


Welcome

Denmark's Green Transition

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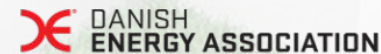
What is State of Green?

State of Green is a public-private partnership founded by:

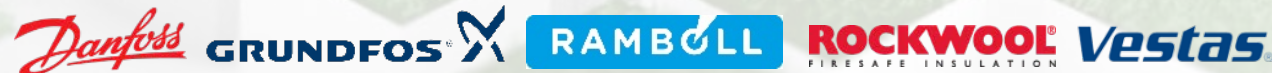
The Danish Government
The Confederation of Danish Industry
The Danish Energy Association
The Danish Agriculture & Food Council
The Danish Wind Industry Association

H.R.H. Crown Prince Frederik of Denmark is patron of State of Green

State of Green's commercial partners:



Premium partners



Associate partners



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Join the Future. Think Denmark

Sharing Denmark's green know-how

STATE OF GREEN QUICK START



Your easy guide to relevant news, profiles and solutions. Begin by choosing an area of interest:



ENERGY EFFICIENCY



HEATING & COOLING



INTELLIGENT ENERGY



WIND POWER



SOLAR & OTHER RENEWABLES



BIOENERGY



WATER



CLIMATE ADAPTATION



ENVIRONMENT & RESOURCES



SUSTAINABLE TRANSPORTATION

State of Green Tours

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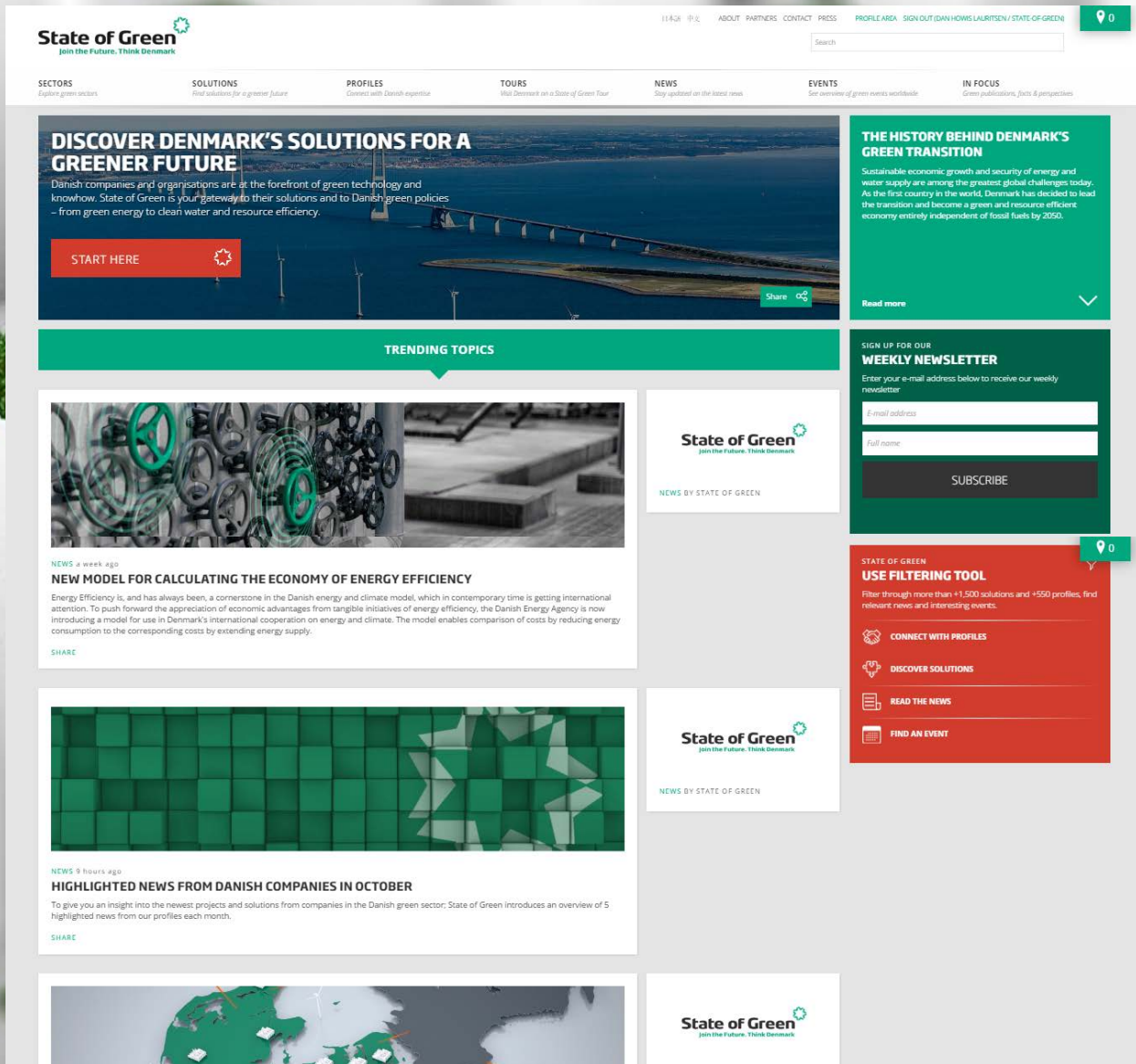
2020

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Stateofgreen.com



1,400
solutions

News
Newsletter
In Focus
Facts

600
profiles

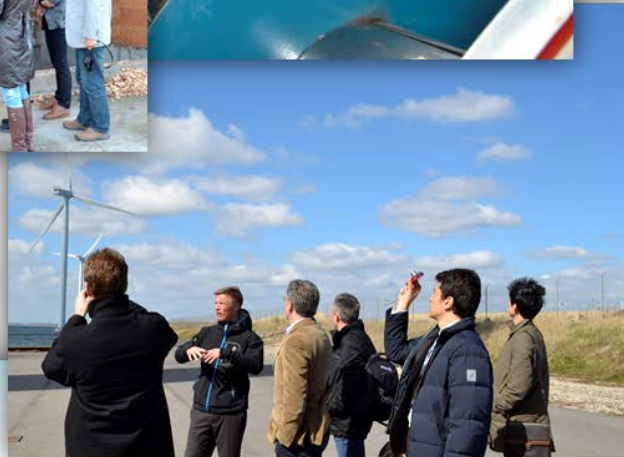
60,000
monthly
visits

English
+Chinese
+Japanese
+ German

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Or visit Denmark on a State of Green Tour



- Technical visits for high-level commercial and political decision makers and media
- Lessons learned by leading Danish companies, institutions and government bodies
- Each tour tailored to delegation's local needs – and the interests of the Danish companies
- Approx. 2,000 visitors per year
- Request a tour at www.stateofgreen.com/tours

State of Green

Join the Future. Think Denmark

The Danish point of departure

- 1973-74 oil crisis
- 99% dependent on imported energy
- Pollution caused by fossil fuels
- Growing public concerns about environmental policy
- Focus on energy security (through diversification)
- Energy efficiency and renewables



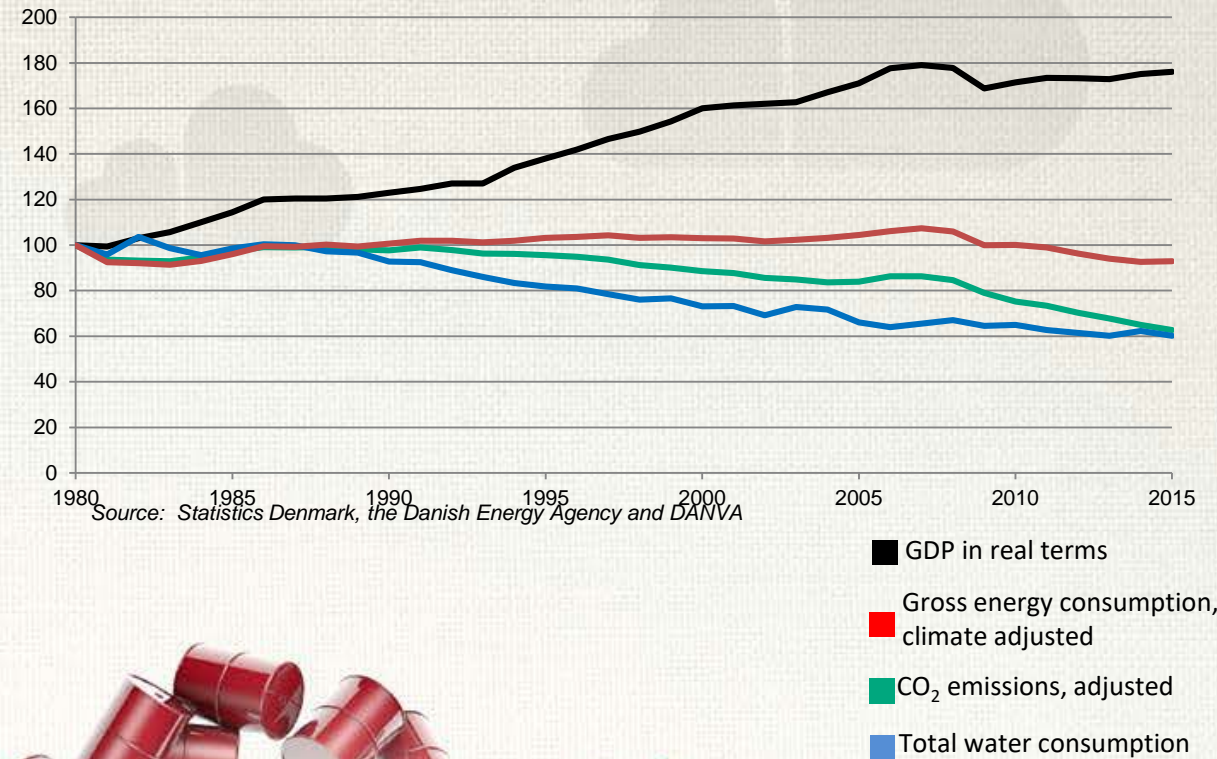
The Danish example (1980 = index 100)

Our economy has grown by more than 70% since 1980

Our energy consumption has remained the same

While CO₂ emissions have been reduced

And total water consumption has been reduced by 40%

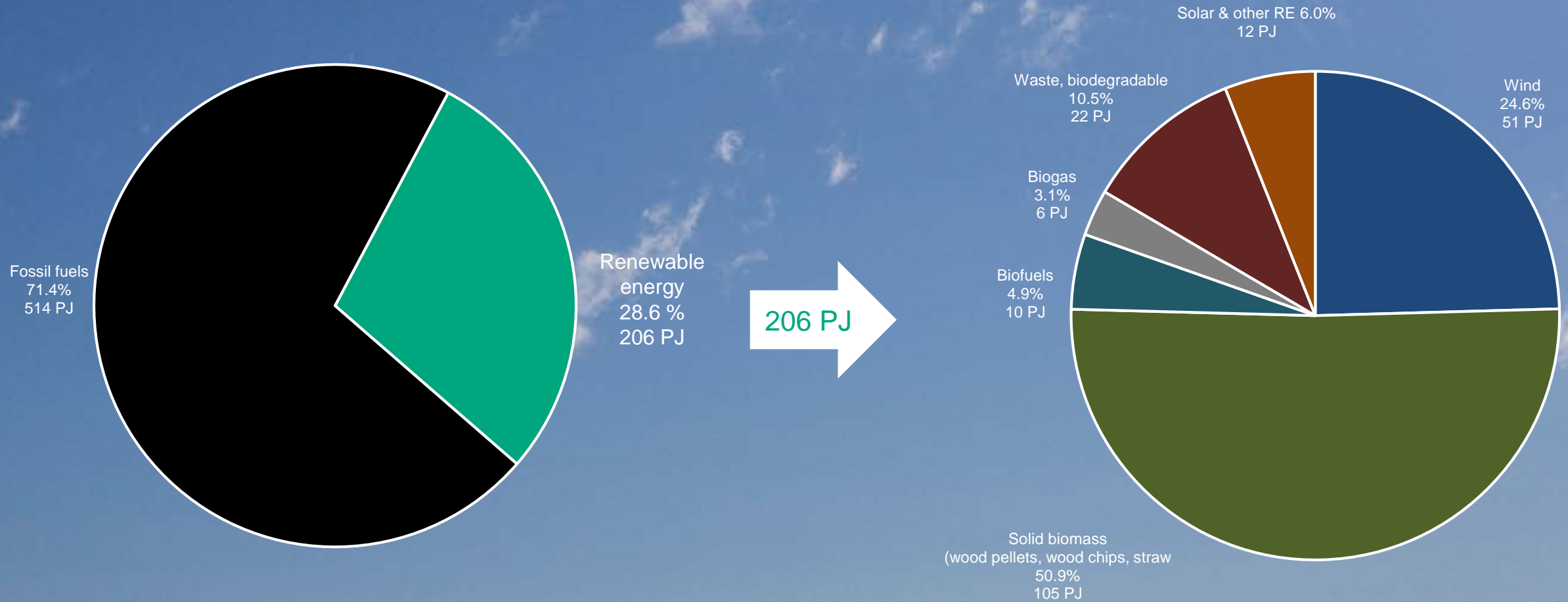


Denmark a fossil fuel independent society by 2050

- March 2012: New Danish energy agreement
- The agreement is characterised by its ambitious scope, broad political support and long time horizon
- Target is 100% fossil independence by 2050
- Energy Commission set up 2016: Focus on how to meet international climate obligations in a cost-efficient way
- Early 2018: New energy agreement

- 40% share of renewable energy in energy consumption by 2020
- 50% share of renewable energy in energy consumption by 2030
- 100% independent of fossil fuels by 2050

Denmark's Energy Consumption 2015



Denmark's Renewable Energy Mix 2015

Production of Renewable Energy

Source	TJ	Change 1990-2015
Wind	50,879	2,216 %
Firewood	21,943	151 %
Waste, biodegradable	19,550	129%
Straw	19,187	53,7 %
Wood chips	13,335	674%
Wood waste	8,837	42,7 %
Heat pumps	8,001	253%
Biogas	6,348	744%
Solar	3,064	3,511 %
Wood pellets	2,641	67,7 %
Bio oil	636	-14,5 %
Geothermal	140	192 %
Hydro	65	-35,6 %
Total	155,167	241%

Import of Renewable Energy

Source	TJ
Wood pellets	33,542
Biodiesel	8,485
Wood chips	3,334
Waste, biodegradable	2,281
Firewood	2,547
Bioethanol	1,818
Total	52,007



Wind Energy in the Danish Grid

In 2015, the Danish capacity of wind energy reached 5 GW

By 2020, 50% of Danish electricity consumption will be supplied by wind energy

37.6% of Denmark's electricity consumption covered by wind in 2016

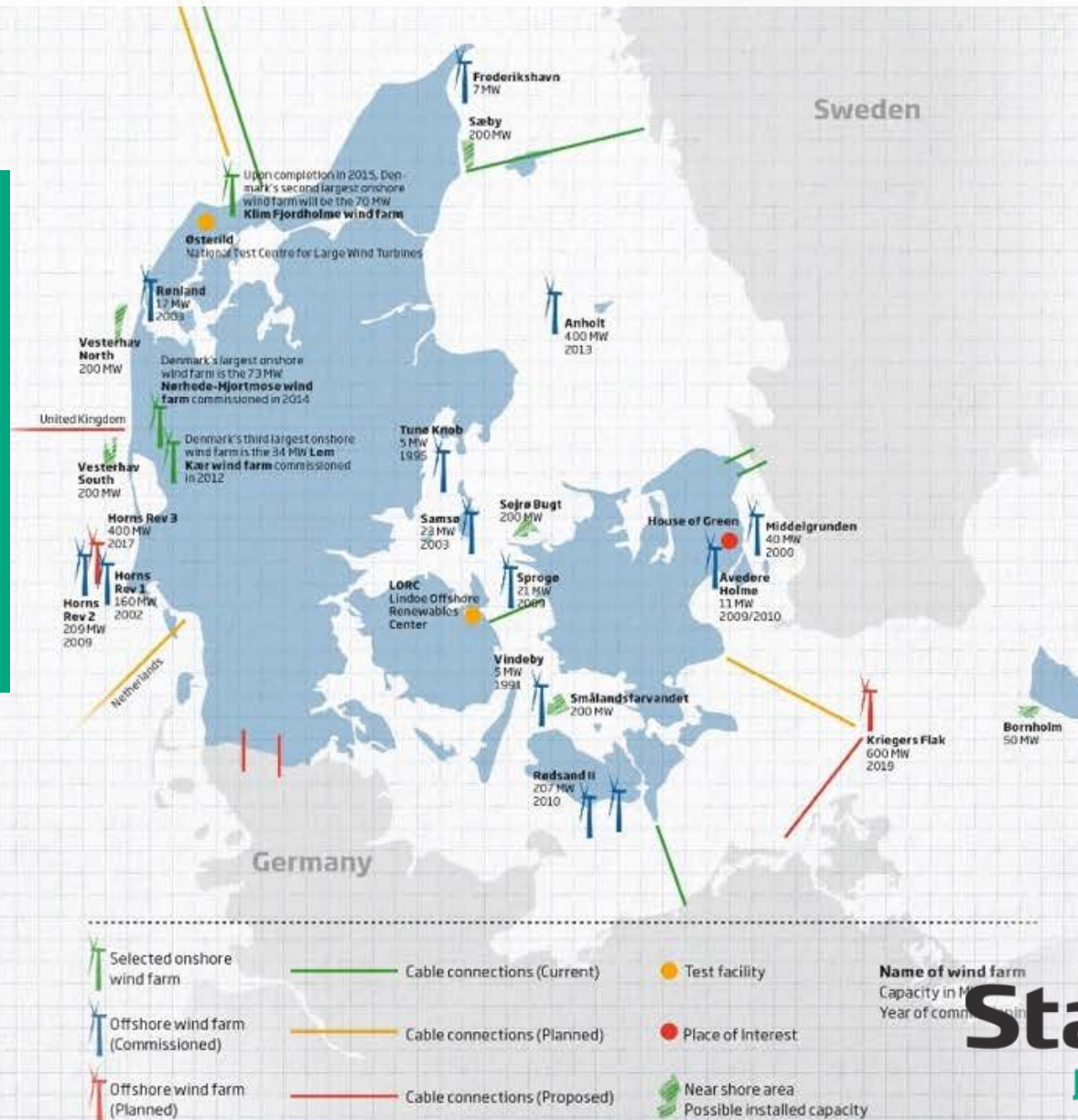
Wind covered on average 110% of the electricity consumption on 24-25 December 2016



Grid Connections Ensure Flexibility

The power exchange Nord Pool ensures that Denmark can sell wind energy when we have excess capacity and buy electricity from the neighboring countries, when there is no wind

Danish security of supply is very high - electricity is available more than 99.99% of the time



Energy savings initiatives

**ENERGY
AUDITS AND
TAX REBATE
FOR INDUSTRY**

**ENERGY
EFFICIENCY
OBLIGATIONS
SCHEME**

**ENERGY
LABELLING
REQUIREMENTS
OF APPLIANCES**

**BUILDING
CODES**

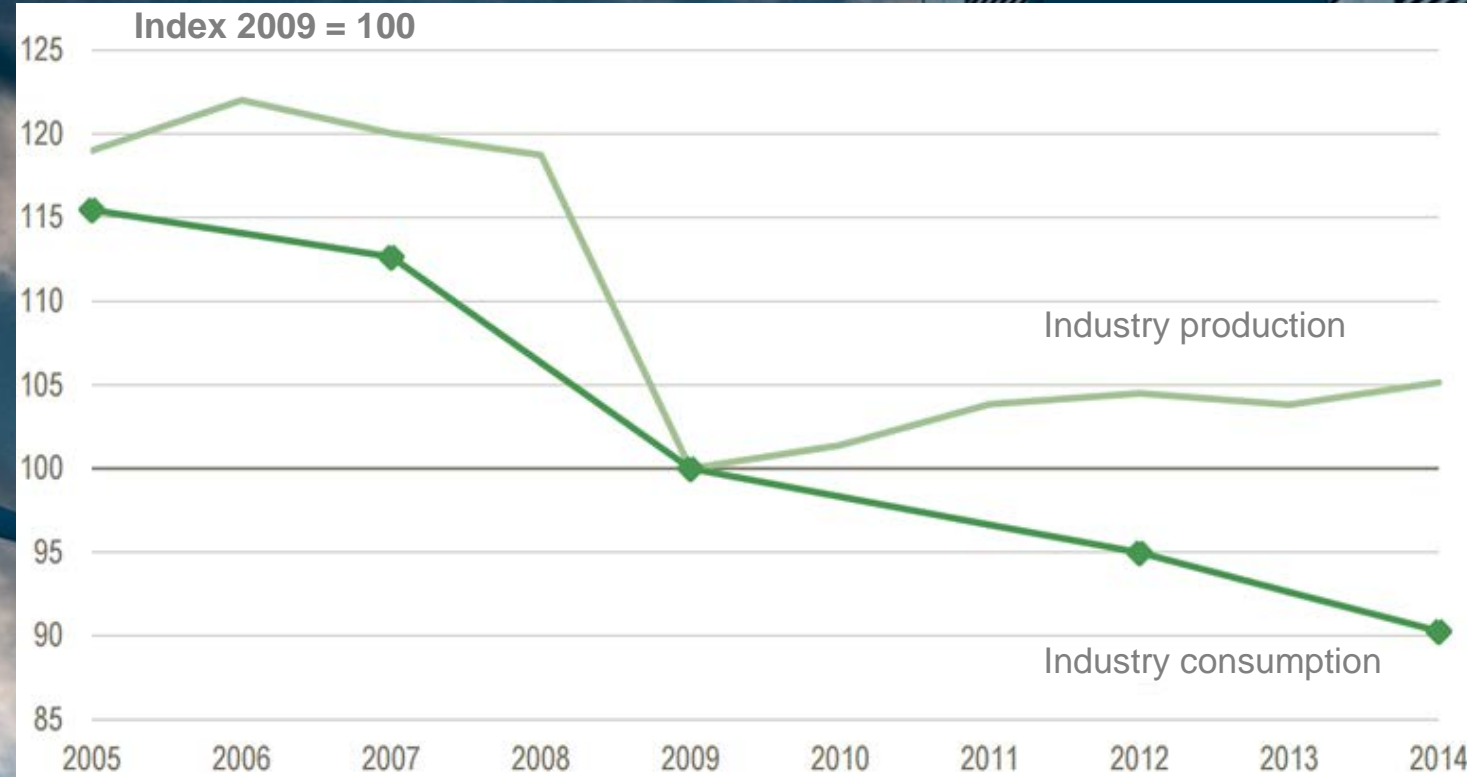
**ENERGY
LABELLING
OF
BUILDINGS**

Energy efficiency in industry

The Voluntary Scheme on Energy Efficiency

- » Introduced in 1996
- » Large energy-intensive companies enter binding agreement with the Danish Energy Agency to implement energy management and energy efficiency measures in their production
- » In return, a substantial part of the companies' CO₂ – taxes are reimbursed
- » Improves companies' competitiveness, shields against fluctuating energy prices, creates predictability and strengthens incentive for long-term investments

- » Find more cases in State of Green's White Paper;
<https://stateofgreen.com/publications>



Source: Statistics Denmark

Energy efficiency in buildings and cities

- › Approx. 40% of total Danish energy consumption is used for **heating, ventilation and lighting** in buildings
- › **Retrofitting** existing buildings with proper **insulation**, windows with **low heat loss** and optimally controlled **ventilation and heating systems** reduces energy consumption substantially
- › The potential for energy savings in the existing Danish building stock is around 70-75% up to 2050 – a **national strategy for energy retrofitting** of all Danish buildings was presented in 2014

Examples of energy efficient solutions:

- › Windows with low heat loss
- › LED lighting
- › Insulation
- › Natural ventilation system supplemented with heat-recovery and thermal management
- › Integrated solar panels for hot water production
- › District Heating
- › Heat pumps
- › Smart and energy efficient pumps
- › Smart design and architecture



Stateofgreen.com/publications

Thank you

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