

Background for Sønderborg

Sønderborg City Council has a vision about being CO₂-neutral by 2029. To achieve this goal a public private partnership named ProjectZero was formed in 2007.

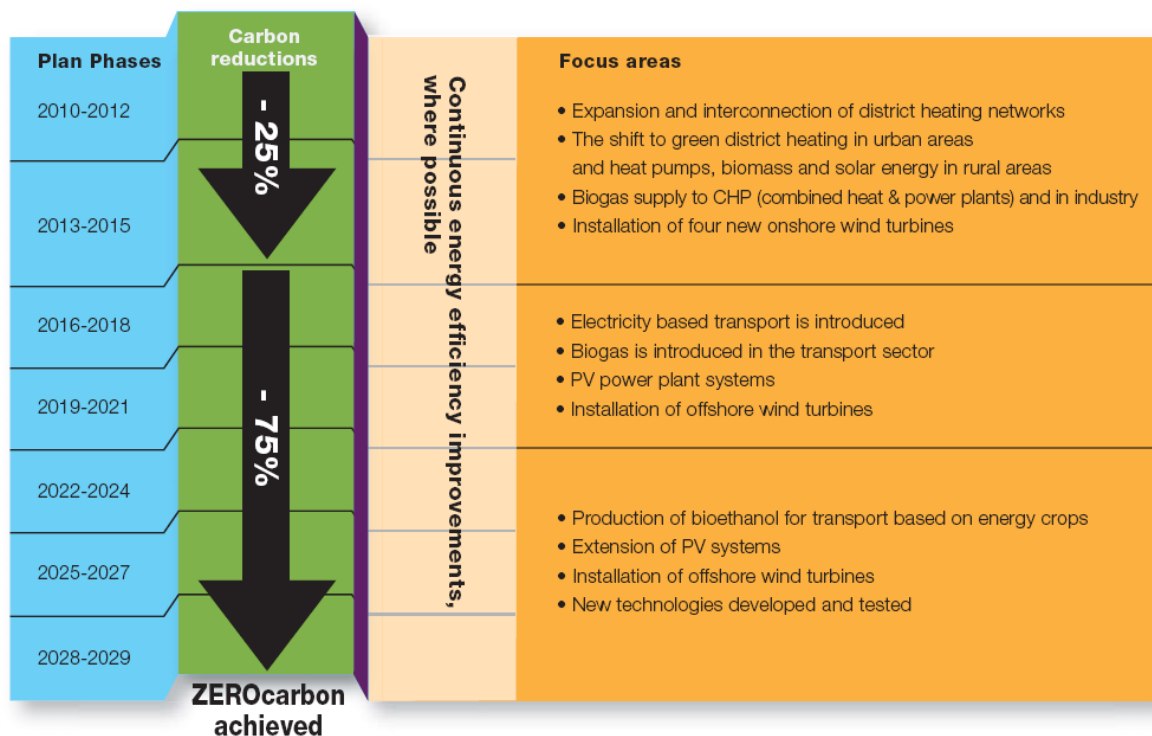
ProjectZero is the vision of creating economic growth in the Sønderborg region, based on a CO₂-neutral development.

Our goal is to reduce the region's domestic electricity consumption by the half and the CO₂-emission by 75 percent before 2020. By 2029, our ambition is to fully eliminate the region's CO₂-emission. The project's primary focus is energy - intelligent management of energy consumption and converting energy production to sustainable sources. Subsequently, we will focus on the related environmental aspects.

The realisation of the project is based on a close cooperation between the companies, the citizens, the educational institutions and the municipality of Sønderborg.

These are ambitious goals and certainly many difficult challenges have to be overcome before the target is reached.

The CASH project has focus on energy renovation of the buildings where residents have a low income. This is a welcome focus in the important work of reducing energy consumption in Sønderborg. About 20 % of the population in Sønderborg lives in social housing. We want our LAPs to be very concrete and work with specific examples of energy renovations in social housing.



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National background

Economical aspects:

A raise in energy prices is expected, which can make fossil fuels an economic problem in the future. Supply security has a high priority.

The Government has decided to promote the most economic and environmental conscious use of energy for heating buildings and supply of hot water and reduce the energy supply dependence of oil.

Until now Denmark has been self-sufficient with nature-gas, but from now on import has to be made to fulfil the need. This is another argument to move away from fossil fuels towards sustainable energy.

Denmark has a cold winter with a typical average temperature of -1,5 degrees. It is normal to heat the buildings from October to April. The heating bill is a significant part of the low-income family's budget.

Governmental requirements:

For many years the government has had building regulations which had to be followed. The building regulations have recently been revised and are valid from 1.1.2011 until 2015.

In the revised version the energy requirements have been intensified with 25%.

Energy requirements:

For buildings, dormitories, hotels etc. the compiled need for supplied energy for heating, ventilation, cooling and hot utility water pr. m² heated storey area must not exceed 52,5 kWh/m² pr. year plus an additional 1650 kWh pr. year determined by the buildings age divided by the heated storey area.

For office buildings, schools, institutions etc. the compiled need for supplied energy for heating, ventilation, cooling and hot utility water pr. m² heated storey area must not exceed 71,3 kWh/m² pr. year plus an additional 1650 kWh pr. year determined by the buildings age divided by the heated storey area.

Large renovations or other significant energy changes have to follow the building regulations.

LAP 1 – Total building envelope renovation, incl. non-independency of fossil fuel and regard to a non-increasing expenditure to residents

Example

The housing estate Skovparken consists of 48 single family houses. 50% of the residents receive social security benefits.

The present situation

The Housing Association B 1942 has renovated the houses because of too high maintenance costs. In that connection a new heating system which is independent of fossil fuel is planned to be installed. Solar heating and heat pumps are supposed to be the base of the heating, possibly supplemented by the new natural gas system by the school next door.

The problems to be addressed

To renovate non-profit houses in order to be independent of fossil fuel so that it will not be more expensive for the residents.

1. What can be the incentive for the residents to choose the greenest solution?
2. There are a wide range of economical possibilities to finance the project – among others increase of the rent, funds, the appropriations of the section. So it is complicated to foresee a solution.
3. Is it possible to create solutions that comply with supplemental heating and economy through a cooperation with external stakeholders (as in this case – the school next door).

The desired situation in the future

Heading towards a situation, where the building construction is independent of fossil fuel. This situation is expected to get fulfilled by renovation of roof, better insulation and low-energy windows. This should be free of charge for the residents. Furthermore the indoor climate and perhaps other housing conditions shall be improved.

Target of the ULSG

Based on the existing project at Skovparken the ULSG members have decided to benefit on LAP1 by focusing on building up a best practice and a belonging common higher level of knowledge concerning how to implement similar projects, i.e. implement total building envelope renovation, incl. non-independency of fossil fuel and regard to a non-increasing expenditure to residents.

LAB 2 - How to ensure energy-efficient behavior among the residents after an energy renovation

Example

Renovation of energy and behaviour – Søstjernevej

The housing estate Søstjernevej consists of 324 apartments, of which 135 has been renovated. 43% of the residents are single without children. 62% are immigrants and descendants.

The present situation

In the housing association SAB: In connection with a project totally renovating the heating system in a housing association a decrease of the heating consumption resulting in smaller heating bills is a natural expectation. By improving the roof, insulation and replacement with low-energy windows and by introducing new energy-saving technology there are several possibilities of saving energy. A change of the behaviour of the residents can be most important as it can be seen in this project. Still there is a clear impression that more can be done concerning changing of the behaviour of the residents.

Today payment of heat consumption is a calculated amount, which does not mirror the exact consumption.

The problems to be addressed

When the residents do not pay directly for their consumption they have nothing to compare with in order to make them want to save energy.

Introduction of consumer smart meters in stead of a joint account makes it possible to compare, which could make the residents want to change their behaviour in order to get an economical advantage. Here joint information and personal instruction have been applied. But more can be done.

The desired situation in the future

It is an aim to get as low an energy consumption as possible with the three following means as a starting point: Renovation of roof, insulation and new low-energy windows, a new two well heating system and a change of the consumer behaviour of the residents.

Target of the ULSG

Based on the existing project at Søstjernevej the ULSG members have decided to benefit on LAP2 by focusing on building up a best practice and a belonging common higher level of knowledge concerning how to implement similar projects, i.e. how to test – and later implement - new methods to change resident's energy behaviour.