



PKEE

Polish Electricity
Association



Polish power sector getting the facts straight



Facts about the Polish power sector

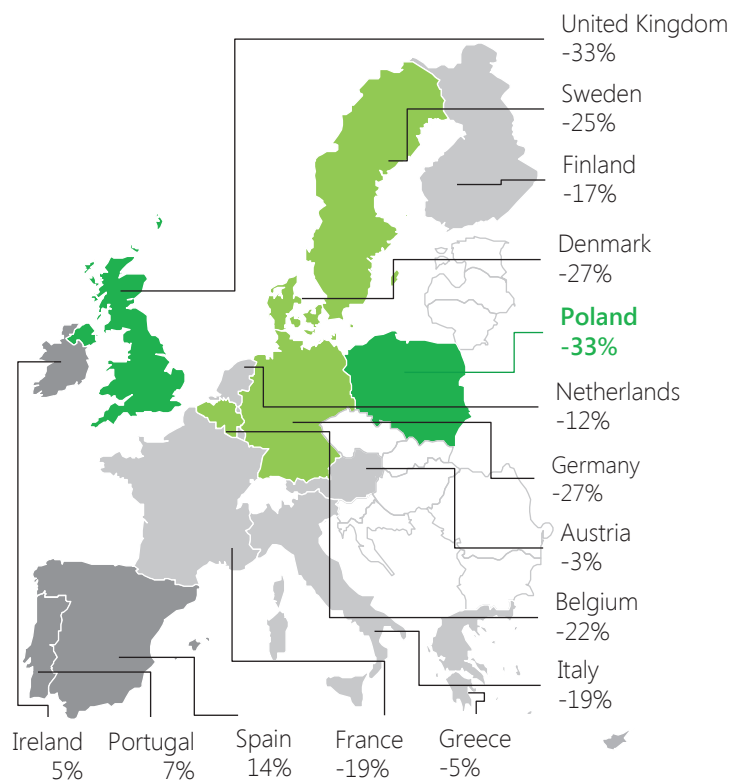
- ▶ Poland is one of the leading economies in terms of reduction of greenhouse gas emissions. Poland reduced CO₂ emissions by over 30% as compared to its Kyoto Protocol obligations.
- ▶ Poland's emissions per capita are comparable to the EU average. The average Pole emits less CO₂ than the average German, Dutch or Finn.
- ▶ The Polish power sector is constantly reducing harmful SO₂, NO_x and dust emissions.
- ▶ Poland is diversifying its energy mix through rapid RES development. RES electricity generation in Poland has increased during the past seven years by 175%!
- ▶ Poland is one of the most energy independent Member States. While some MS are heavily dependent on natural gas suppliers from third countries (e.g. Russia), security of supply in Poland is guaranteed by indigenous fuels.
- ▶ Affordability of energy is one of the pillars of the EU energy policy. Highly-efficient coal-fired units are still much cheaper than all other energy sources. The EU needs to look for cleaner ways to burn coal, rather than eliminate it from the energy mix.
- ▶ Electricity prices for households in Poland are one of the highest among the EU Member States (in PPP). Further rapid price increases due to development of low-carbon sources are economically and socially unacceptable. The diversification process needs to take place gradually.
- ▶ 2021-2030 derogations (free CO₂ allocation) are essential to provide affordable energy prices and enable modernisation of the power sector in Poland. Polish utilities have the highest share of carbon costs per MWh of electricity. This is why post-2020 free CO₂ allocation will not cause market distortions.

Poland is constantly reducing its greenhouse gas emissions

Poland is one of the leaders in reduction of greenhouse gas emissions in the EU

Polish CO₂ emissions have decreased by ca. **33 per cent** as part of the Kyoto Protocol obligations.

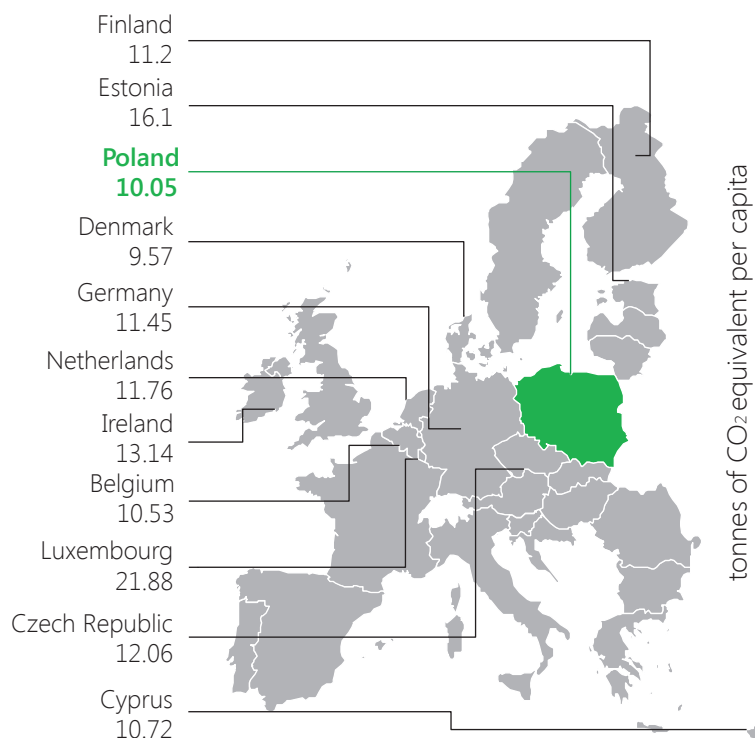
Greenhouse gas emissions reductions in 2014 without international aviation (in CO₂ equivalent) indexed to the Kyoto base year (%). Source: Eurostat



The average Pole emits less than the average German, Dutch or Finn

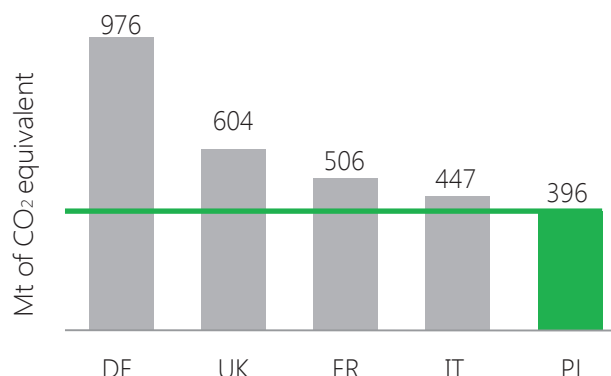
Polish greenhouse gas emissions per capita do not exceed the average emissions generated by other EU leading economies.

Greenhouse gas emissions per capita in 2014 (tonnes of CO₂ equivalent per capita)
Source: Eurostat



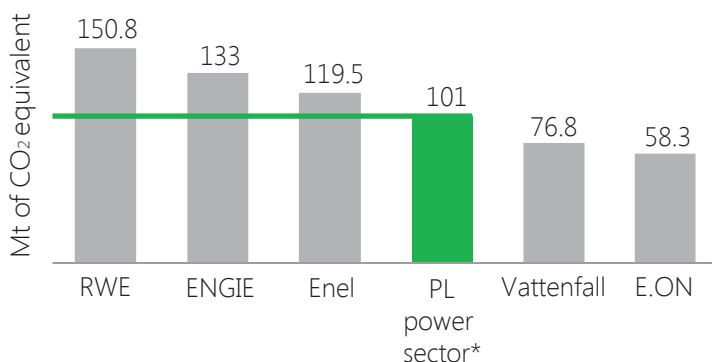
Polish greenhouse gas emissions in the EU context

Poland is not the biggest CO₂ emitter in the EU



Total greenhouse gas emissions by countries (including international aviation and excluding LULUCF) in 2013 (million tonnes of CO₂ equivalents). Source: Eurostat

Polish share in the EU power sector's emissions is minimal



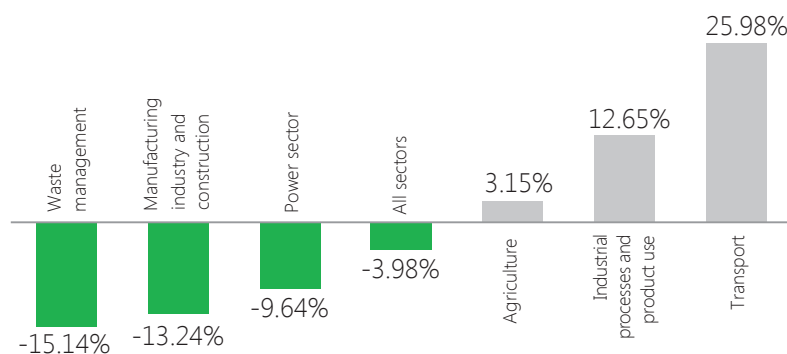
In 2014 EU-28 fuel combustion CO₂ emissions in energy industries reached ca. 1 246 million tonnes. Only ca. 160 million tonnes of CO₂ was emitted by the Polish power and heat sector.

In 2014 the Polish power and heat sector was responsible only for 0.5 per cent of worldwide greenhouse gas emissions.

The leading European utilities' CO₂ emissions in 2015 (million tonnes of CO₂ equivalent). Source: annual company reports

*Includes greenhouse gas emissions (in Mt of CO₂ equivalent) from the following companies: PGE (58.29), Tauron (16.40), PAK (12.26), ENEA (11.72), Energa (2.35).

Polish power sector is reducing its CO₂ emissions



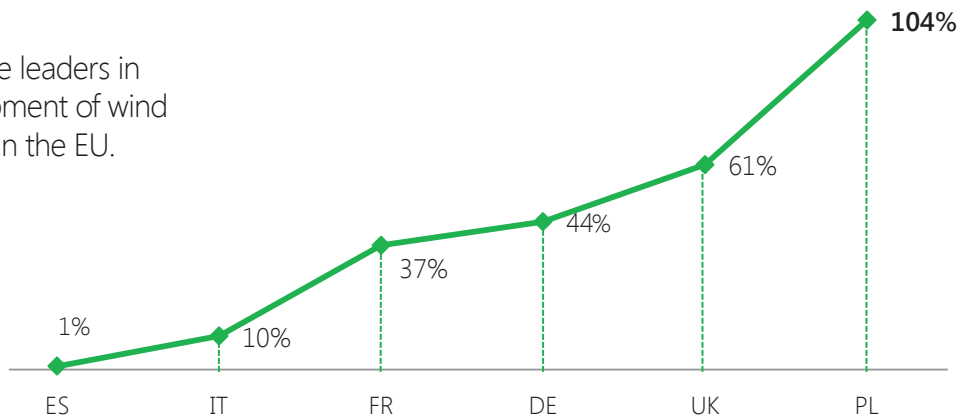
On the basis of the Paris Agreement and relevant EU legislation all sectors will be contributing to the climate action. However, historical emissions (2005-2014) reveal that there is also a big potential in other sectors.

Greenhouse gas emissions dynamics by sector in Poland (2005-2014). Source: Eurostat

Poland is rapidly increasing the share of RES in its energy mix

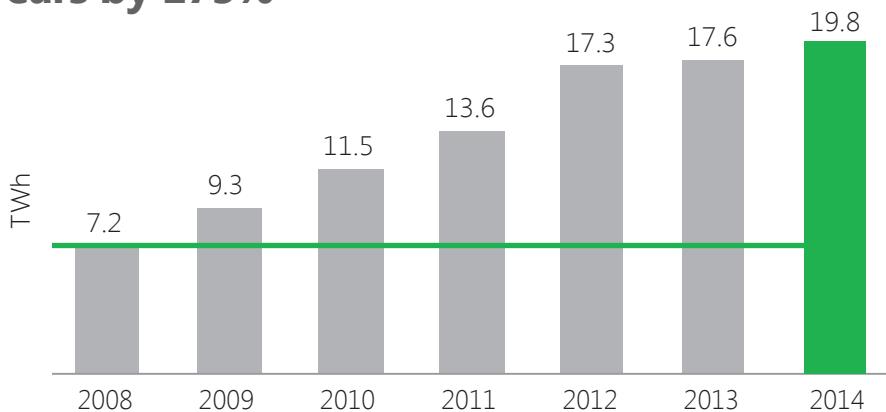
Poland's wind generation capacity is growing rapidly

Poland is one of the leaders in the rate of development of wind power generation in the EU.



Growth of installed capacity in the period 2012-2015 (%). Source: EWEA (2016)

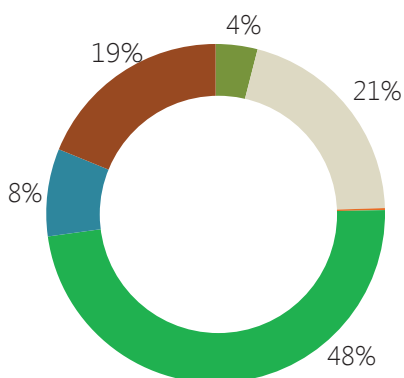
RES electricity generation in Poland has increased in recent years by 175%



RES share in gross electricity generation rose from 4.6 per cent in 2008 to 12.1 per cent in 2014.

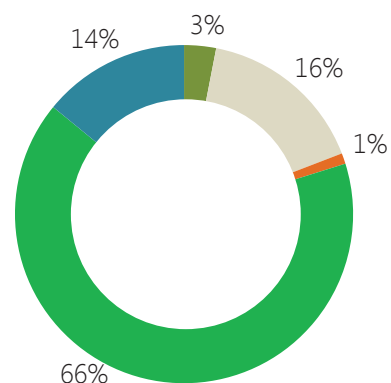
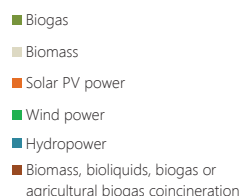
Gross RES electricity generation in the period 2008-2014 in Poland (in TWh). Source: EC (2015), GUS (2016)

Polish RES fuel mix is based on wind, biomass and hydropower



RES installed capacity in Poland by sources (2015). Source: NRA (URE)

Polish RES fuel mix is indeed based on indigenous sources. The majority of biomass consumed in the power sector has domestic origin.

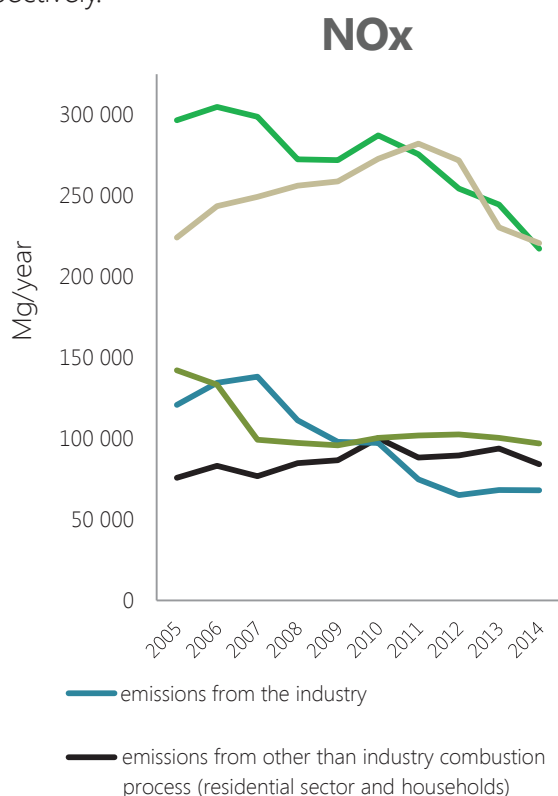


RES generation in Poland by sources (2015). Source: NRA (URE)

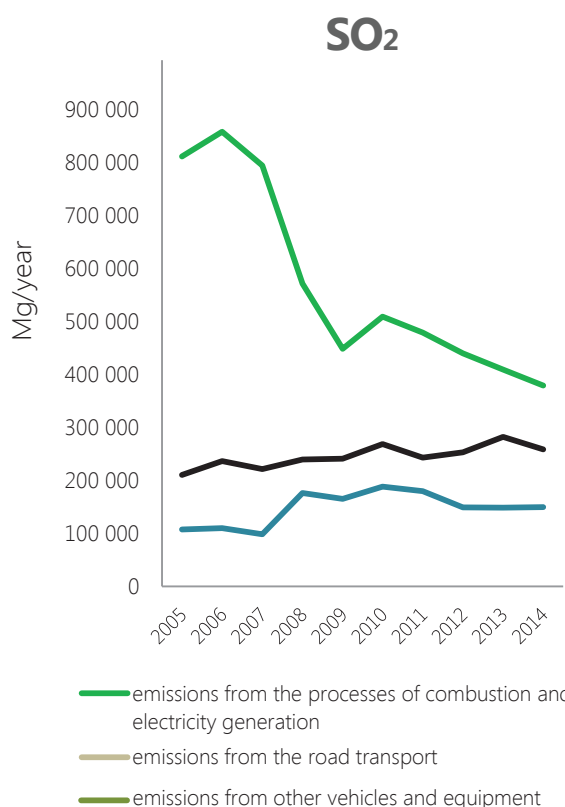
Polish power sector is steadily decreasing its industrial emissions

Polish power sector is constantly reducing its industrial emissions

In the period of 2005-2014, the Polish power sector reduced its SO₂ and NO_x emissions by 53% and 27% respectively.

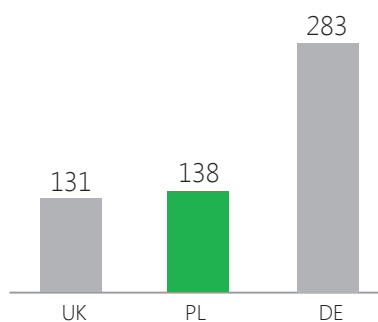


NO_x emissions in Poland 2005-2014 (Mg/year). Source: KOBiZE



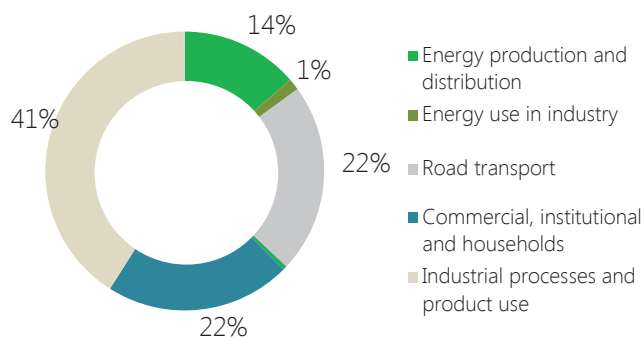
SO₂ emissions in Poland 2005-2014 (Mg/year). Source: KOBiZE

Poland is not the leader in energy generation based on coal and lignite



Gross electricity generation from solid fuels (TWh). Source: EC (2013)

Polish power sector is not the main source of industrial emissions

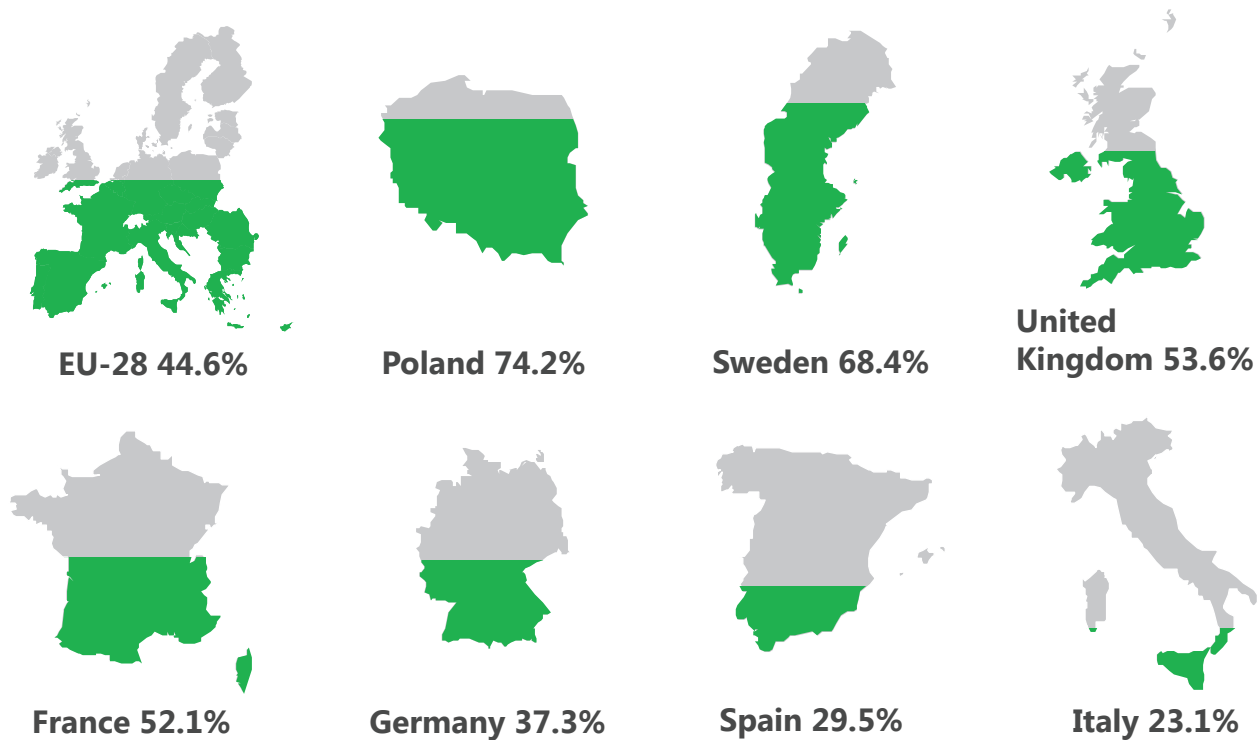


Emissions of non-methane volatile organic compounds (NMVOC) by source sector in Poland (2013). Source: Eurostat

Poland is one of the most energy independent Member States in Europe

European (in)dependence - energy import independence

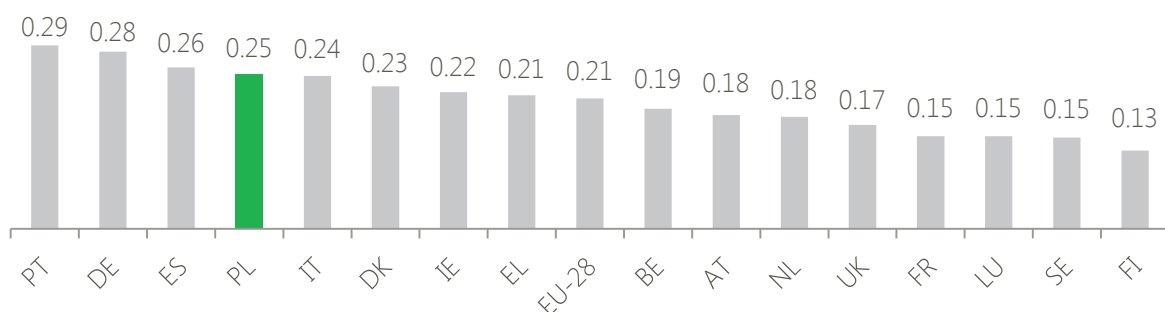
■ energy import independence ■ energy import dependence



EU-28 energy import dependency in 2013 - all fuels. Source: EC (2015)

Poland is one of the most energy independent Member States. Security of supply in Europe should be based primarily on indigenous energy sources.

Poland has one of highest electricity prices for households in the EU

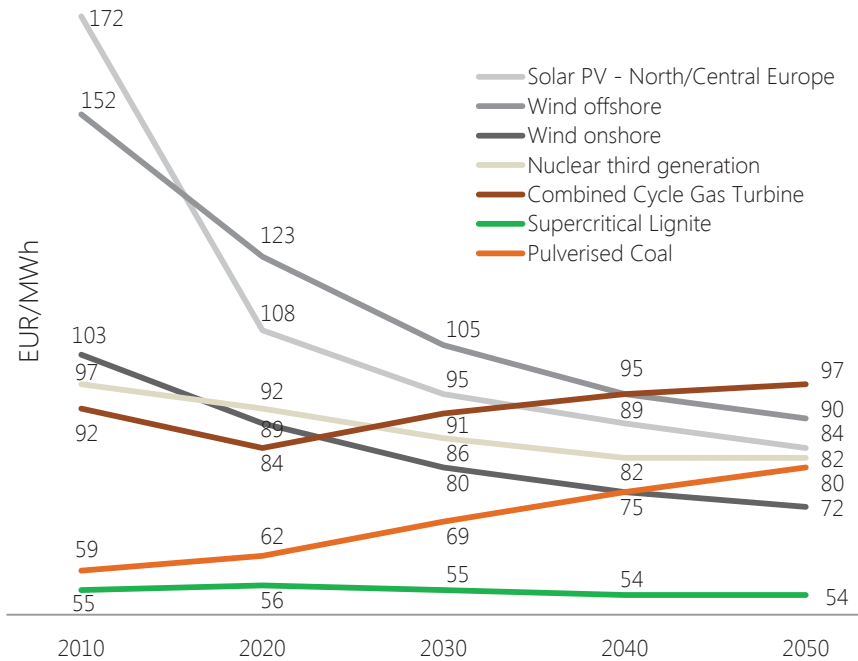


Selected EU Member States' electricity prices for household consumers, 2015 semester 1 (PPP/kWh). Source: Eurostat

The Energy Union should address not only climate change but social challenges as well.

Business perspective

Coal and lignite technologies are still the cheapest ones in economic terms



It makes economic sense to use the coal technology in a cleaner way instead of eliminating it from the EU energy mix.

Assumptions: Annual capital cost at WACC 7.5% real, operating hours per year as observed today, Carbon Prices = 0, cost of CO₂ transport and storage not included.

Indicative levelised costs of electricity (LCOE) for selected power generation technologies (EUR/MWh net). Source: EC (2016)

Free CO₂ allocation for the Polish power sector does not create market distortions - carbon costs are still higher for Polish generators

Company	without free allowances [20 EUR/EUA]	free EUA 2021-2030 [20 EUR/EUA]	without free allowances [25 EUR/EUA]	free EUA 2021-2030 [25 EUR/EUA]	without free allowances [35 EUR/EUA]	free EUA 2021-2030 [35 EUR/EUA]
PGE	19.0	14.8	23.8	18.5	33.3	25.9
Tauron	17.7	13.8	22.1	17.2	30.9	24.1
E.ON	8.2	8.2	10.2	10.2	14.3	14.3
Vattenfall	8.6	8.2	10.8	10.8	15.1	15.1

Average cost of EUAs in 1 MWh of electricity - depending on EUA price [EUR/EUA]. Source: internal analysis

In all carbon price scenarios, Polish utilities have a higher share of EUA expenditure (even with derogation) in the cost of 1 MWh of electricity than other EU utilities. This is because of the large share of fossil fuels in the Polish energy mix.

Facts & myths about 2013-2020 derogation (free CO₂ allocation)

Myth: Polish derogation creates distortions of competition on the EU market and therefore should be avoided

Fact: Polish utilities bear higher cost of CO₂ than their EU peers - even with a derogation

Myth: Poland does not invest in the diversification of its energy mix, so there are no renewables in the National Investment Plan

Fact: Poland is diversifying its energy mix and is on track to meet the 2020 RES target – despite not being able to include RES in the National Investment Plan

Myth: Polish utilities use free allocation to finance new coal-fired power plants – high carbon lock-in effect

Fact: Poland does **NOT** use the avoided costs coming from free allocation for investments in new coal-fired plants – coal investments are **NOT** included in the National Investment Plan

Myth: 8-year-long derogation is sufficient in terms of allaying starting point and fuel mix differences in Member States

Fact: Full diversification of the Polish energy mix cannot happen in just 8 years, this process will take decades and needs to happen gradually – in a cost-efficient manner

Myth: The value of free allocation for Poland in the 2013-2020 period is ca. EUR 8 billion

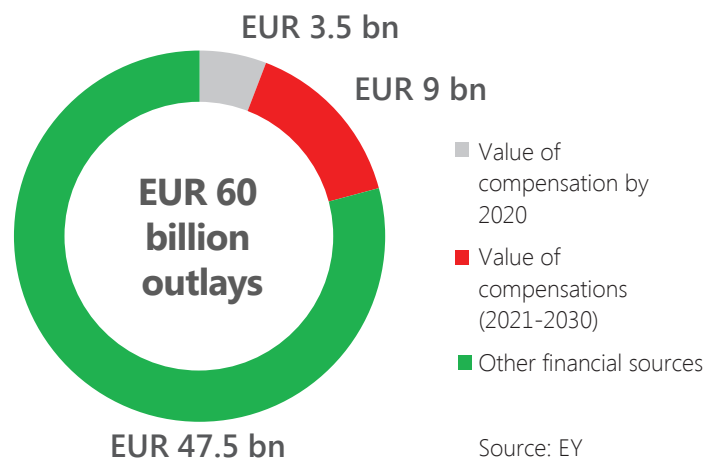
Fact: The actual market value of free allocation for the Polish power sector by 2020 will be just ca. EUR 3-3.5 billion as compared to ca. EUR 60 billion of investments needed to achieve 30% emissions reductions by 2030

EU ETS review - our recommendations for compensation mechanisms*

Investment outlays in the scenario of 30% emissions reductions by 2030 [EUR billion]

Current and future compensations together = ca. 20% of investments needed to decrease emissions in the Polish power sector by 2030.

Investments needed to reduce CO₂ emissions in Poland are extremely high. We need to maximise compensations under EU ETS.



Source: EY

In order to provide the best method of allocation, flexibility is needed to choose between:

- 1) National Investment Plans (without threshold) or
- 2) competitive bidding or
- 3) combination of both mechanisms

Member States should have a possibility to **review** the National Investment Plan - to enable them updating the list of investmentst twice in the period 2021-2030

Modernisation investments that have obtained all relevant corporate decisions **after the adoption of the European Council conclusions of 24th October 2014** should be eligible to be financed

**Art. 10c
Transitional
free allocation**

**Art. 10d
Modernisation
Fund**

The governance should be simplified - one advisory body instead of complicated structure is needed

The eligible MS should be empowered to control their **investment portfolios**

The role of the **EIB** should consist of only monetisation of allowances, advice and assistance in the process of due-diligence, attracting private funding

*In line with EURELECTRIC's proposal: www.eurelectric.org

About us

The Polish Electricity Association (PKEE) represents the largest electricity producers and leading industry organisations in Poland. We focus mainly on improvement of our industry's functioning in a modern market economy.

Our engagement in many national, EU-wide regulatory projects and activities helps the Polish electricity sector to face the challenges concerning the transformation of the energy market in the field of:

- ▶ ensuring security of electricity supply,
- ▶ achieving a competitive market with affordable electricity prices,
- ▶ environmental protection and climate policy,
- ▶ and the development of modern technologies.

We support the development of the Polish electricity industry by opinion-forming activities to improve investment predictability and shape a rational, industry-friendly regulatory environment – both at the national and EU level.

We are a member of the Union of the Electricity Industry – EURELECTRIC, pan-European association of utilities. Our activity in the field of EU regulations is further strengthened through our office in Brussels.

At national level, we represent an important voice of the sector regarding energy issues, and we cooperate with the Polish government through consultation of legal acts and initiatives concerning our industry's operations.

We are looking forward to working with you.



www.pkee.pl

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