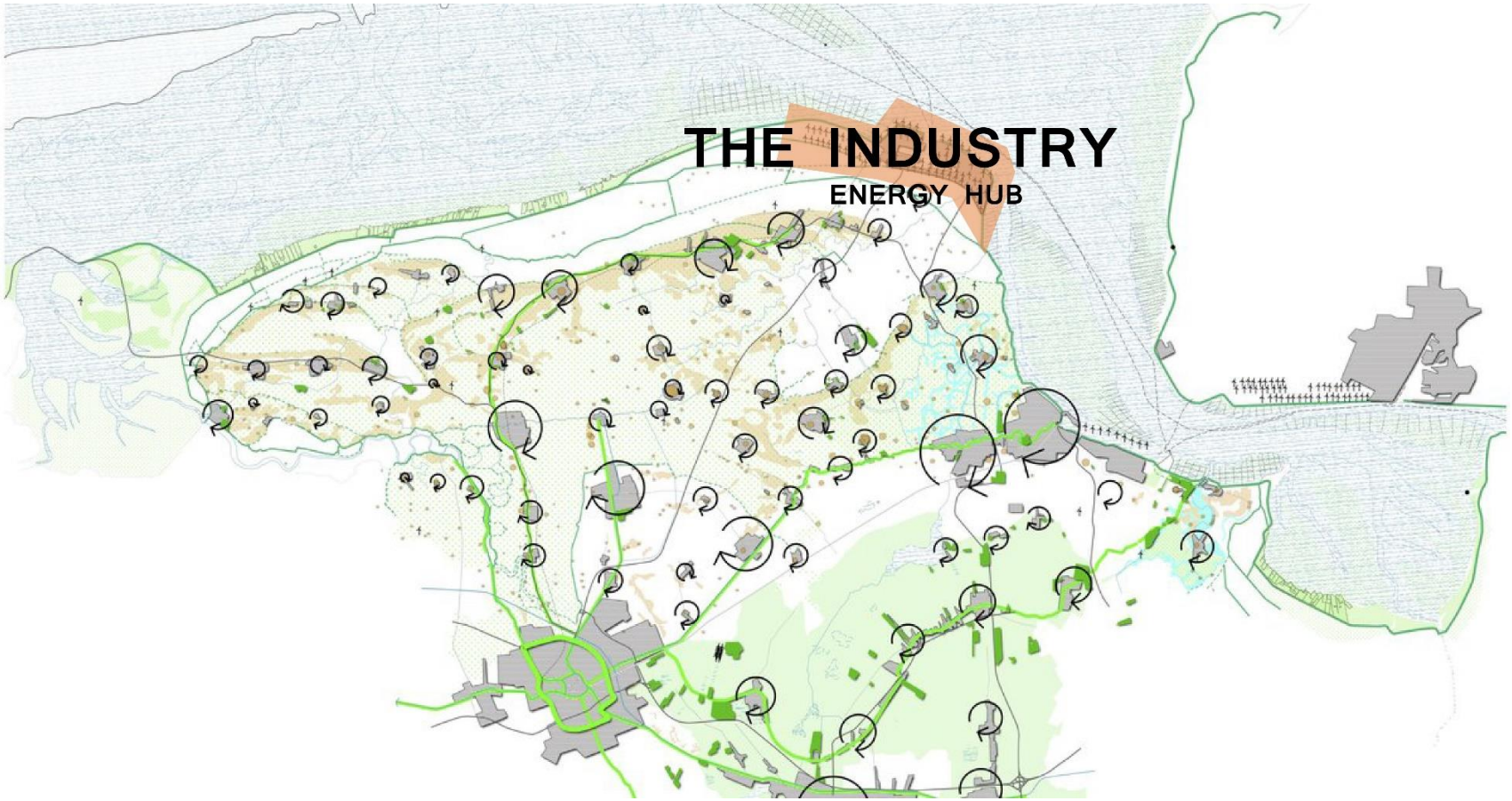

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- Hybrid energy systems
- Interactions between energy carriers
- Examples:
  - Cold recovery in LNG regasification
  - Heat recovery in P2G stations
  - Flexible heat & power in CHP plants

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.