Workshop

Establish new District Heating

Gemeente Súdwest-Fryslân

Project Confidence

From idea to project

- Deep Dive I
  - On 13, 14 and 15 June, we met with a group of Danish and Dutch experts in Bolsward. Here we covered various topics in detail. Importantly, it did not stop at these three days, several new developments are already taking place in this new, valuable network.

- Project partners
  - Working together in this project with.:
    - Danish Board of District Heating
    - Gemeente Súdwest-Fryslân
    - Enber B.V.
    - Province of Fryslân
    - BNG Bank Nederlandse Gemeenten
    - VNG Vereniging Nederlandse Gemeenten
    - Danish Embassy in the Netherlands
    - Naestved Fjernvarme, Egedal Fjernvarme, municipality Høje-Taarstrup

Dutch ambitions

- 55% CO2-emission reduction by 2030 compared to 1990 levels
    - I.e. switch from (individual) natural gas heating to district heating
- The number of district heating connections should approximately double between 2020 and 2030
    - Ambition to realize 500.000 new district heating connections by 2030
    - A further grow to about 2.600.000 new connections by 2050
- For the infrastructure alone, this involves EUR 4.8bn to EUR 6.8bn until 2030 and about EUR 35.5bn until 2050

Development of Collective Heat Act

New legislation (2025) drives the development of district heating networks in the Netherlands.

- The public majority interest in a heat company is anchored in the law, with an explicit call to municipalities to participate
- The role of heat communities is further secured in the law
- Cost price plus in stead of NMDA (Not More Than Natural Gass comparison)
- A second law (municipal instruments) aims to provide an opt-out arrangement for phasing out natural gas.

Making a better business case for district heating.

Súdwest-Fryslân

Water-rich, rural municipality with 2 large cities and many small centres. With a committed and organized Mienskip (community)

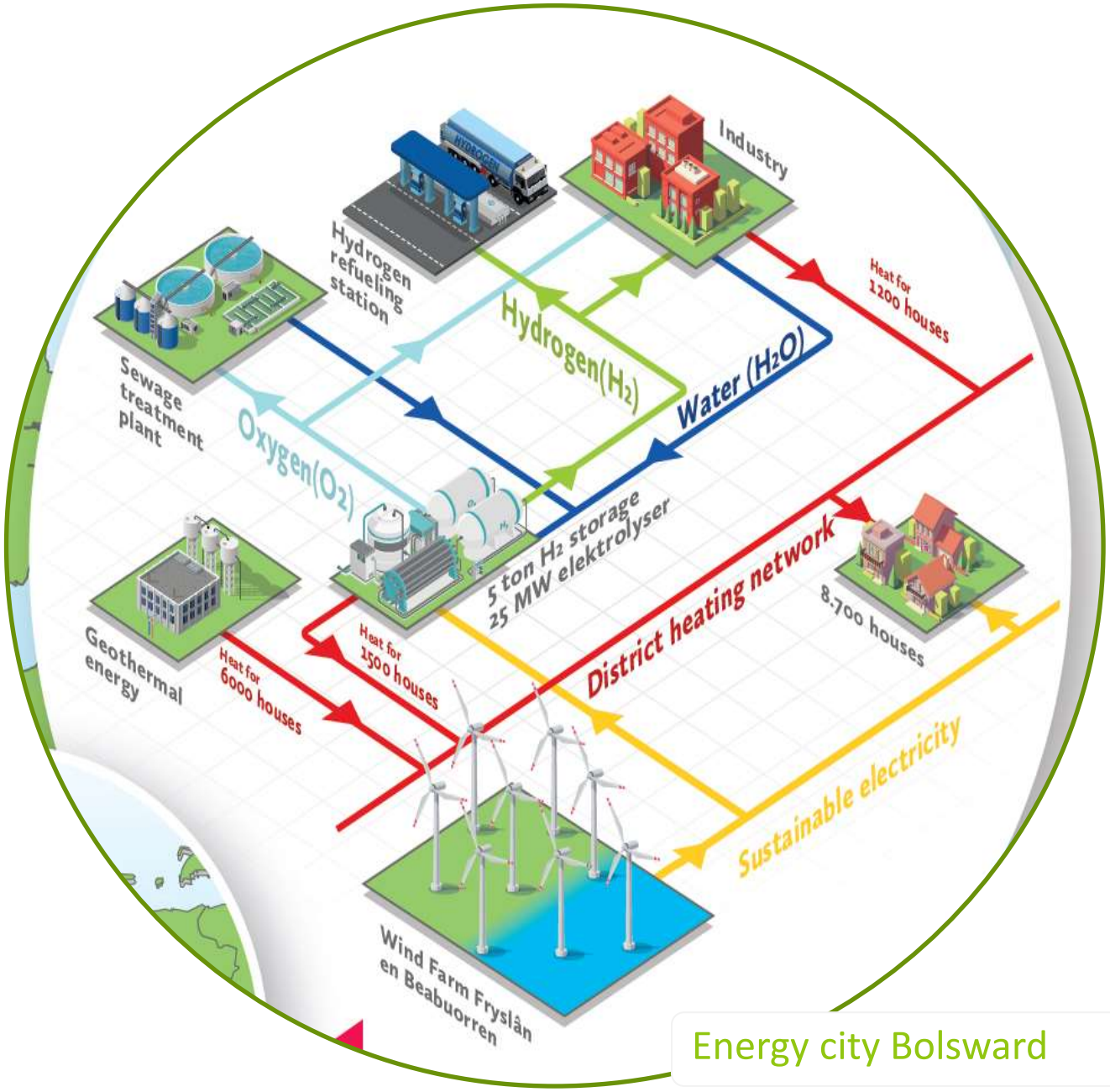
- 90,876 inhabitants
- 83 villages, 6 cities
- 52,270 hectares of land
- 38,515 hectares of water
- 4 Heat projects (under development)

Our projects

Sneek The island

Our projects

Warm Workum



Energy city Bolsward

New strategy

From pilots to approach

Main challenges.:

High Costs

- District heating projects in less populated areas face higher costs per household compared to urban settings, making them less economically viable

Perceived Risk

- Heat projects are often viewed as high-risk investments in the Netherlands

Knowledge Development

- The development and dissemination of knowledge about district heating solutions are progressing slowly, hindering effective implementation

Legislative Focus

- Coming legislation targets urban solutions, neglecting the unique needs and challenges in smaller heating systems

Deep dive I
Lessons learned:

Lesson 1.:

Make a plan for the entire municipality.

Determine the most promising cities/towns and start there.

The most important factors to determine the areas are:

- the high energy density per m2
- the presence of an inexpensive heat source.

“Plan big, start small”

Jens Andersen Director of the heating companyNæstved.

New strategy

From pilots to approach

Step 1.:

Masterplan municipality of Súdwest-Fryslân.

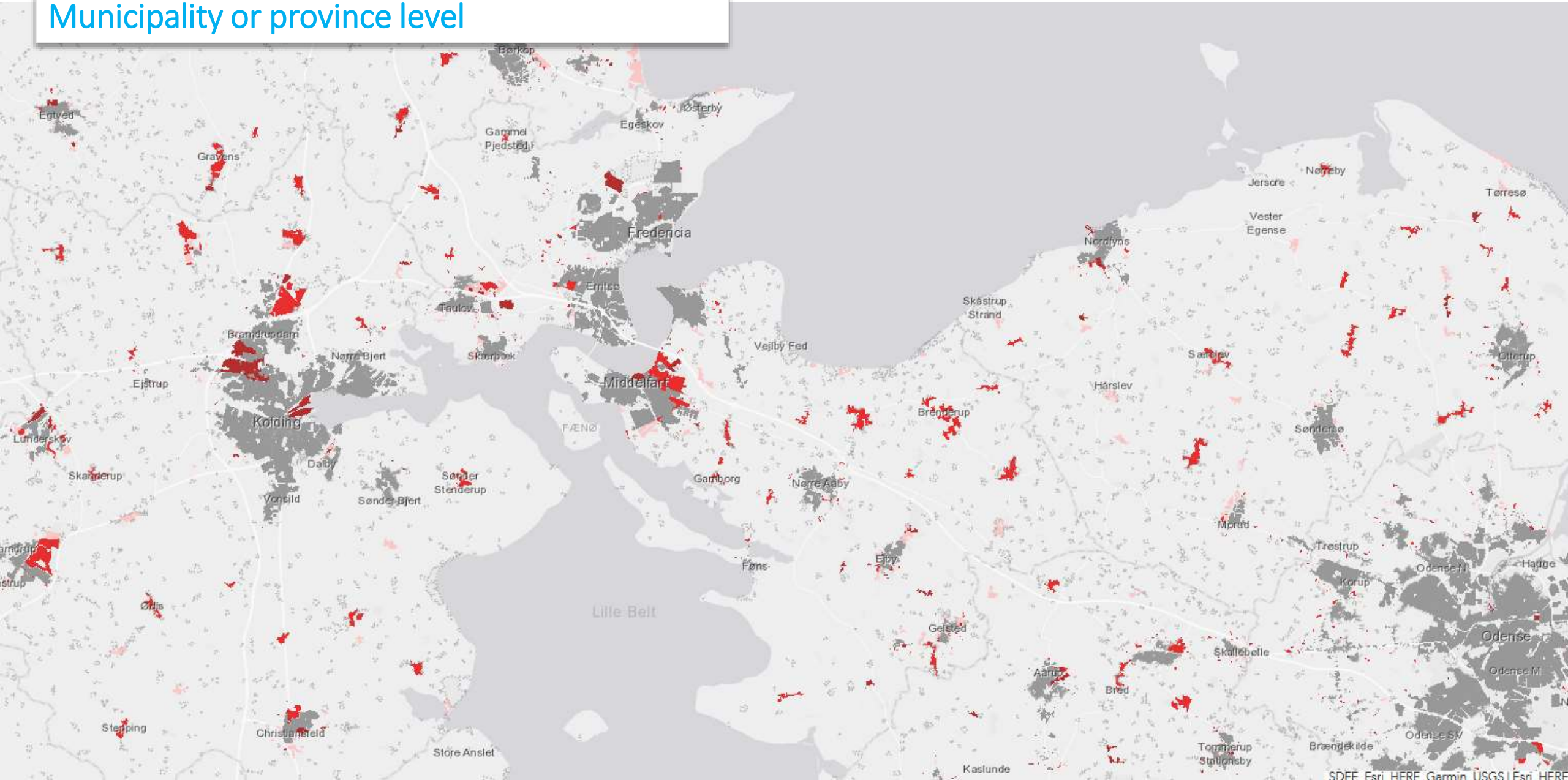
- Heat plan for the municipality
- Inventory of available sources
- Determination of the most promising cities/villages for collective heat

The most important factors to determine the areas are:

- the high energy density per m2
- the presence of an inexpensive heat source.
- Coupling opportunities during construction have a limited impact.

Heat plan

Municipality or province level

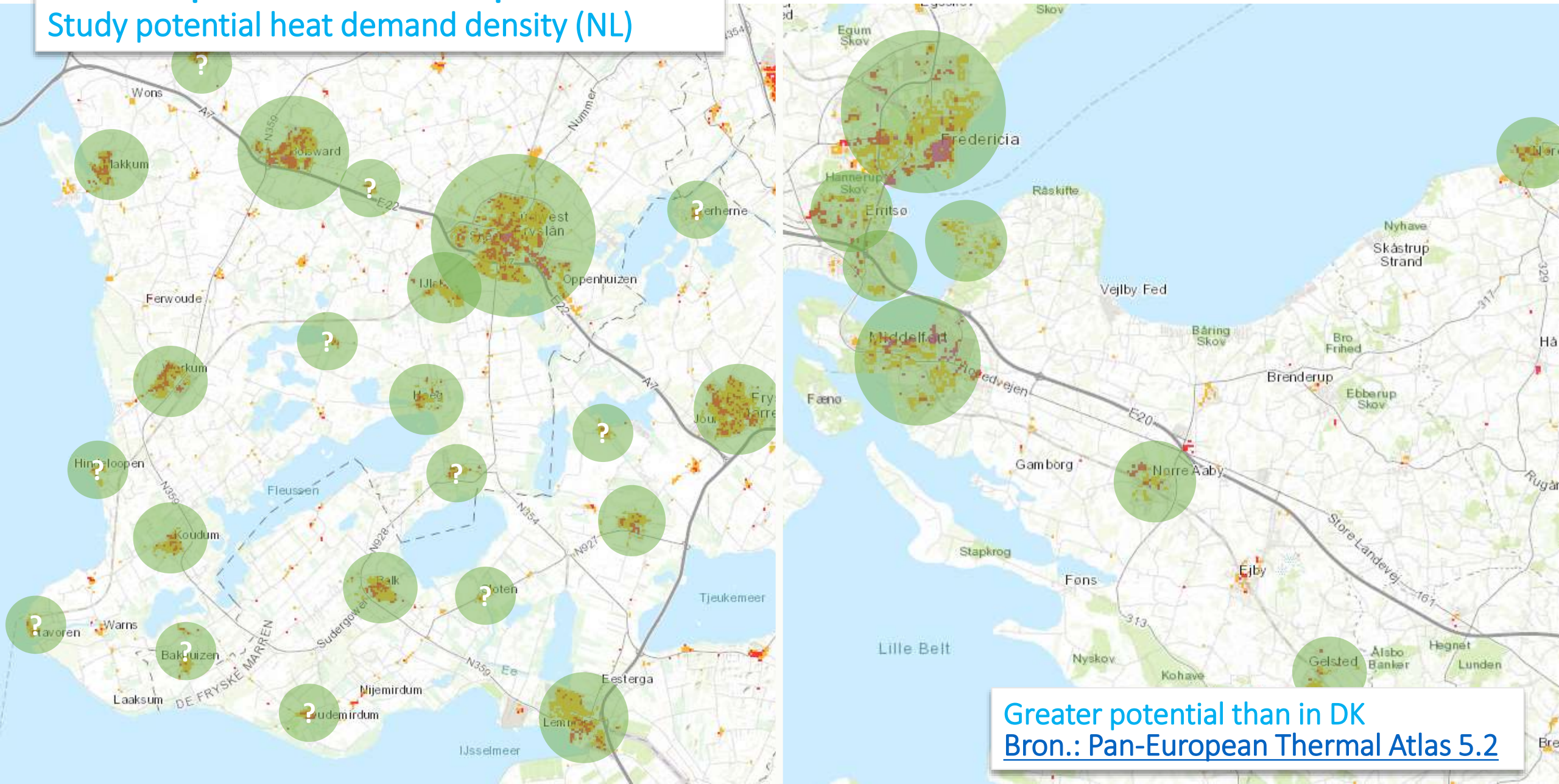


Heatplan and determination

Promising cities and villages

Development of heat plan

Study potential heat demand density (NL)

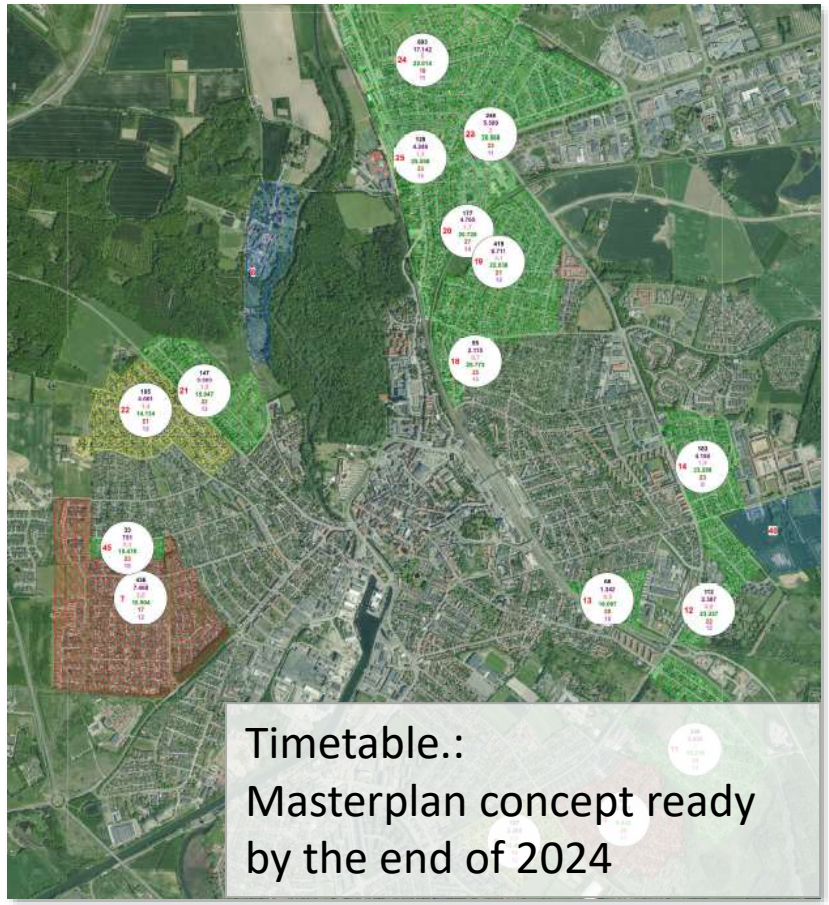


Greater potential than in DK

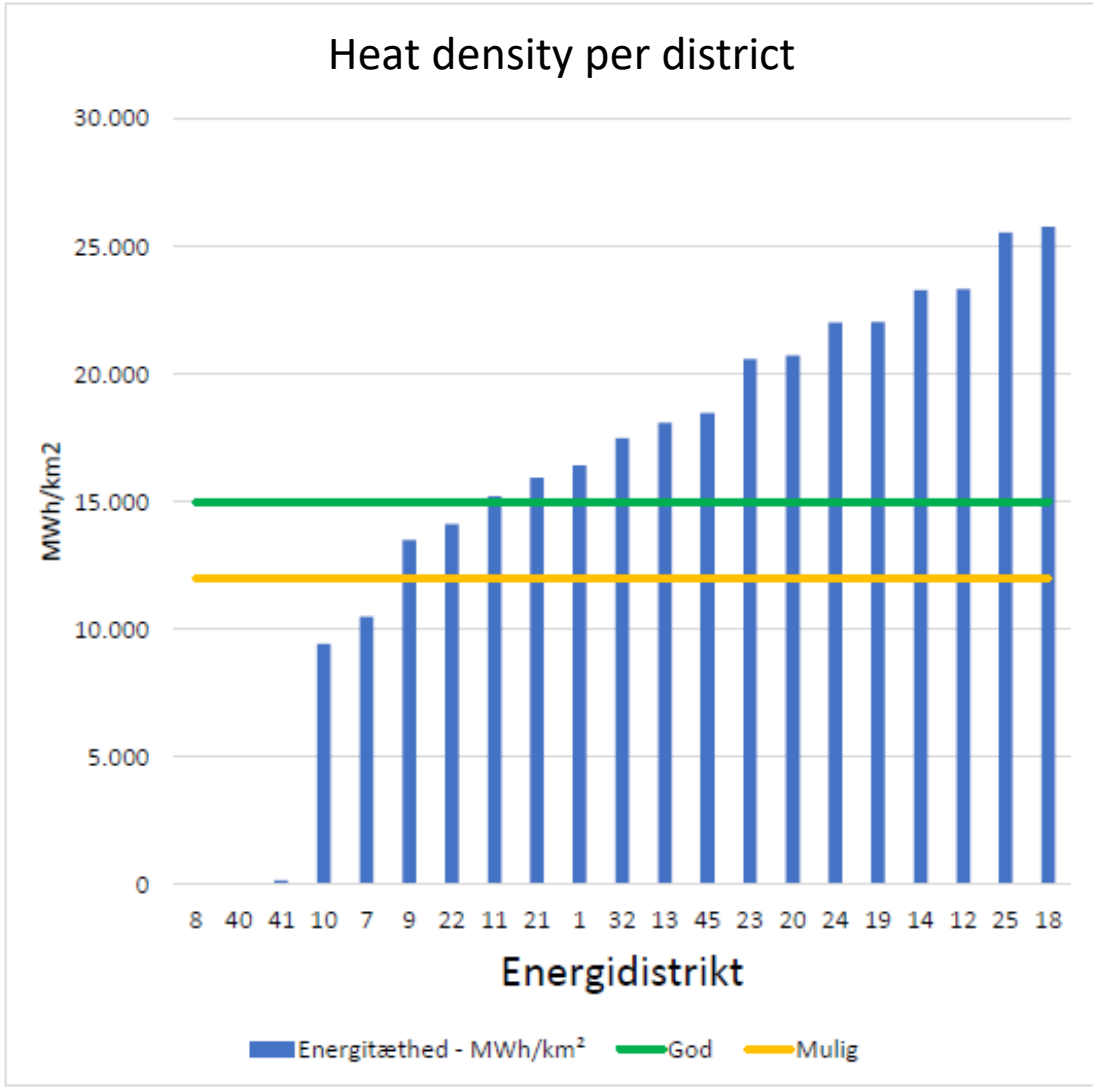
Bron.: Pan-European Thermal Atlas 5.2

Determination of the most successful
district or village

Determination of the most successful
district or village



Timetable.:
Masterplan concept ready
by the end of 2024



Deep dive I
Lessons learned:

Lesson 2.:

Don't start at 100% sustainable.

Build out the resource strategy as the number of connections grows.

We will not have to get rid of natural gas until 2050. That gives us another period to work towards 100% renewable energy.

New strategy

From pilots to approach

Step 2.:

Project proposal for the most successful district or village.

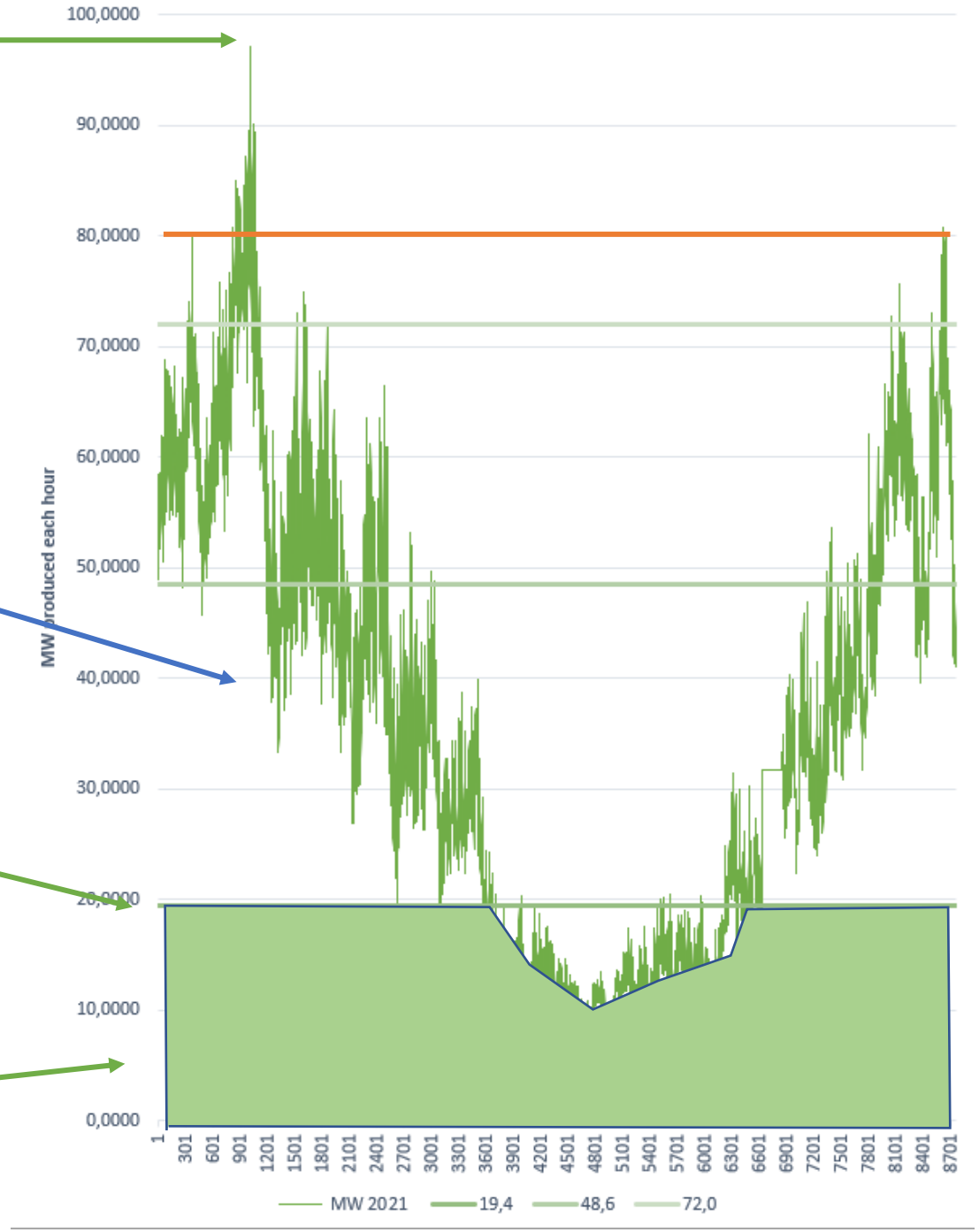
- Applying Danish expertise
- Developing a source strategy
- Translating results into approach (pilot) projects

Maximum required capacity
(Cold winter's day, 1 day in the year)

For a viable business case, use the remaining 50% low-cost source.

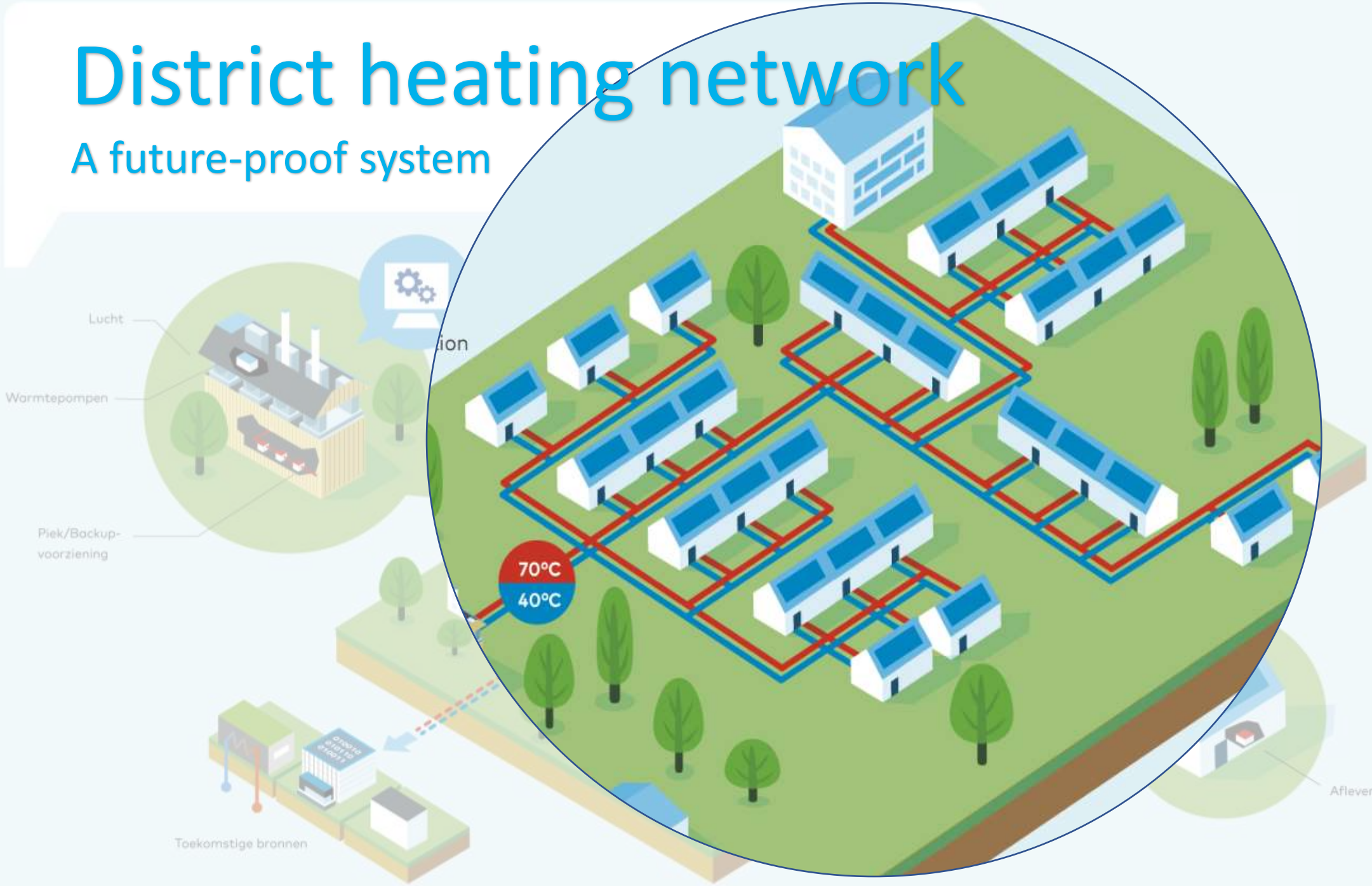
Maximum heat pump capacity (sustainable)

Ensures 50% of the required capacity throughout the year



District heating network

A future-proof system

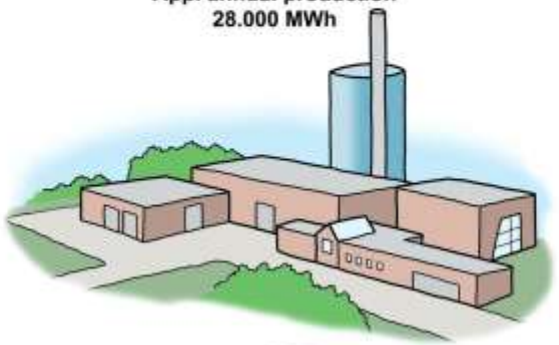


Gram Fjernvarme

District heating plant

App. annual production
28.000 MWh

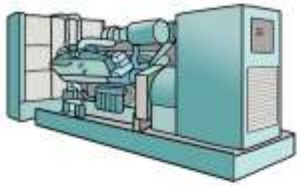
ARCON SUNMARK
May 2016



City

Gram, Denmark
Municipality of Harderslev
2486 inhabitants (2022)

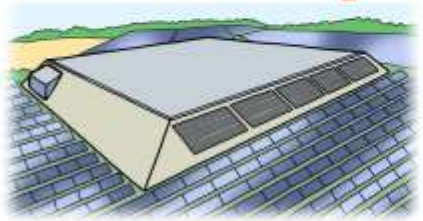
Gas engine
5,5 MW power



7 MW heat

71 - 74°C

Thermal pit storage
122.000 m³



170 kW
photovoltaic

Hot water

Cold water

Storage tank
2300 m³

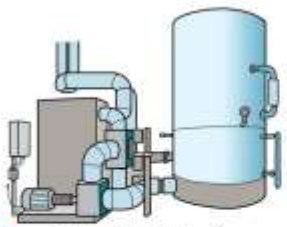
2 MW heat

Gas boiler
5,5 MW heat

Ege Tæpper

Hot water

10 MW hot water



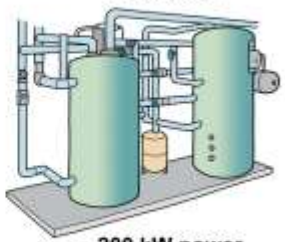
Electric boiler

10 MW power

31 MW heat

Solar collectors
44.800 m² (3.565 qcs)

Heat pump



200 kW power
950 kW heat

32 - 38°C

Deep dive I

Lessons learned:

Lesson 3.:

Think of companies as potential customers, too.

Also supply heat to companies, which makes the heat cheaper for everyone in a certain area.

Convincing more people to join and adding companies, housing associations from day one significantly improves the business case.

New strategy

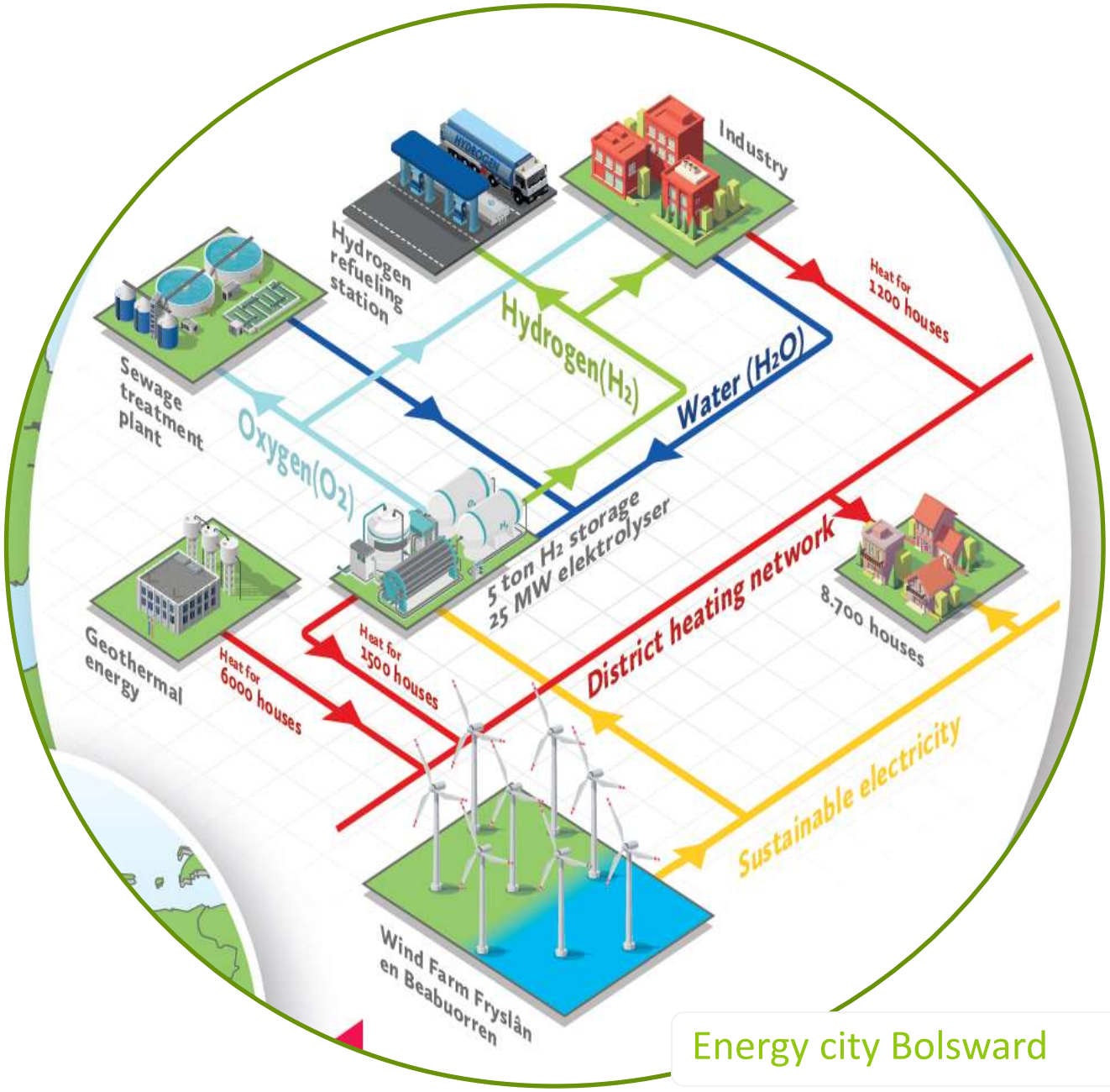
From pilots to approach

Step 3.:

Approaches companies in a different way.

Different approach of companies is not just focus on waste heat or alternatives to gas.

See delivery of heat also as a possibility.



Energy city Bolsward

A 100% municipally owned district heating company?

Development of a municipal owned District heating Company

Research of models

	Danish model	DH infrastructure company	Public DH company	Commercial DH company	Local DH company
User empowerment	End user owner	Partly on infra	Via municipal council	Restricted	Cooperative owner
Socio-economic distribution	-	-	Social distribution	-	-
Affordability	Non-profit Resource strategy	Non-profit Resource strategy	Non-profit Resource strategy	Profit motive	Non-profit Resource strategy
Reliability	Proven system	Continuity infra	Continuity secured	Cherry picking	Risks not secured over time
Legislation, collective heat supply	Lowest social costs	Only Infra	Continuity of infrastructure & supply chain	No public majority stake	How?
Projects and examples	+400 Heat companies 97% publicly owned	GWIB Enpuls (Enexis)	Eindhoven, Groningen, Veenendaal en SWF	Ennatuurlijk, Eneco, Vattenfall	Warm Heeg

Pilot	Goal	Control	Trustworthy	Affordable	Landscape	Fair share	Co2	Exploratory phase	Development phase	Implementation phase	Exploitation phase
Heeg	1130	✓	✓	?	–	?	✓	→	→		Risk
t Eiland	878	✓	–	X	–	?	✓	→	→		KDB
Bolsward	4734	✓	–	X	–	?	✓	→	→		KDB
Workum	1671	✓	–	X	–	✓	✓	→			KDB

Total: 8413 homes

Deep dive I

Lessons learned:

Lesson 4.:

Increase the trust of residents, politicians and financial institutions.

Actively work together with residents, housing corporations, company's and focus on an initial success.

Increase your trust by working transparently.

Be clear about the division of roles. The task is large and requires cooperation and clear division of roles

New strategy

From pilots to approach

Step 4.:

Next step in feasible and affordable projects.

- Translation of the approach for the entire municipality
- Entering into a dialogue with the province and ministry about how we can achieve the energy transition in rural areas.

Deep dive I
Lessons learned:

Lesson 5.:

From facilitating to taking control.

With clear direction from the municipality, you look at the best solutions in the municipality from a broader perspective with more opportunities.

We asked where the Danish experts would start with the Dutch task. They saw a clear task for the municipality in taking the lead in the heat transition.

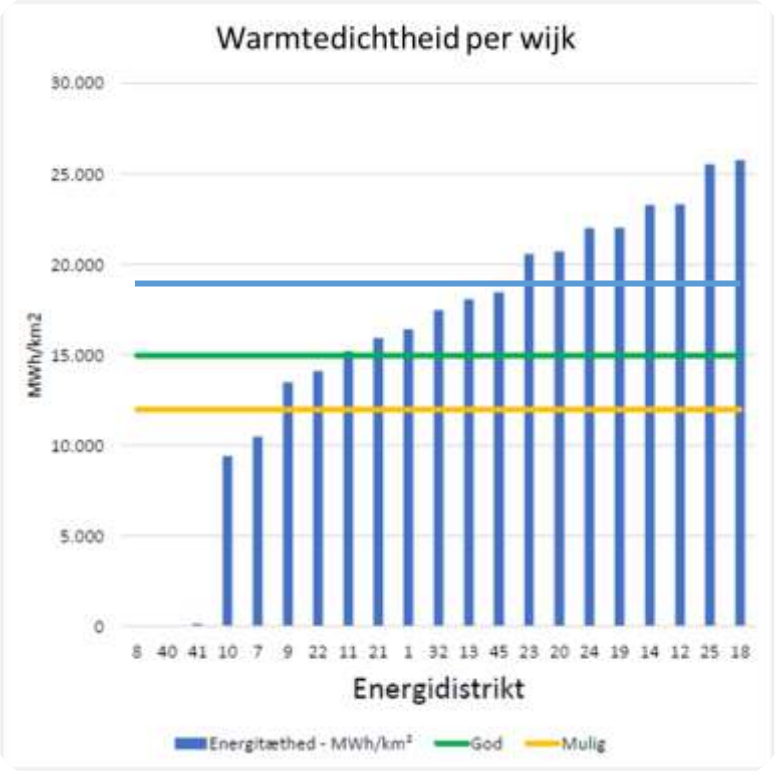
New strategy

From pilots to approach

Step 5.:

Creating trust by developing clear roles.

- Transparency in the role of the municipality
- Transparency in the process of projectdevelopment
- Transparency in the business case and tarrifs
- Public role important to prevent cherrypicking



New strategy

From pilots to approach