



MEDIA KIT

Energy

The rise in CO2 emissions over the last 30 years and the increase in global demand for sustainable, stable, affordable energy represents a major challenge worldwide. A growing global population and expanding middle class has set the global energy scene in a state of flux.

In 2019, Denmark responded to the problem by passing the legally binding Climate Act with an ambitious target of reducing CO2 emissions by 70 per cent by 2030 compared to 1990. The act will be followed by a Climate Action Plan in 2020.

“Denmark has a long tradition of working with renewable energy and we have a long-term ambition of becoming 100 per cent independent of fossil fuels by 2050. Today, renewable energy covers more than 36 per cent of our energy demand, with wind and bioenergy being the largest clean energy contributors. Long-term, proactive energy policies that focus on cost-efficient solutions have enabled significant economic growth,” says Finn Mortensen, Executive Director at State of Green.

Since 1980, Denmark’s GDP has increased by over 100 per cent in real terms with just a 6 per cent increase in domestic energy consumption. Over the same period, the country’s carbon emissions have dropped, when adjusting for import and export of energy.

“In Denmark, energy efficiency has become an embedded part of our approach to work and play. Companies and citizens have been encouraged to reduce energy consumption through political and economic initiatives, such as improved energy standards for buildings, energy labelling for electrical appliances, taxes and subsidies, public campaigns and energy saving agreements with the industry,” notes Finn Mortensen.

From black to green energy

Production of clean energy depends partially on the country and its endowment of natural resources. In Denmark’s case, there exists an abundance of wind. In fact, wind turbines supplied 46.9 per cent of Denmark’s electricity consumption in 2019, making it the dominant source of renewable energy in the electricity system.

“One single wind turbine from the next generation of turbines will be able to power up to 10,000 households. Imagine, what an entire farm of them can produce,” says Finn Mortensen.

Wind, like solar power, is a fluctuating energy source. However, that has not limited Denmark’s use of renewable energy or interfered with security of supply. Instead, it has fostered the development of Denmark’s state of the art integrated electricity grid, where different power sources complement each other. If there is a lack of wind, other sources take over.

“Denmark’s integrated energy system is fully reliable, with the highest level of security of supply in Europe. However, a holistic, integrated energy system is an ongoing process and we are continuously working to improve integration through research and demonstration projects,” underlines Finn Mortensen.

Energy efficiency enables greater integration of renewables

Energy efficiency and renewable energy are often presented as binary choices. Why invest in energy savings if the energy is clean? In many cases, it becomes a question of ‘either or’ as both energy efficiency and renewable energy require larger investments in infrastructure. However, when looking at the future energy system, it is evident that renewable energy and energy efficiency can be seen as mutually supportive technologies, as efficient energy consumption reduces demand and alleviates pressure on the grid, thereby making it easier to integrate renewable sources.

Bioenergy as part of the green agenda

Bioenergy is the main source of renewable energy on a global scale. It refers to the conversion of solid, liquid and gaseous biomass resources to generate energy. It allows value to be extracted from waste, thus paving the way towards a circular economy and a phase-out of coal.

Denmark has utilised bioenergy as part of its green agenda since the 1980s and today, bioenergy is the most used renewable energy source in Denmark, covering almost 70 per cent of Denmark's combined renewable energy consumption. Furthermore, more than half of Denmark's district heating is produced from biomass. The role of biogas in the Danish green transition is becoming more important. It is easily injected into the Danish natural gas grid and helps recycle scarce resources such as phosphorous. With the rapid increase of biogas plants, Denmark could be the first country in the world to replace natural gas with bio methane by 2035.

Collective heating and cooling

Danish district heating builds on century-long experience focusing on integrating all available energy sources. The district heating grid is, however, increasingly focused on including additional renewable energy sources such as solar heating plants.

“We are experiencing an improvement in technology and pipe systems that minimise heat losses and increase the business case for district heating worldwide. An important feature of a future smart city is a district energy system. Admittedly, it is a large outward investment, but Danish experience shows that in the case of densely populated areas, it is the most cost-efficient, energy efficient and thereby sustainable solution compared to individual supply options” says Finn Mortensen.

District cooling works along the same lines as district heating – only with cold water – and Denmark uses seawater for this process. In Denmark, 2/3 of all households have their heating and hot water needs met by district heating, while in Copenhagen it is 98 per cent of households.

Contact State of Green to learn more

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- The Danish history of wind energy goes back to 1891, where the first electricity generating wind turbine powered a single school. Today, onshore wind is the cheapest source of electricity in Denmark and Northern Europe.
- The world's first offshore wind farm was commissioned in Denmark in 1991. It was decommissioned in 2016 due to outdated technology.
- Denmark is currently home to 6,251 wind turbines, covering around 47 per cent of the country's electricity consumption.
- Denmark is home to 1.6 million m² of solar heating panels (2019) with a combined thermal capacity of 1.1 GW.
- 72 per cent of the Danish electricity production was covered by renewable energy in 2019.
- The International Energy Agency estimates that about one-third of the world's total CO₂ emissions in 2050 could be reduced through improvements in end-use energy efficiency.

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State of Green is a not-for-profit, public-private partnership between the Danish Government and Denmark's four leading business associations: Confederation of Danish Industry, the Danish Energy Association, the Danish Agriculture & Food Council and Wind Denmark. We foster relations with international stakeholders interested in discussing their challenges and bring into play relevant Danish competencies and technologies that enable the green transition.

As your one-point entry to more than 600 Danish businesses, governmental and academic institutions, experts, and researchers, State of Green connects you with all leading Danish players working to drive the global transition to a sustainable, low-carbon, resource-efficient society. Whether it be within renewable energy, energy efficiency, water management, waste management, climate adaption or integrated urban solutions, we can match you with the partners and solutions you need. Our goal is to support your role in the global green transition in the most optimal way.