

# V3 ECO-BUILDINGS

IN THE GARDEN DISTRICT BISKOPSHAGEN

## SYNOPSIS

In Biskopshagen, a garden district in Växjö, the municipal housing company Växjöhem has built 88 dwellings in 18 buildings and one pre-school with the purpose of having a low energy use.

## BACKGROUND

A long tradition of using renewable energy sources, mainly wood, exists in Växjö. However, it is necessary to also have diversity in the renewable energy sources, meaning that energy sources such as solar and wind must be introduced to a higher extent. The energy used in households for heating, electricity and hot water stands for roughly one third of all the energy consumption in Växjö. In Växjö, the energy focus has been mostly directed to new constructions, but the big potential to reduce energy consumption is within the existing building stock. The important experiences learnt from the construction of the new eco-buildings can be applied when refurbishing the existing building stock.

## OBJECTIVES

- Build dwellings and a pre-school with an energy consumption that is 35% lower than applicable national indices (in 2005):

	Dwellings	Pre-school
Heating	85 kWh/m <sup>2</sup>	110 kWh/m <sup>2</sup>
Electricity	20 kWh/m <sup>2</sup>	51 kWh/m <sup>2</sup>



Credit: Henrik Johansson

## PROJECT DESCRIPTION

Biskopshagen is characterised by being a garden district with rather small buildings. All of them are connected to the district heating system. An integrated building process enabled to reach a low energy consumption, addressing energy and cost efficiency during the entire operation of the project – from the early city planning to the detailed technical design. Houses have high insulation standard with good air tightness and heat recovery. Displays showing the energy use were installed in each apartment so that tenants could maintain this level of consumption. Special training courses directed to the builders were organised in order to raise awareness on energy concerns. As many families were expected to move into the area, a pre-school was also built within the project.

## RESULTS

The houses were built between 2006 and 2008. The energy statistics available in autumn 2010 showed that the use of district heating in the apartments was 71 kWh/m<sup>2</sup> and the use of electricity was 10 kWh/m<sup>2</sup>. Even if there are variations between different households, it is still very clear that the target was achieved by far. Also the pre-school has better results than the target regarding heat, 90 kWh/m<sup>2</sup>, but the use of electricity is 74 kWh/m<sup>2</sup>. This is explained by the large kitchen which was not properly considered from the beginning.

## NEXT STEPS

The experiences retrieved in this building project will be used in future developments.

## FURTHER INFORMATION

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