



ECO-City

Joint ECO-City developments in Scandinavia and Spain
Supported by the EC **CONCERTO** Initiative



Introduction and overview of ECO-City project in Denmark, Sweden and Norway

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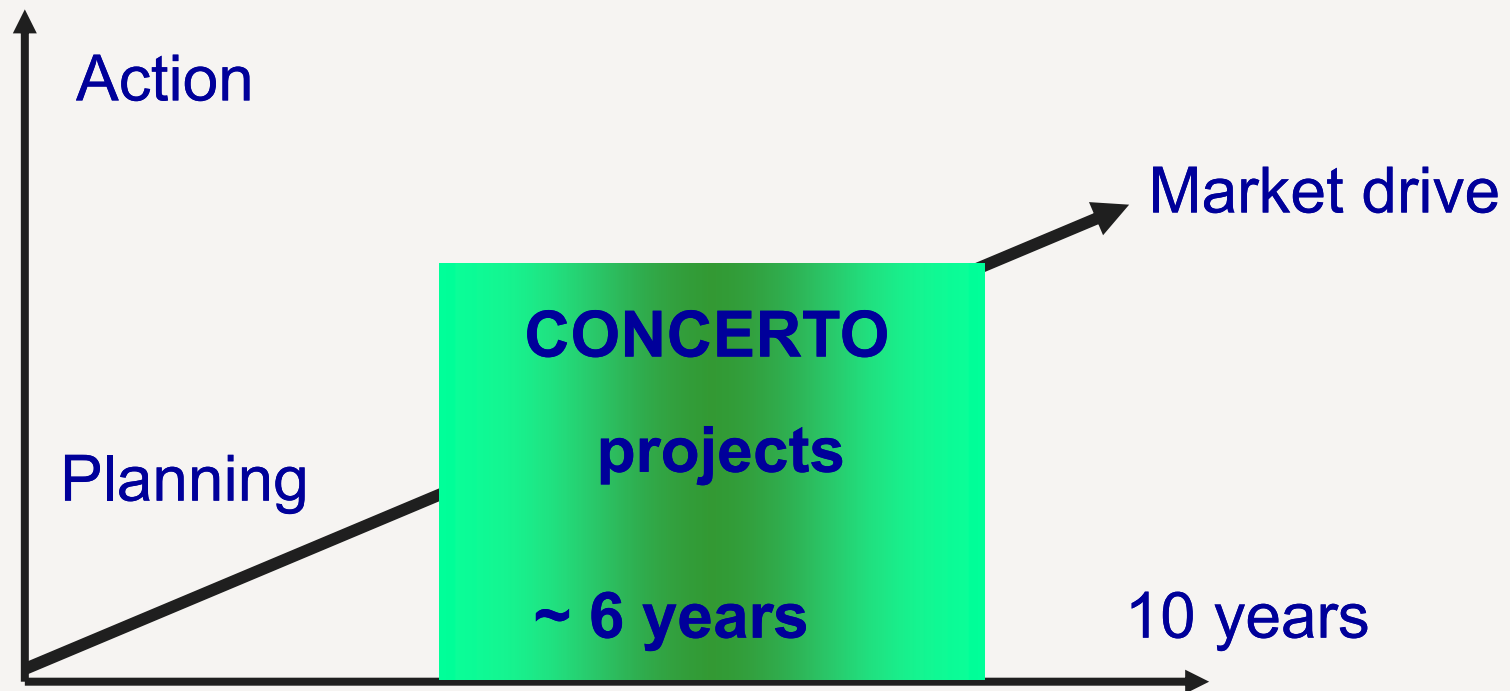
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What is Concerto



The EU CONCERTO initiative

Objective: to demonstrate EU policies in practice

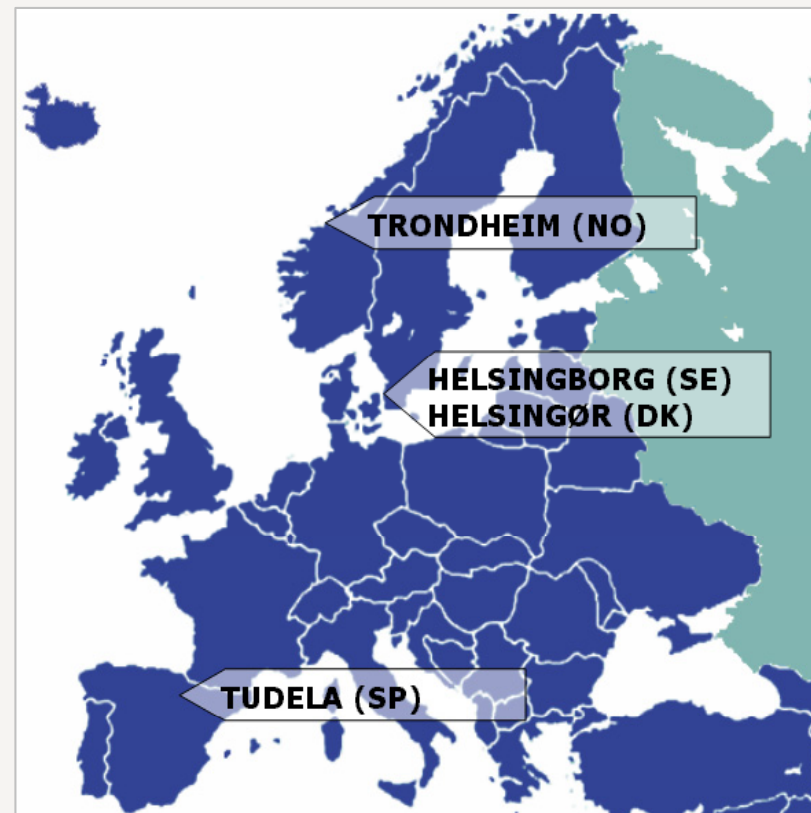


ECO-City project

Main project figures:

- > 22 project partners from
- > 5 countries
- > 3 Communities
- > Total cost 28.7 mio. €
- > EU support 11.5 mio. €

- > Project application 2003
- > Project period 2005-2012



Overall Objectives in ECO-City project

- > Energy savings corresponding to 4000 households consumption in project and further impact of same magnitude
- > Influencing 17.000 inhabitants
 - > Electricity savings of 20.2 GWh/y (incl. waste to energy storage and planned wind)
 - > Heat savings of 75.4 GWh/y
 - > CO2 savings of 26,500 ton/y
- > Affordable pay-back periods of 10-12 years
- > Being a pilot demo project as a ambassador for sustainable town development in the 3 regions from north to south in Europe



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ECO-City Community:

Helsingør/Helsingborg



ECO-City PARTNERs in HELSINGBORG + HELSINGØR

- > **HELINGBORG STAD (SE)** Municipality of Helsingborg
- > **HELINGØR KOMMUNE (DK)** Municipality of Helsingør
- > **ÖRESUNDSKRAFT (SE)** Energy Utility of the Region
- > **HELINGØR FORSYNING (DK)** Helsingør District Heating Company
- > **NSR (SE)** Waste Company of the Region
- > **HELINGBORGS HEM (SE)** Municipal Housing Company (>30% of building stock)
- > **LUND UNIVERSITY (SE)** Research and Development
- > **COWI (DK)** Consultant: Energy, Engineering, Environment, Economics and management

HELSINGØR

- > 7th largest city in Denmark
 - > 30,000 inhabitants
- > 2700 degree days p.a. (56°N)
- > Centre for commerce
- > Historic importance
 - > Founded in 9th century
 - > Kronborg Castle (world heritage)

HELSINGBORG

- > 10th largest city in Sweden
 - 70,000 inhabitants
- > Business center with large industries
 - > e.g. Kemira, IKEA etc.
- > Important harbour
- > University campus



Centre of Helsingør and Helsingborg in the Horizon



Kronborg Castle (known from Shakespears Hamlet)



Energy supply in Helsingborg

Ambitious Goal = 80% CO₂ reduction in 2010 (vs. 1990)

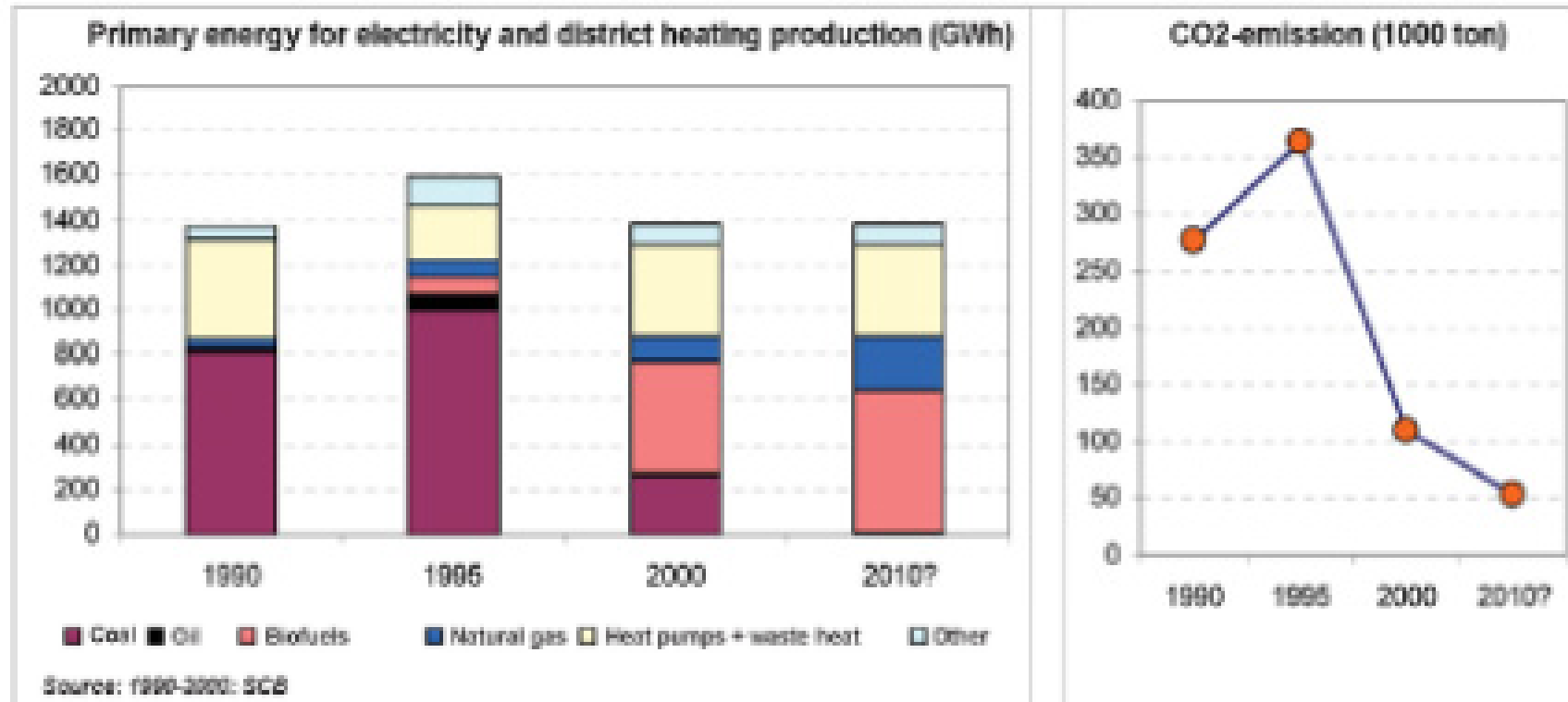


Fig. ..The development and ambitious targets for Helsingborg in 2010 - 45% biomass, 20% n-gas, 28% waste and heat pumps and 7% other renewables by 2010 - Can it be reached?

Previous history of ECO-City

- > Existing cooperation between people on both sides of the strait
- > Helsingborg made ambitious energy strategy
- > Governmental changes downgraded energy and climate activities after year 2000
- > CONCERTO became catalyst
- > Enthusiastic people made ECO City possible after several years of preliminary work



Results in Helsingør/Helsingborg



A	Maria Park	New ECO-dwellings
B	Maria Sofia	New ECO-light dwellings
C	Fronten	New ECO-dwellings
D	Parkkvarteret	ECO-rehab of apartment block
E	Portalen	New ECO-dwellings
F	Laröd Östra	New ECO-dwellings
G	Hamilton	ECO-rehab of apartment block
H	Björka Ödåkra	New passive houses
I	Biogas plant	New RES
J	Biomass boiler	New RES
K	Prøvestenen	ECO-rehab and new built of administration
L	Grydemoseskolen	ECO-rehab of school
M	Kulturværftet	ECO-rehab of cultural institution

Biomass boiler - Helsingør



- > Rebuilding of old incineration plant
- > 35-40 tons wood chips per day
- > Boiler effect 5,5 MW
- > Approved for 7000 h per year (Sep-Apr)
- > Yearly production: 35.000 MWh equivalent to 2500 households
- > A sister boiler is planned (not in ECO City period)
- > Displaces natural gas installations



• Before

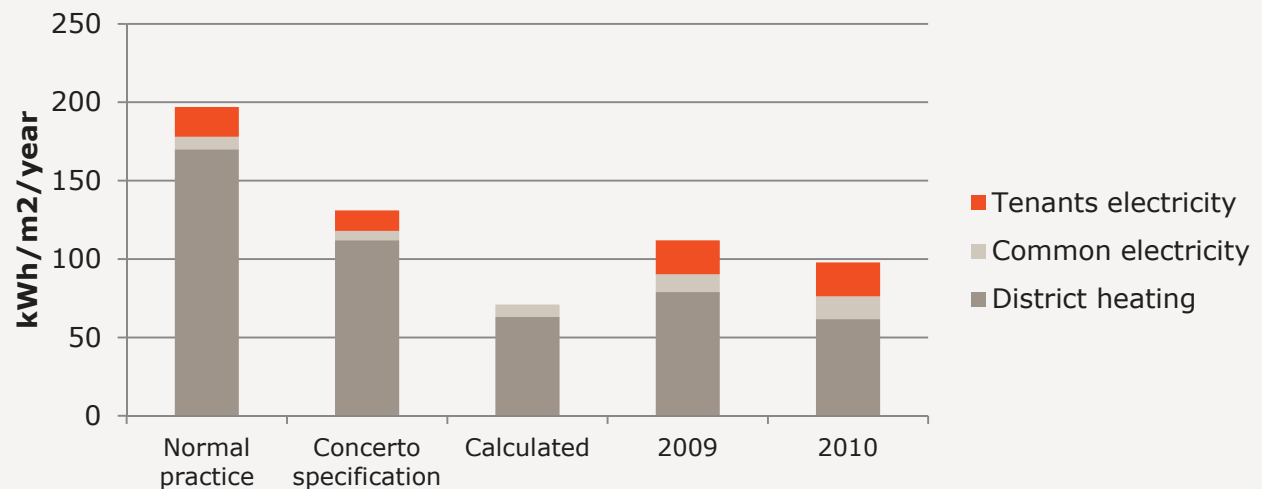
Parkkvarteret (ECO-rehabilitation) - Helsingborg



- > Two building blocks renovated
- > Insulated inside (box-in-box) with 50 mm
- > Insulation of thermal bridges
- > Balanced ventilation with heat recovery
- > Closed glass balconies



Energy consumption



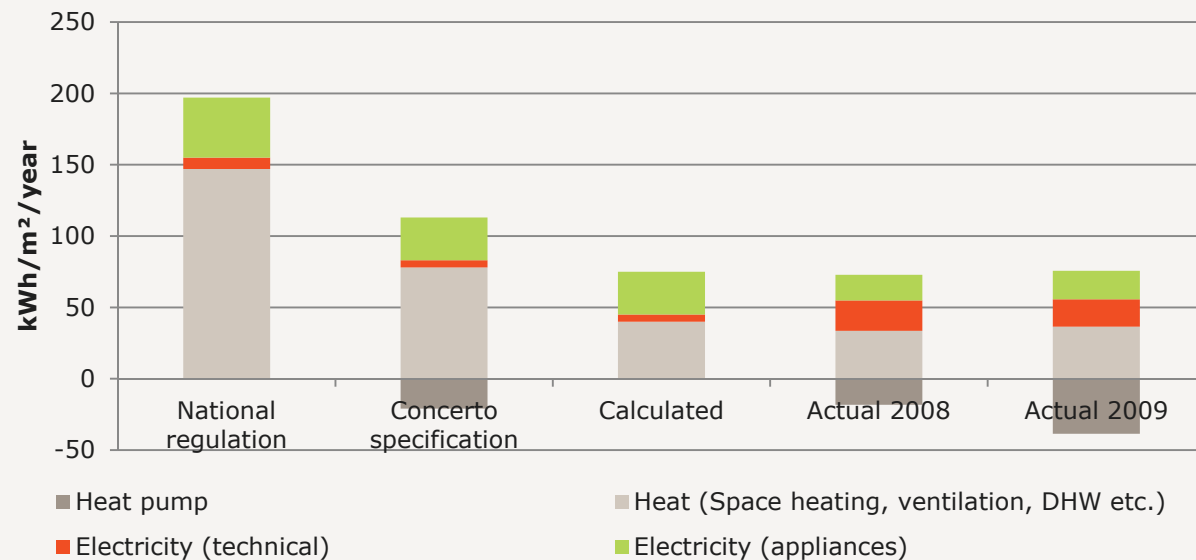
Fronten (New ECO-apartment block) - Helsingborg



- > Smart metering system installed (individual feed back on energy consumption)
- > Optimised windows, increased insulation, ventilation with heat recovery, water saving fixtures, heat pump, avoidance of thermal bridges etc.



Energy consumption



Comfort metering new prototype developed





Expansion of Biogas Plant incl. upgrade to natural gas standard and used for public transport



142 m² Photo Voltaics & improved energy efficiency at school => 20% savings



Have the energy saving target been met?

Monitoring results indicate YES 😊 !

> Buildings

- > 123307 m²
- > 28% energy savings
- > 5.7 GWh saved energy per year
- > 7.7 mio € saved
- > 11 years pay-back period

> Renewable Energy Supply

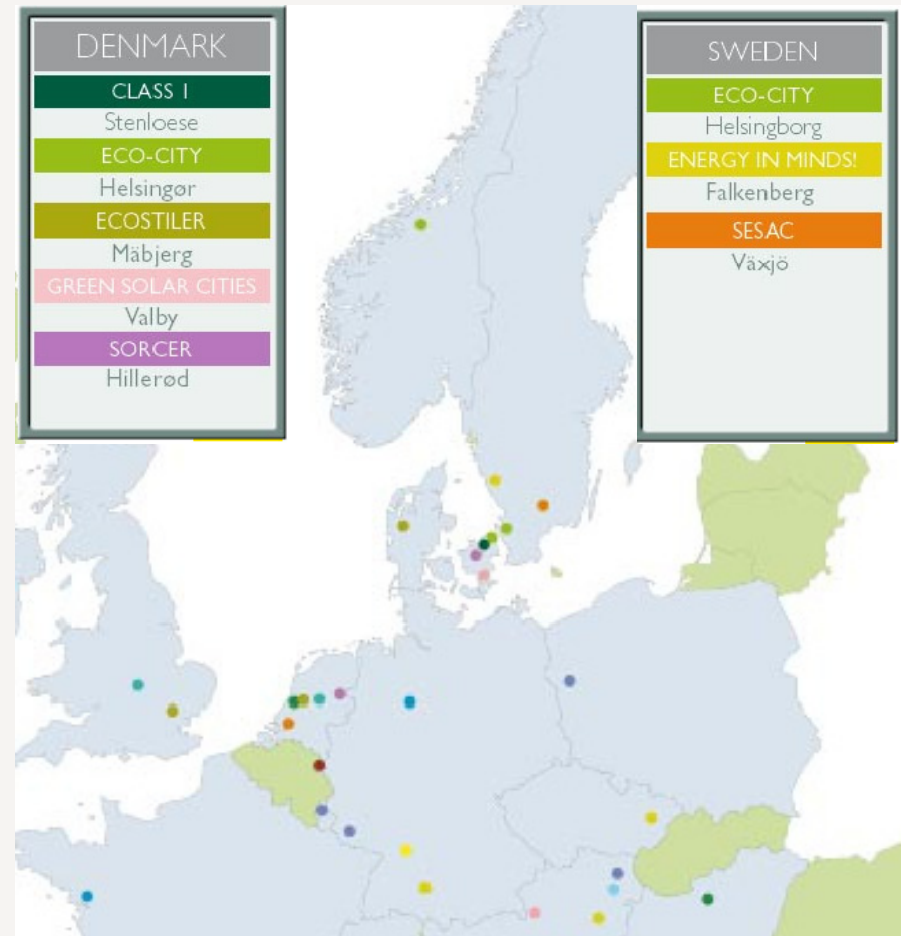
- > 65.5 GWh production per year
- > 7.3 mio € investment
- > 9 years average pay-back period on renewable energy production

> Total CO2 savings

- > approx 11000 ton/y corresponding to approx 4000 households
- > present total emission is 6.1 ton/inhabitant CO2 equivalent all incl.

Outlook and outcome of ECO City

- > CONCERTO projects has spread energy and climate activities in the region as ripples in a pond
- > Neighbouring municipalities in Denmark are interested in ECO City activities
- > Helsingborgshem continues building low energy houses for renting
- > Both municipalities continues working with energy efficiency
- > COWI is working with energy planning in many cities in Denmark due to experiences from ECO-City



TRONDHEIM Community Presentation

