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DECEMBER 2018

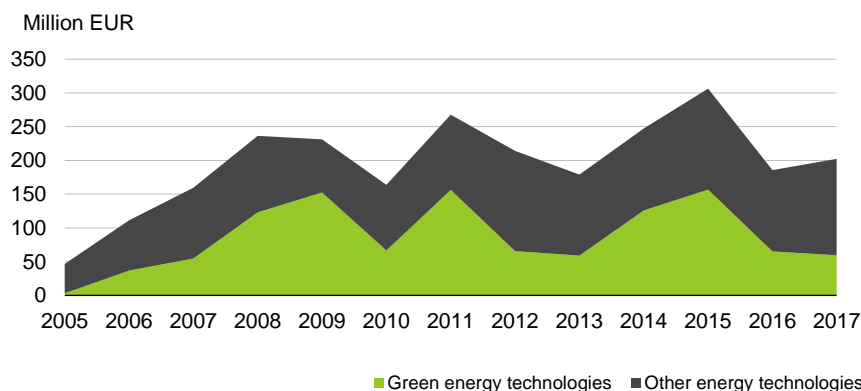
Polish Energy Transition and Danish Involvement

In recent years the Danish exports of energy technologies to Poland have increased, underlining Poland's importance as an export market for the Danish energy industry. This substantiates that the green transition is catching up in Poland.

A green outlook

There is a predominantly positive trend in the exports of energy technologies to Poland. Although there have been fluctuations, the level of exports in 2017 more than fourfold exceeded those in 2005, as shown in figure 1. The shift towards a greener energy system in Poland is clear, with renewables constituting 9,5% of gross inland

Figure 1: Danish Exports of Energy Technologies to Poland 2005-2017



Note.: Exports are in nominal prices and exclusive of oil rigs.

Data source: Eurostat and calculations by The Confederation of Danish Industry

energy consumption in 2016, as shown in figure 2, compared with a share of 5,0% in 2005. This green trend can be seen in Danish exports of energy technologies to Poland as well, with a considerably larger share of exports coming from green technologies in recent years.

Danish exports to Poland reached their highest level in 2015

Exports of Energy Technologies

Energy technology exports to Poland peaked in 2015 at 306 million EUR, the share of green technologies being 51.2%. After falling to 186 million EUR in 2016 the development in exports to Poland has reversed.

29.4 pct share of green energy technology

Danish exports of energy technologies to Poland increased in 2017 from the previous year to 202 million EUR. As a result Poland established itself as the 11th largest export market for Danish energy technologies in 2017, covering 1.9% of the total exports. The share of green technologies was 29.4%.

Table 1: Top Markets for Danish Energy Technology, 2017

No.	Country	Exports, billion EUR	Share of Danish exports, %	Green share, %
1	UK	2,50	23,8	67,5
2	Germany	1,72	16,3	60,3
3	United States	0,63	6,0	49,3
4	China	0,52	5,0	25,3
5	Sweden	0,49	4,7	35,4
6	Norway	0,45	4,2	43,3
7	France	0,37	3,5	47,9
8	Finland	0,26	2,5	61,9
9	Spain	0,25	2,4	47,2
10	Australia	0,22	2,1	56,7
11	Poland	0,20	1,9	29,4
12	Netherlands	0,19	1,8	28,8

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* indicates the share of RES and EE technologies in the country's total energy technologies from Denmark. Exports are exclusive of oil rigs.

Data source: Eurostat and calculations by The Confederation of Danish Industry.

Energy infrastructure is the largest export group

The exports of green energy technologies are mainly driven by exports of energy infrastructure. However, exports of thermal insulation products, which tripled in size from 2016 to 2017, is now the second largest group of green technologies exported to Poland, followed by pumps and compressors.

Table 2: The Largest Product Groups in Danish Green Energy Technology Exports to Poland, 2017

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

Note: The grouping is based on product codes from 2012 and therefore the exact levels are uncertain. Data source: Eurostat and calculations by The Confederation of Danish Industry.

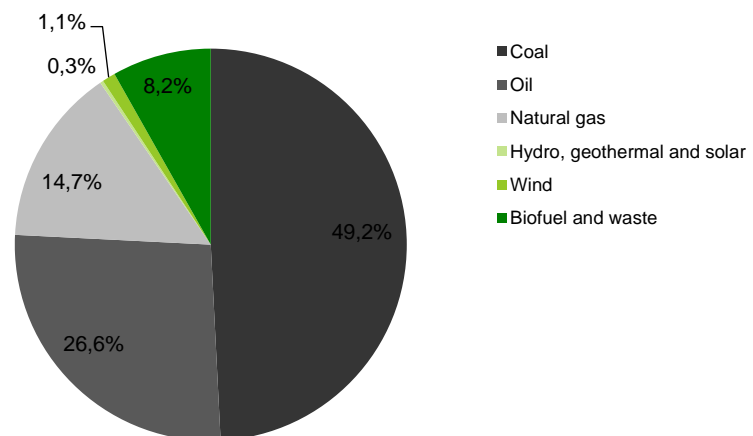
Polish Energy Mix

With a population of almost 40 million Poland is a significant part of the European Union. While the country is amongst the more energy intensive EU Member States, with greenhouse gas emissions per capita above the EU average, Poland is a key part of the EU's Energy Union.

Energy consumption continues to be dominated by coal

In 2016 Poland's gross inland consumption of energy was 99.93 Mtoe. Coal accounted for 49% of inland energy consumption followed by oil and natural gas, with shares of 27% and 14% respectively. Wind comprised 1% of Polish energy consumption in 2016. Renewable sources accounted for 9,5% of gross energy consumption in 2016, a considerable increase from the 5,0% share they held in 2005.

Figure 2: Structure of Gross Polish Energy Consumption, 2016



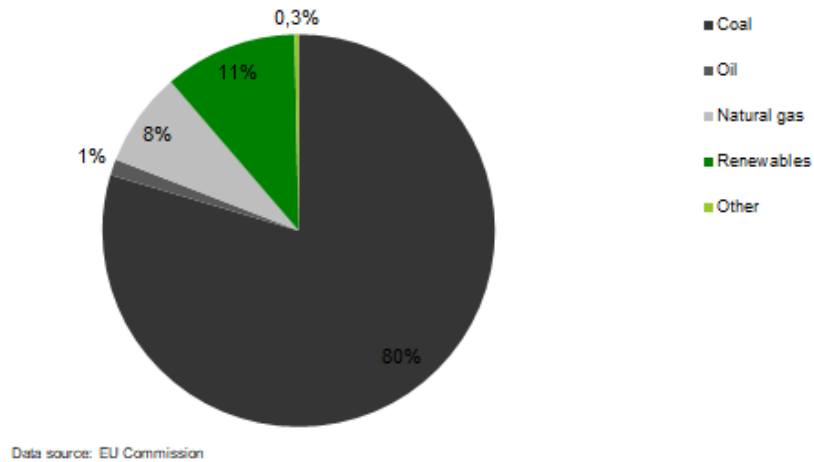
Data source: Eurostat

A coal driven heat and power sector

The Polish heat and power sectors are mainly running on coal, with an 80% share of coal in gross electricity and heat generation in 2016.

In this sector, renewable energy accounted for 11%, as shown in figure 3.

Figure 3: Gross Electricity and Heat Generation, 2016



Green transition is on the move in Poland

Poland will be hosting the COP24 in Katowice in December 2018. This year's round of international climate talks will be highly important politically. A so-called Paris Rulebook is to be agreed on. A strong rulebook is needed to enable effective and transparent implementation of the Paris Agreement. In addition, a recent climate report from IPCC (Intergovernmental Panel on Climate Change) and the EU-Commission underlines the urgency of international action to combat climate change. Therefore, political attention on further ways to increase climate efforts will undoubtedly be in the forefront of COP24.

New 2040 Energy Strategy

The Polish Ministry of Energy has published the draft of The Polish Energy Policy until 2040 (PEP). It plans to increase power capacity from 40 GW to 73 GW and expects the share of coal to fall from the current 78% of electricity consumption to 32% by 2040.

Outlined in the draft are four important forecasted changes in the structure of Poland's power industry up until 2040:

1. The share of gas will increase from 3% to 16%

Gas will be vital in the heating sector

Gas will play a regulatory role in the energy system and will be used mainly in co-generation for heat production, while also being used in gas-steam blocks as a source for RES. As a result, gas will become a significant share of the heating sector.

2. The share of coal will fall from 78% to 32%

Decreasing dependence on coal after 2027

The use of coal in the electricity sector will not decrease until 2027, but by 2030 only 60% of the generated electricity will come from coal. By 2035 coal power plants constituting a total capacity of 16.7 GW will be disconnected from the grid.

3. Renewable energy will provide 32% of energy.

Offshore wind and solar power to lead the increase in renewables.

Offshore wind farms and photovoltaic installations will constitute the largest shares of renewable energy, respectively 17.7% and 8.5% of domestic energy demand. The Polish State Secretary for Energy, Grzegorz Tobiszowski, has recently announced plans to develop 8 GW of offshore wind by 2035. The country is set to pass a law to this effect, that will outline annual targets for 2019-2035. Recently a 1 GW onshore wind auction was launched. The auction was met by large interest and prices between 37 and 50 EUR pr. MWh. Despite a planned new action in 2019, Poland does not expect to build any new onshore wind beyond the volumes envisaged in their current auction processes. Their onshore wind capacity will fall from 7 GW in 2025 to just 800 MW in 2040. However, there still remain large cost-efficient onshore wind potentials in Poland.

4. Nuclear power will provide 18% of energy.

Nuclear power as a source for sustainable energy

The goal is to launch the first reactor around 2033 and subsequently launch five more, one every two years, until 2043. The total capacity should be 6-9 GW. However, the final decisions regarding nuclear power plants will be made by the new government in 2020-2021.

Conclusion: Increase in demand for wind and solar technologies

While the above-mentioned 2040 Energy Strategy is still only a proposal by the government which is not decided yet, it is clear that Poland is taking steps towards a greener energy sector, and planning on using offshore wind and photovoltaics to achieve a larger share of renewable energy. Onshore wind can potentially be added to this, but there remains barriers to be solved. Thus, it is to be expected that Poland will have a growing demand for wind and solar technologies up until 2040, if they are to meet these goals. For producers of these green technologies this rise in demand will bring increasing opportunities to expand into the Polish market. These market trends can be further supported by an increasingly public attention to local air pollution. Individual coal heating is causing serious smog outbreaks in many larger Polish cities. Therefore, solutions to deal with this, including green electricity and energy efficiency, will likely be boosted by public pressure.