



ECO-City

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



Status Helsingør + Helsingborg



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09.05.06

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Historic City Centre of Helsingør and Helsingborg in the Horizon



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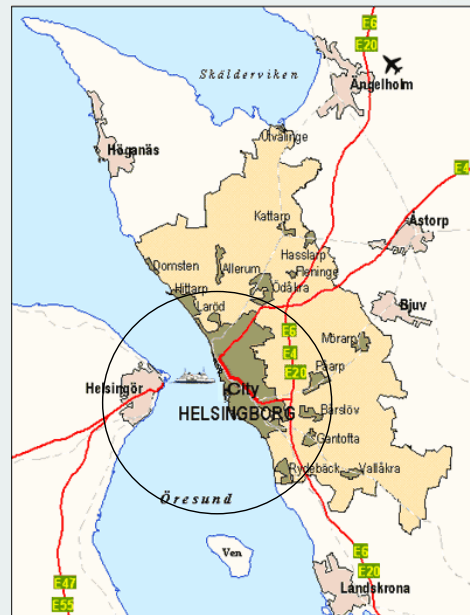
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Helsingborg + Helsingør Community

- Transnational Regional Community
- Reductions in energy demand side
 - Public buildings incl.
 - Campaigns
 - Training
- ECO-rehab of up to 453 dwellings
- 282-350 new ECO-dwelling on 3-5 sites
- Utilisation of biomass
- Electricity from wind power
- Combi cooling (poly-generation)
- Organic waste for biogas (optional).



The Concerto Community of Helsingborg-Helsingør

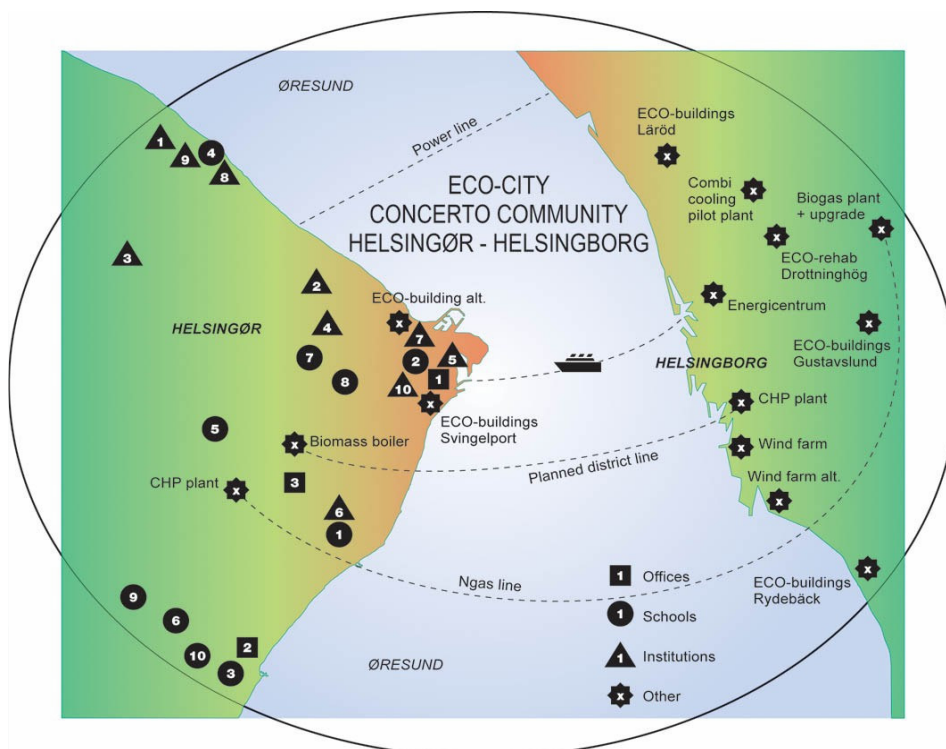
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Integrated Approach



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Sites for New ECO-Buildings in Helsingør



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New ECO-Dwellings at the old Tretorn Industrial Site in Helsingør (50-100 units, ≥ 3 levels)



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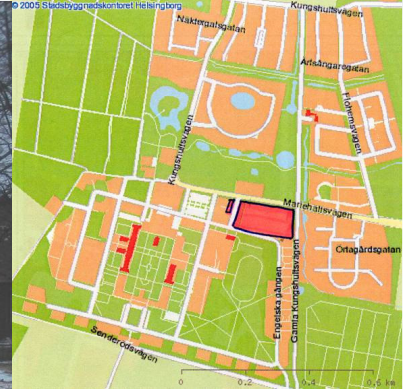
Task 2.1.1; 3.1.6 ECO-Buildings in Helsingborg

- **Task leader:** Helsingborgshem, Collaborator: COWI
- **Approach:**
 - **Sites Identified: To be finally approved by EC**
 - **COWI: BE06 and BSIM calculations, dialogue with architects and HOUSE-SE**
 - HOUSE-SE: Provide design basis and project material, set demands to designers
 - COWI: Economic evaluation
- **Deliverables:**
 - D.2.1.1.1 Analysis report of energy concepts for target sites integrating both RES and RUE incl. recommendations. Month 9 (COWI)
 - D.3.1.6.1 Tender documents that can identify eligible cost (HOUSE-SE)

Sites in focus for ECO-Buildings for Helsingborgshem in Helsingborg

- **Maria Park**, 68 dwellings 2-3 level, new row houses
- **Turkiet**, 107 dwellings up to 5-7 level, new townhouses
- **Fronten**, 48 dwellings in up to 13 level, new apartment block
- **Park Kvarteret**, 111 dwellings in 7 levels, rehab. townhouses, Drottninghög & a.o. up to 340 dwellings for rehab
- Status: **In progress**

New ECO-Buildings at Maria Park in Helsingborg (68 units)



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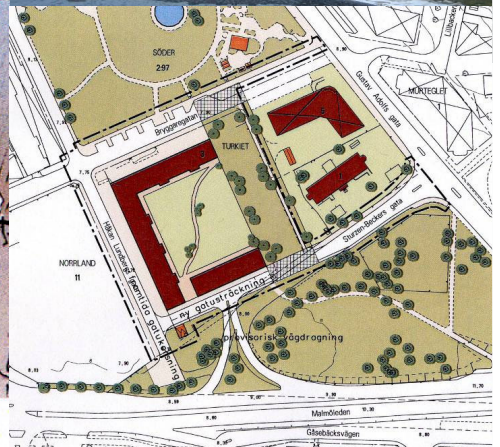
Other buildings in the area



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New ECO-Buildings at Turkiet in Helsingborg (107 units)



Håkan Lundbergs gata, vy från norr. (Illustration Dominik Darasz)

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New ECO-Buildings at Fronten in Helsingborg (48 units)



FASADER (Atrio Arkitekt)



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ECO-rehab of Municipal Buildings

Top: Dwellings at Helsingborg Mun.,

Bottom: Schools at Helsingør Mun.



Task 3.1.4; 4.1.2

Energy Man. Municipal Buildings in Helsingør

- **Task leader:** Helsingør Kommune Sten G. Poulsen, Collaborator: COWI
- **Approach:**
 - MUN-DK: Identify buildings for action together with COWI, justify costs for support
 - COWI: Prepare energy audits and input to action plan.

- **Deliverables:**

D.3.1.3.1 Energy Audit reports Month 8 (COWI)

D.3.1.4.1 Prioritised action plan (Schools) Month 12 (MUN-DK)

Tender documents that can identify eligible costs (MUN-DK)

D.4.1.2.2 Monitoring system on Municipal buildings Month 14 (MUN-DK)

D.3.1.5.1 Rational Use of Energy Manual Month 18 (COWI)

Approach for ECO-Buildings

1. Mapping data, initial screening, analysis of possibilities, energy targets, action plan

2. Implementation e.g.:

- Energy efficient lighting, light control and BMS
- Demand controlled ventilation with heat recovery
- 1+2 pane windows
- Extra insulation, reduced line losses
- Solar heating, heat-pumps
- De-central gas boilers vs. local district heating

3. Monitoring and follow-up

- Sharing savings between end-users and municipality at schools, offices and institutions
- Training and information to janitors and caretakers

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Task 2.1.1 & 3.1.1 2 MW Wind turbine pilot in Helsingborg

- **Task leader:** Öresundskraft, Collaborator: COWI
- **Approach:**
 - UTIL-SE Analyse wind turbine integration. Plan environmental permit etc.. Prepare tender documents. Plan monitoring programme.
 - COWI assist in approval procedure and tender spec.

- **Deliverables:**

D.2.1.1.2 Background paper on wind turbine integration Month 12

In progress

D.2.1.3.1 Working paper on interaction in the Helsingborg context Month 14

D.3.1.1.1 Tender for bidding of Wind Turbines Month 18

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Permit Procedure Wind Turbines

- **Site Owner**
- **Environmental Authorities**
 - County
 - 12 months
 - Appeal 12 months
- **Building Authorities incl building permit**
 - Municipality
 - 9-12 months
 - Appeal 2-3 years
- **Other stakeholders**
 - Army
 - Airtrafic Authority
 - Neighbours etc.

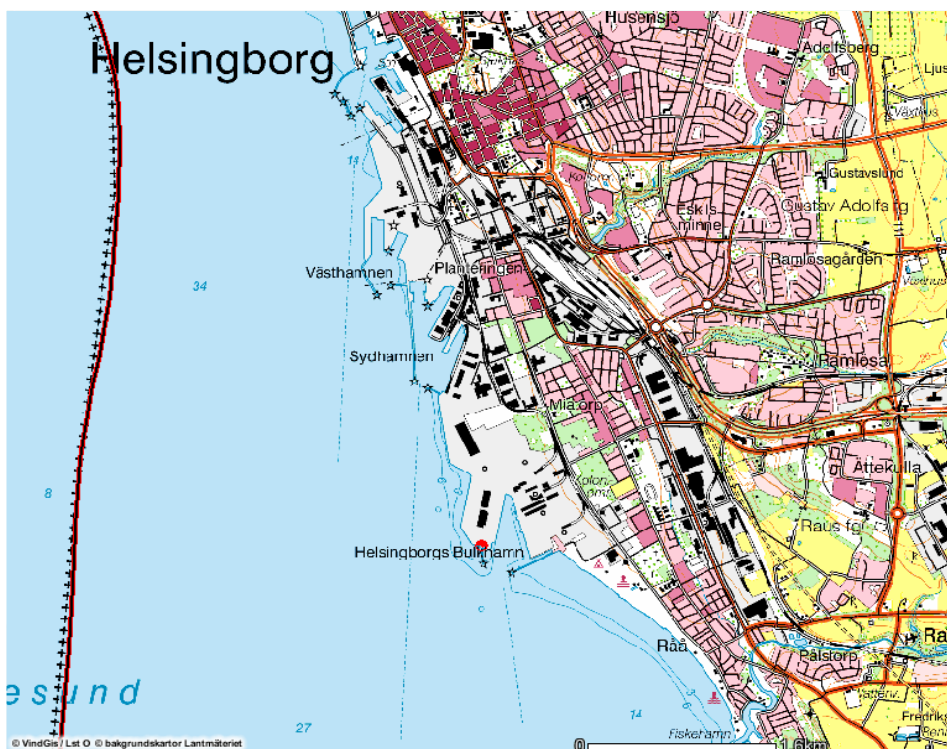
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Best Site for one 2 MW Turbine as a ECO-City landmark



Appeal Procedure

- Permits 9-12 months
- Appeal 2-3 years

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Investigations of Alternative Sites



1. Kemira
2. South Harbour
3. Stormgatan
4. NSR

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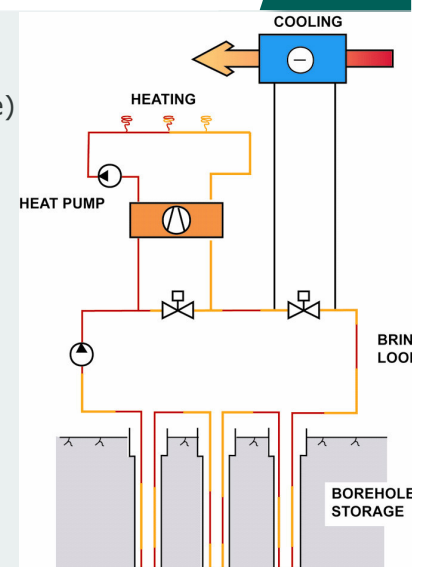
Task 2.1.2; 2.1.3 Polygeneration - heat driven cooling and heat pump

- **Task leader:** Lund University / Öresundskraft, Collaborator: COWI (incl. Kurt Madsen, Niels Henrik Harboe)
- **Approach:**
 - UNI-SE: Model heat reservoir
 - UTIL-SE: Find potential location for demo and analyse interaction with overall energy system in Helsingborg
 - COWI: Develop cooling combi concepts, analysis and economic optimisation together with UTIL-SE

Status: Mapping of hydrogeological conditions and investigation of possible sites is ongoing

- **Deliverables:**

- D.2.1.2.1 Analysis report as basis for demo-project Month12 (UNI-SE)
- D.2.1.3.1 Working paper on interaction in the CHP system Month 14 (UTIL-SE)
- D.2.1.3.2 Working paper on possibilities in Helsingør. Month 18 (COWI)



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Task 3.1.2; 4.1.2 5 MW Bioboiler at Helsingør

- **Task leader:** Helsingør Fjernvarmeforsyning, Collaborator: COWI
- **Approach:**
 - **Preliminary design (done)**
 - Detailed design and tender (incl. options on energy eff. & fuel flexibility)
 - Tender evaluation, Contracting, Construction, Start-up, Monitoring
 - **Permit Given ...but waiting for decision on complain from the Energy Appeal Council**
- **Deliverables:**
 - D.3.1.2.1 Tender documents for competitive bidding Month ? (COWI)
 - D.4.1.2.1 Plan of monitoring system Month 18 (UTIL-DK)

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ECO-Renovation of Boiler House with new 5 MW High Efficient Biomass Boiler



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Expansion of Biogas Plant being planned at NSR incl. upgrade to natural gas standard



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Task 2.1.5; Biogas in Helsingborg

- **Task leader:** NSR, Collaborator: COWI

- **Deliverables:**

**D.2.1.5.1 Description of biogas plant design concept Month 8
(ENV-SE)**

In progress

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Materials recycling and bioclimatic building design at NSR



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Task 2.4.1; Comfort Metering and Control in Helsingborg

- **Task leader:** Helsingborgshem, Collaborator: COWI
- **Approach:**
 - **COWI: dev. and recommend on control strategies, and features together with Helsingborgshem**
 - **HOUSE-SE: involve BMS specialist to produce prototype. Comfort, heat, water, power, peak reduction and ventilation control, (subcontract 25000 euro). Identify demo site.**
 - **Communicate with RTD-NO and UTIL-SE and UTIL-SP on communication part**
- **Deliverables:**
 - D.2.1.4.1 Description of improved metering and control system Month 10 (HOUSE-SE)

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Task 5.1.1; 6.1.1 Training, Dissemination and Campaigns

- **Task leader:** Öresundskraft, Collaborator: COWI; Helsingborg Stad; Helsingør Kommune
- **Approach:**
 - **UTIL-SE Assess training needs** and prepare note to TRAIN-SP, Carry out cross community workshop
 - UTIL-SE Prepare caretaker training program together with COWI etc.

- **Deliverables:**

D.6.1.1.2 Local community dissemination plan Month >5 (MUN-SE)

D.6.1.1.1 Present project in Energicentrum exhibition Month 10 (UTIL-SE)

D.5.1.1.1 Caretaker program Month 12 (UTIL-SE)

D.5.1.2.1 First 20 caretakers trained Month 18 (UTIL-SE)

D.6.1.1.1 Campaign on energy eff, appliances Month 12 (UTIL-SE)

D.6.0.2.1 EU Dissemination plan Month 12 (COWI)

Cross community workshop (UTIL-SE)