

AUGUST 18 2014 – 4GDH CONFERENCE – AALBORG, DENMARK

DISTRICT HEATING IN NEW CONSTRUCTION

GRØN ENERGI – GREEN ENERGY: WE ANALYSE

- Fact-based input to Danish energy policy on DH-related issues
- Financed by Danish District Heating Association + several companies from the sector

Systems integration

Energy efficiency

Systems export



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Energiplanlægger

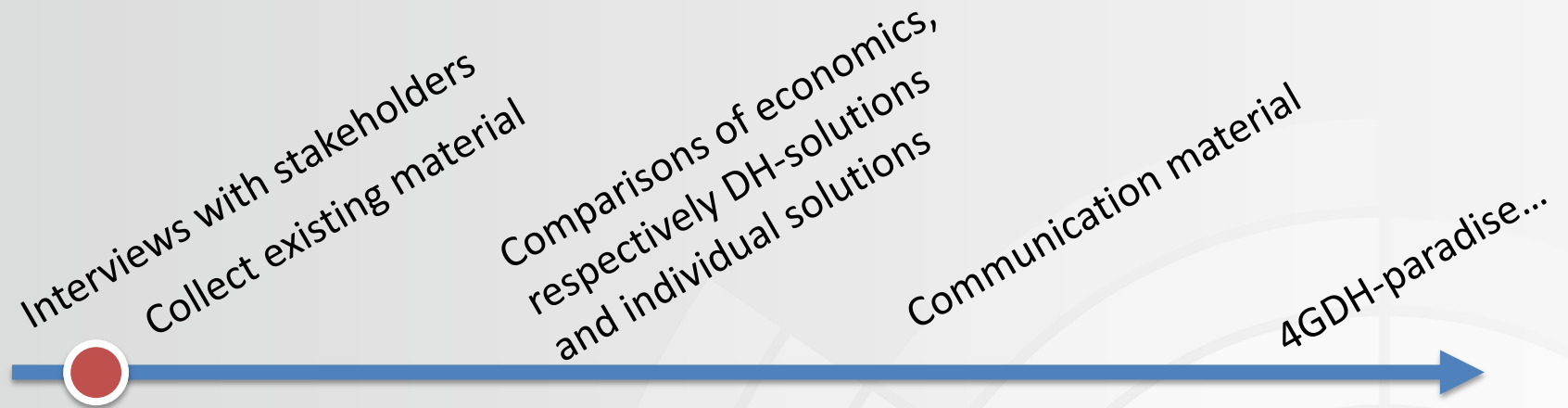
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WHY AND HOW WE LOOK AT DH & NEW CONSTRUCTION

- Last year 63,8 % of new houses was built with district heating¹
- Challenge the perception that district heating is not viable in areas of new construction
- Determine where district heating is feasible, considering a heat supply increasingly diverting from fossil fuels

1: <http://www.danskfjernvarme.dk/nyheder/nyt-fra-dansk-fjernvarme/to-ud-af-tre-nye-huse-har-faaet-fjernvarme>

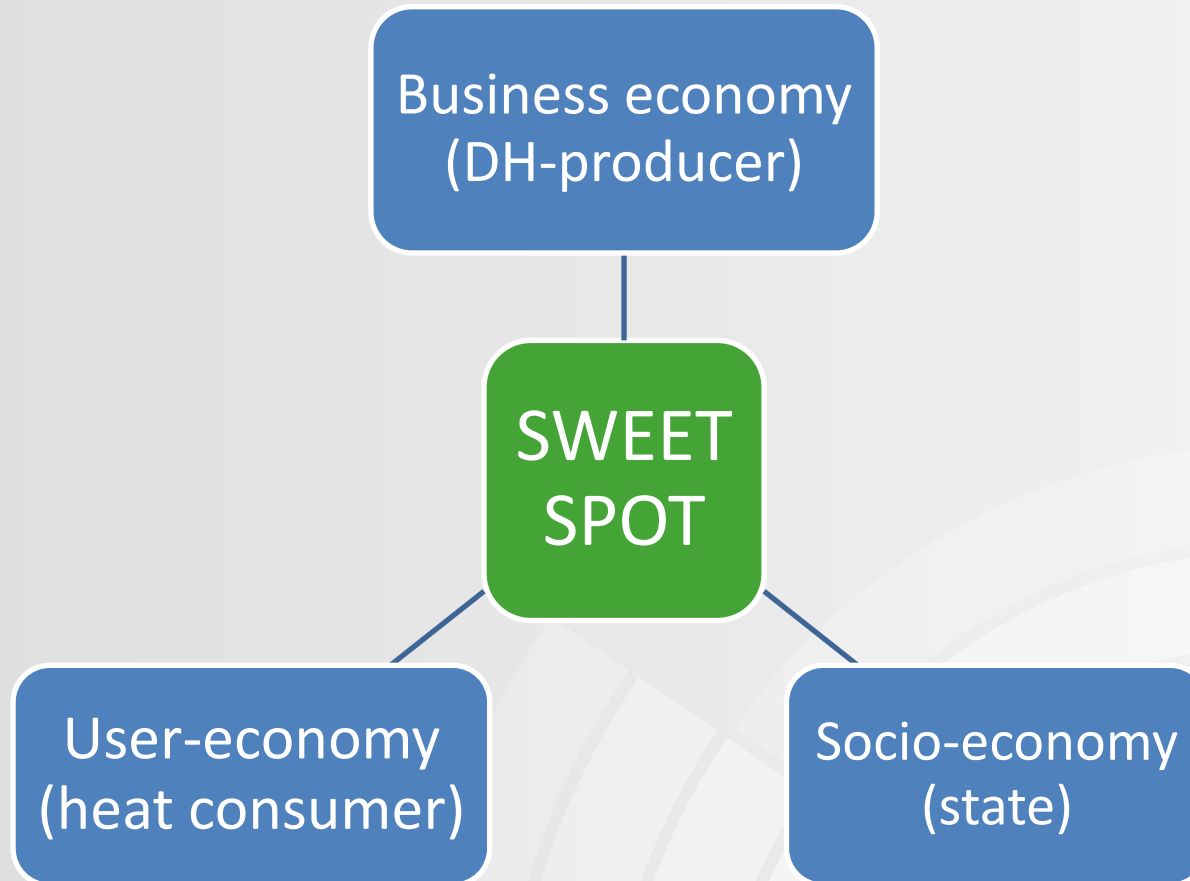
TIMELINE: JUST STARTED...



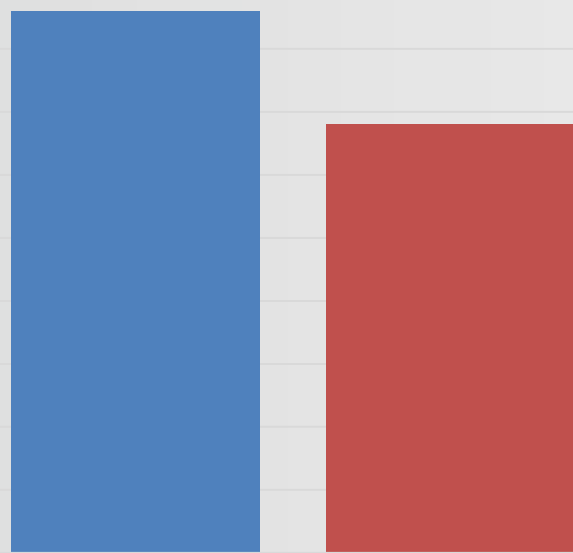
KEY DEFINITIONS

OPERATION OF DANISH DISTRICT HEATING	DISTINCTION	"NEW CONSTRUCTION"
<p>Non-profit</p> <p>Active on the power markets</p> <p>Important differences compared to other countries!</p>	<p>Low-temperature district heating</p> <p>vs.</p> <p>Low-energy housing</p> <p>vs.</p> <p>New construction</p>	<p>New buildings requiring some level of heating</p>

WE MUST STRIKE THE RIGHT BALANCE



GREEN ENERGY'S PERSPECTIVE ON "SOCIO-ECONOMY"



} Societal saving

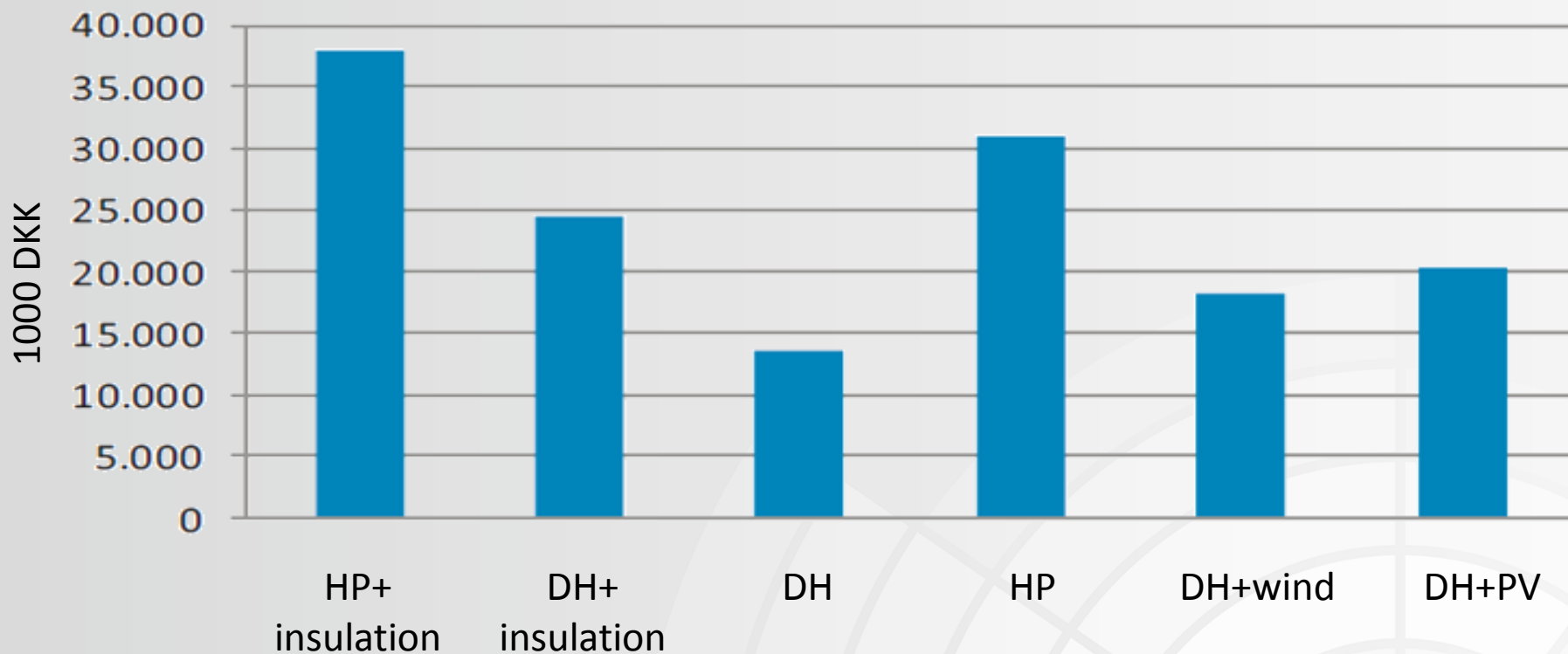
Heat supply should be based on socio-economy.

Simple.
As.
That.

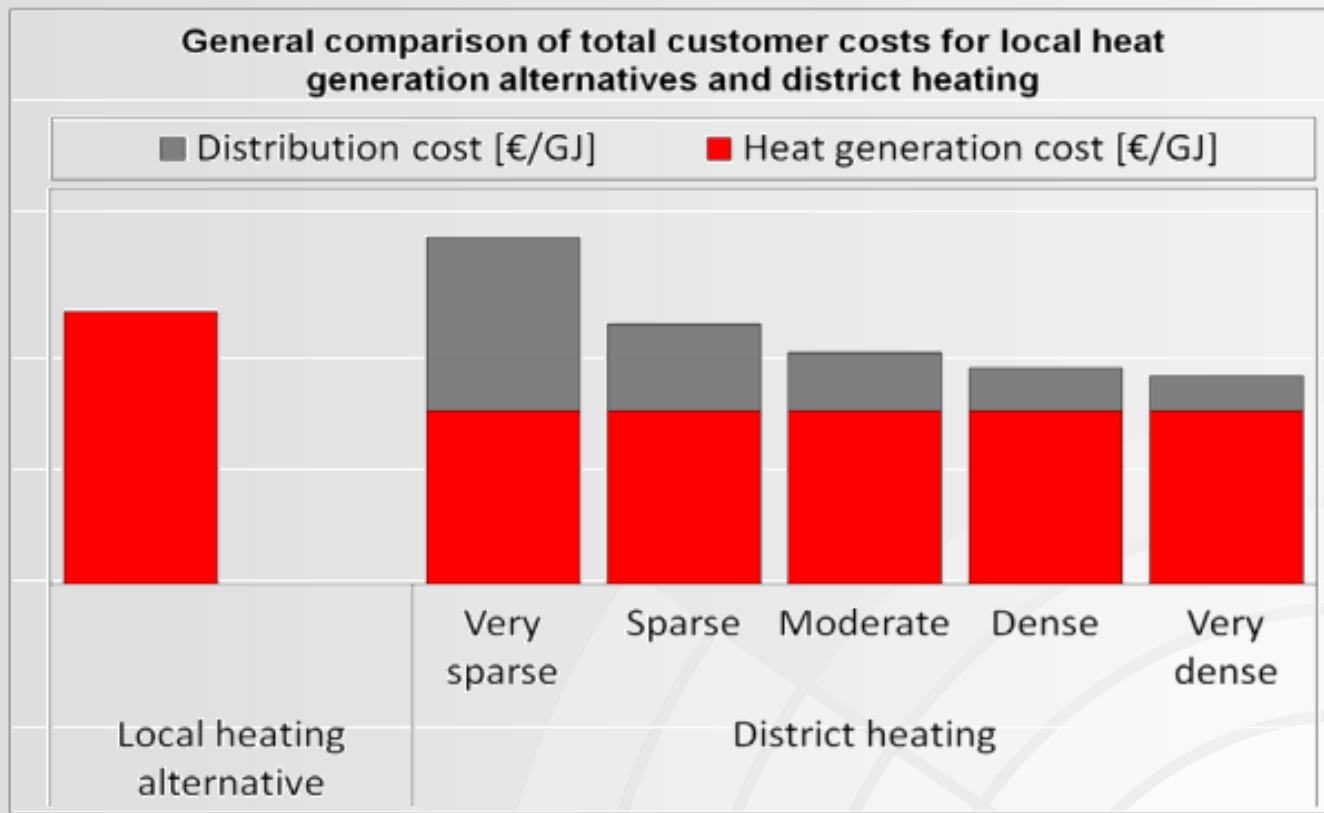
Socio-economic cost

■ Individual heating ■ District heating

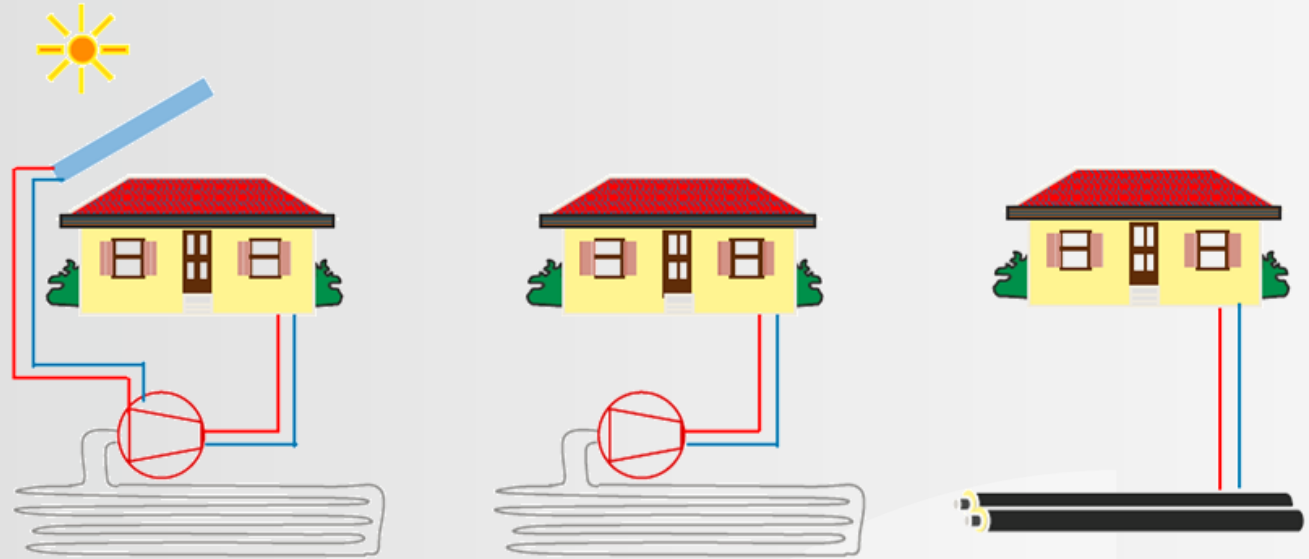
EXAMPLE OF SOCIO-ECONOMIC COST. LOWER = BETTER



USER-ECON. MUST BE ALIGNED WITH SOCIO-ECON.



THE DANISH CHALLENGE



HEAT DEMAND	7 MWh/year	7 MWh/year	7 MWh/year
SOCIO-ECONOMY	Very poor	Poor	Good
BUILDING CODE (BR10)	Low energy class 2015	Normal +	Normal

GREEN ENERGY'S ASKS 3 QUESTIONS

- Is there **still potential to provide new construction with district heating** from a socio-economic and business-economic perspective
- Should the **Building Code be amended**, so socio-economy from A-Z provides criteria for isolation, heat supply etc.
- Should we **change the Heat Law** – rolling back the opportunity of automatically repealing obligatory connection to DH in new areas?



RESEARCH: DANISH HEAT ATLAS – REAL CONSUMPTION



AALBORG UNIVERSITY



- ...and seven DH-companies
- Funded Danish District Heating Association's R&D-programme
- PURPOSE
 - Map Danish energy consumption for heating
 - Evaluate low-energy housing – as good as promised?
 - Improve analytical foundation for deployment of DH



Socio-economy of various heating-solutions is likely to vary from case to case

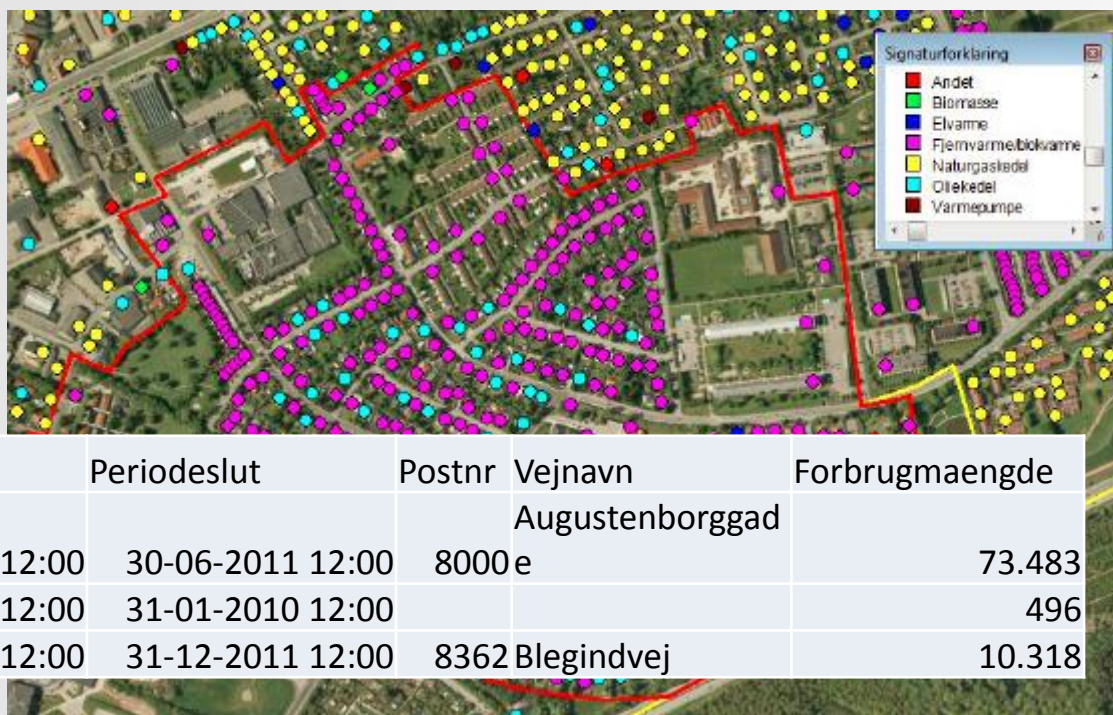


Hence we need strong data and tools for analysis in these cases



RESEARCH: DANISH HEAT ATLAS – REAL CONSUMPTION

- Data based on **real consumption** since 2010 = In-depth insight into energy consumption, expansion potential, etc.



Maaleenhed	Forsyningsart	Periodestart	Periodeslut	Postnr	Vejnavn	Forbrugsmængde
kWh	Fjernvarme- vand	01-07-2010 12:00	30-06-2011 12:00	8000e	Augustenborggad	73.483
Kbm	Naturgas	01-01-2010 12:00	31-01-2010 12:00			496
Liter	Fyringsolie	01-01-2011 12:00	31-12-2011 12:00	8362	Blegindvej	10.318

2014 COWI - Varmeatlas og fjernvarmepotentiale

A SAMPLE OF CASES: NEW CONSTRUCTION

PROJECT	HEATING SOLUTION	SOCIO-ECONOMY	REFERENCE
Søfryd, Ballerup	Ground source heat pump	Better with DH	1
Danmarksgrunden, Rødovre	Ind. heat pump	Not analysed	1
Møllebankerne, Borup	Ground source heat pump	Not analysed	1
Vestas HQ, Aarhus	Ground source heat pump + PV	Not analysed – illegal?	1
Stenløse Syd	Mix: DH, gas and heat pump	?	Personal communication
NYE, Aarhus	?	Better with DH	2

1. Rambøll (2014): Effektivisering af opvarmningssektoren med eksempler
2. Rambøll (2012) Bæredygtig byudvikling til ny bebyggelse

...and the list goes on

THANK YOU

Questions?

Comments?

www.gronenergi.org

EXTRA: THE LOBBYIST'S CHALLENGES

- In new construction, which would show positive socio-economy with a DH-solution, a certain share of houses are built as low-energy housing without DH. This makes it easier to comply with building codes.
- This leads to a risk for DH, since fewer consumers will lead to higher tariffs for the remaining DH-consumers
- Building code does not require authorisation for heat supply under 250 kW – DH pipes does
- DDHA is part of a reference group, contributing to the revision of the building code (Bygningsreglementet).
 - E.g. the contradictory effects of having good socio-economic impact of using district heating for a new construction and at the same time of having the building codes dictate individual solutions