



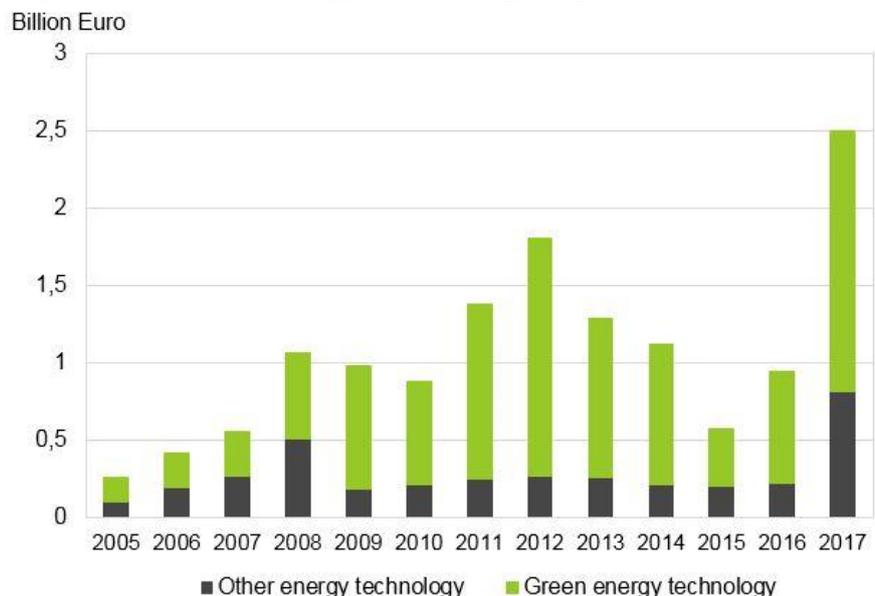
British Energy Transition with Danish Involvement

Danish energy technology exports reached an all-time high in 2017

Danish exports of energy technology to the UK amounted to 2.5 billion EUR in 2017, making it the most important export market for the Danish energy industry.

Although exports have fluctuated from year to year, the trend is upwards – with a tenfold increase since 2005. The positive development is particularly strong in green energy technologies, illustrating a strong Danish involvement in the British transition towards a greener energy system.

Figure 1 : Danish Energy Technology Exports to the UK



Note: Green energy technology denotes goods for the generation of renewable energy and energy savings.

Source: Eurostat and calculations by The Confederation of Danish Industry.

Exports soared to 2.5 billion EUR in 2017

Exports of energy technology

In 2017, Danish exports of energy technology to the UK took a significant upturn to 2.5 billion EUR. This corresponds to almost 24 per cent of total Danish exports in energy technologies making the UK the largest export market for Danish energy technologies in 2017.

Table 1: Top Markets for Danish Energy Technology, 2017

No.	Country	Exports, billion Euros	Share of Danish exports	Green share
1	UK	2.5	23.8	67.5
2	Germany	1.7	16.3	60.3
3	USA	0.6	6.0	49.3
4	China	0.5	5.0	25.3
5	Sweden	0.5	4.7	35.4
6	Norway	0.4	4.2	43.3
7	France	0.4	3.5	47.9
8	Finland	0.3	2.5	61.9
9	Spain	0.3	2.4	47.2
10	Australia	0.2	2.1	56.7

Note: *Share of Danish exports* indicates the size of the energy technology exports to the country relative to the total Danish exports of energy technology. *Green share* describes the share of green energy (RE and EE technologies) of the total Danish exports of energy technology to the recipient country. Exports figures exclude oil rigs.

Source: Eurostat and calculations by The Confederation of Danish Industry.

Green share: 67.5 per cent

Energy technology exports to the UK reached their highest level ever in 2017. The share of green technologies herein was 67.5 per cent which is the highest green share of all the top ten export markets.

Wind technology is the biggest export item

The exports of green energy technology are mainly driven by the exports of wind turbine components. However, several product groups in the energy industry have reported a positive market development in the UK in 2017. Other high-ranking product groups are pumps and compressors as well as engines and generators.

Table 2: The largest product group in Danish green energy technology exports to the UK in 2017

Rank	Group
1	Wind Turbine Components
2	Pumps and compressors
3	Thermal insulation
4	Heating or cooling
5	Energy Infrastructure
6	Other
7	Engines and generators
8	Battery Technologies

Source: Eurostat and calculations by The Confederation of Danish Industry.

The export of wind-powered generating sets has increased by 250 million EUR from 2016 to 2017, while parts of non-electrical engines and motors have increased by 520 million EUR during the

2017 exports were extraordinarily high

same period. The increases in these two export goods are the most essential reasons for the overall increase in the exports of green energy technology to the UK from 2016 to 2017. 2017 was an extraordinary year with completion of very large wind projects. It is expected that export figures for 2018 will be closer to pre-2017 levels.

Exports in many areas of energy technology

The trade and collaboration are broad-based and cover a range of other sub-sectors such as biomass, waste-to-energy, building materials, energy efficient equipment and district heating. Further, there is strong collaboration and exchange in more traditional fields such as oil, gas and energy goods.

The UK is the largest recipient of Danish FDI within utilities

Investment in the Energy Sector

By the end of 2014, the Danish stock of Foreign Direct Investment (FDI) in the UK amounted to 16.6 billion EUR. With a stock of 5.5 billion EUR, utilities amounted to 33 per cent hereof.¹ This investment mainly covers wind farms, particularly offshore, as well as several other energy plants. The total stock of Danish FDI abroad within utilities amounted to 7.3 billion EUR of which the UK accounted for 75 per cent.

The UK is of prime importance - both in terms of exports and investment

The UK is a very important export market for the Danish energy industry. Further, Danish industries, pension funds and private investors have large sums invested in the UK's energy systems. Therefore, British policies and investment outlook in this field are of crucial importance to the international outlook for the Danish energy industry.

Climate Change Act aims at 80 per cent CO2 reductions by 2050

UK Climate Policies as a driver for clean energy

The Climate Change Act (2008) is a strong driver for the decarbonisation of the British economy. It has set a target for the UK to achieve a reduction in the emission of greenhouse gasses of 80 per cent by 2050 compared to a 1990 baseline using five-yearly carbon budgets². The first carbon budget (2008-12) was outperformed by 1 per cent and both the second and the third budget are expected to be outperformed according to current projections.

Clean Growth Strategy

However, without new policy measures, a shortfall has been predicted for the fourth and fifth carbon budget periods. Against this background, the UK government has presented its Clean Growth Strategy to accelerate carbon reductions further.

¹ Danmarks Nationalbank's Statbank, Yearly stock statistics on direct investments. 2014 is the latest year with available FDI statistics at this level of detail.

² Committee on Climate Change

Table 3: UK’s Carbon Budgets

Budget period	Reduction target	Results vs. budget
2008-2012 (1 st budget)	-25	-1 per cent
2013-2017 (2 nd budget)	-31	(-5 per cent)
2018-2022 (3 rd budget)	-37	(-4 per cent)
2023-2027 (4 th budget)	-51	(+6 per cent)
2028-2032 (5 th budget)	-57	(+10 per cent)
2050	-80	

Note: The reduction target compared to 1990 as a basis year.

Clean Growth Strategy presented in October 2017

The Clean Growth Strategy³ presented by the UK's Government in October 2017 is intended to ensure a continued reduction in CO2 emissions, promote clean growth as well as keep energy costs at a minimum for both consumers and businesses. Clean growth is at the center of the UK’s Industrial Strategy which determines how the Government will invest £2.5 billion from 2015-2021 to support low carbon innovation.

The key policies and proposals of the Clean Growth strategy include:

- Accelerating clean growth through green finance capabilities.
- Improving business and industry efficiency through energy saving schemes, carbon capture & storage, and recycling of heat.
- Improving energy efficiency of households through energy performance certificates, smart meters and low carbon heating.
- Accelerating the shift to low carbon transport such as EVs, low emission taxis and buses and switching freight from road to rail.
- Delivering clean, smart, flexible power through phase out of coal, new nuclear power, new auctions for renewable energy and a sector deal for offshore wind as well as a resource and waste strategy.

The UK sets for further green transition in the future

With the Climate Change Act and the Clean Growth Strategy as main policy drivers, the UK is set to pursue its ambitious targets for carbon reductions and green growth.

UK Energy Policies

Reliable, low cost and clean energy

The Department for Business, Energy and Industrial Strategy (BEIS) has outlined their single departmental plan⁴. The objective of the plan related to energy is to ensure that the UK has a reliable, low cost and clean energy system. To achieve this, four goals are pursued:

1. Maximise the advantages for the UK’s industry from the global shift to clean growth through the new Clean Growth Grand Challenge and take action on climate change

³ Clean Growth Strategy, Policy Paper

⁴ Department for Business, Energy and Industrial Strategy Single Departmental Plan, 2018

2. Ensure a reliable and secure energy system
3. Deliver affordable energy for households and businesses
4. Manage the energy legacy safely and responsibly.

Clean Growth Grand Challenge

To achieve the first goal, BEIS has set a Clean Growth Grand Challenge⁵ - a plan to encourage investment in low carbon technologies and working towards a more efficient use of resources. The growth of the heat networks market is promoted by funding through the Heat Networks Investment Project.

A reliable and secure energy system

The goal to ensure a reliable and secure energy system will be achieved by making the electricity system smarter and more flexible, creating the right environment for more storage, demand side response, smart grids, and interconnection. Adequate energy capacity to cope with demand peaks will be achieved through added capacity and capacity market operations.

Affordable energy for households and businesses

In order to provide affordable energy, a programme to support energy efficiency in business will be pursued. All households and small businesses will be offered a Smart meter by 2020. There will also be focuses on energy efficiency improvements in households through energy renovations to improve the Energy Performance Certificate rating for as many homes as possible.

Alignment with EU rules essential after Brexit

The effect of Brexit on the energy sector in the UK is still unknown. Therefore, the Confederation of British Industry (CBI) argues that in order to enable harmonised energy trade between the EU and the UK appropriate convergence to current EU rules on the International Energy Market (IEM) is essential⁶. Furthermore, CBI argues that the UK should retain its influence in the development of the energy system through EU energy agencies as well as through participation in the EU Emissions Trading System (EU ETS) at least until 2020 and afterwards either continue or develop a domestic system aligned with the EU ETS.

The energy sector in the UK – some highlights

The UK is Europe’s third-largest wind nation and the largest in offshore wind

With an installed base of 18.9 GW at the end of 2017, the UK is Europe’s third-largest wind energy country. In 2017, 4.3 GW new wind energy capacity was installed in UK, which is more than 27 per cent of all new wind capacity installed in EU countries that year. According to RenewableUK, during 2018, the UK’s installed capacity has surpassed 20 GW, enough to meet the power needs of more than 14 million homes. The wind industry has committed themselves to a Sector Deal with the UK Government⁷. Their aim is to more than

Offshore wind to double by 2030

⁵ Clean Growth, The Grand Challenges Policy Paper

⁶ CBI report highlights the need for regulatory alignment on energy, CBI

⁷ UK Offshore Wind Industry Reveals Ambitious 2030 Vision, Ørsted

double the capacity from 13GW today to 30GW by 2030 so that offshore wind will generate a third of the UK's electricity in 2030.

Onshore wind not eligible for support at present.

The Renewables Obligation (RO), which supports renewable electricity projects in the UK of large-scale, closed for onshore wind in 2016, making onshore wind farms no longer eligible for subsidies⁸.

Secure supply through Viking Link

As part of improving the security of electricity supply, a high voltage direct current interconnector is projected between Revsing in southern Jutland, Denmark and Bicker Fern in Lincolnshire, Great Britain⁹. This interconnector, known as Viking Link, will improve security of supply and will enable a more efficient use of renewable energy, which will benefit both UK consumers as well as both countries' socio-economies. Energinet and National Grid Viking Link (NGVL) expect to commission Viking Link in 2023.

Energy efficiency in buildings through energy renovation and district heating

Heating in buildings and industry accounts for over 32 per cent of the UK's carbon emissions. Several measures are being taken at the level of national and local government and in the industry and housing sector to meet the challenge of carbon reduction. Focus is on upgrading the energy performance certification of as many homes as possible. Further, increased use of district heating is pursued. Heat networks are being built and expanded. The Heat Network Investment Program (HNIP) provides funding to local authorities which are developing heat network projects.

Strong Danish-British collaboration

As the trade and investment statistics reveal, Danish industry and investors take an active part in the British energy transition.

Energy authorities collaborate

Further, the UK and Danish authorities collaborate and share best practices in the field of energy. The Danish Energy Agency and the Danish Embassy in the UK undertake a co-operation programme jointly with Danish organisations, businesses and other stakeholders to enhance the dialogue and partnership with British authorities and stakeholders in the field of energy.

Exchange of experience in district heating and energy planning

The programme has its main focus on district heating and has so far resulted in a number of exchanges between British and Danish stakeholders – at workshops, conferences, trade fairs, as well as dedicated study and field visits between policy makers, regulators, utilities, industry and other energy stakeholders. In the light of positive experience so far, the programme is set to expand, enabling more exchanges.

⁸ RO closure, ofgem

⁹ Viking-link.com

MoU with Scotland on district heating and energy efficiency

The collaboration has been taken a step further in Scotland where it is governed by a Memorandum of Understanding setting the scene for closer collaboration among partners from both countries – even in policies and planning.

Livable Cities

The Embassy of Denmark and Danish industry undertake campaigns in the UK promoting the concept of “*Livable Cities*” – modern urban planning with all it entails in terms of green energy, energy efficiency and a livable environment.

Trade fairs and conferences in many fields

Further, Danish business groups and experts take part in important energy events, conferences and trade fairs, be it in the field of oil and gas, wind energy, urban energy planning, district heating or energy savings.

Summing up, the following points apply:

- The UK is undergoing an ambitious and challenging green transition
- Denmark is engaged in it at many levels, both in exports, investments and plans for electrical power interconnection
- Collaboration is expected to remain strong as the UK continues its green energy transition in areas of strong Danish competencies
- The commercial collaboration is reinforced by and supplemented by dialogue and partnership at planning and policy level.