

# Samsø: Europe's Renewable Energy Isle



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**Citizens of the central Denmark island of Samsø have fulfilled their goals of becoming energy self-sufficient: All of their electricity comes from wind turbines; while more than 70% of their heating needs are met using renewable technologies.**



In 1997, the island, whose population numbers just over 3,000 inhabitants, was named Denmark's 'renewable energy island', based on ambitious goals to become energy self-sufficient by 2008. Two years earlier than envisaged, i.e. in 2006, using 11 onshore wind turbines this target had already been reached. The network of turbines generate enough clean energy annually to meet the Samsø community's entire electricity requirements: On still-wind days, when the turbines can't generate enough electricity, energy flows from Denmark's main energy grid to the island's network.

## Net electricity balance

In turn, on windy days Samsø exports wind-generated energy to the national main system. Indeed, the island has a positive annual net electricity balance, as it exports far more energy to the mainland than it receives. (Each turbine produces enough electricity to power 2,000 homes per year.)

Meanwhile, homes and businesses in the larger towns draw their heat and hot water from renewably-fuelled district heating systems. On the northern end of the island, between the villages of Nordby and Maarup, a system of 2,500 m<sup>2</sup> of solar panels heats

water that in turns warms the villages' homes. A woodchip burner that uses waste wood from Samsø's Brattingsborg Forest backs up the solar heating system. On the southern side of the island, the towns of Tranebjerg, Onsbjerg, Brundby and Ballen are heated by district heating plants. Moreover, a number of private homeowners have replaced their oil burners with solar panels, ground-source heating and woodchip and pellet stoves. Altogether, these efforts have replaced more than 70% of heat generation with renewable technologies.

## Energy Academy

The innovative islanders also have their own Energy Academy and energy office which provide them and visitors with information on renewable energy technologies and energy savings. Samsø has received several awards for its achievements in switching to renewable energy. Currently, a trial project is underway at the academy investigating the use of rapeseed and elephant grass for heating purposes.

The growing trend towards more sustainable solutions doesn't just concern renewable energy, as the academy is also investigating greener technologies for the transport

sector, including powering motor vehicles with rapeseed oil and hydrogen fuel. Some foresee a future where cars and trucks will be powered by hydrogen generated by wind turbines. In the meantime, the majority of island vehicles consume traditional petroleum-based fuels, but these emissions are offset by the offshore turbines, including for the three ferries that connect the island to the country's mainland.

### Renewable Energy Island

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