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COMMISSION STAFF WORKING DOCUMENT

Country Factsheet Poland

Accompanying the document

**COMMUNICATION FROM THE COMMISSION TO THE EUROPEAN
PARLIAMENT, THE COUNCIL, THE EUROPEAN ECONOMIC AND SOCIAL
COMMITTEE, THE COMMITTEE OF THE REGIONS AND THE EUROPEAN
INVESTMENT BANK**

State of the Energy Union

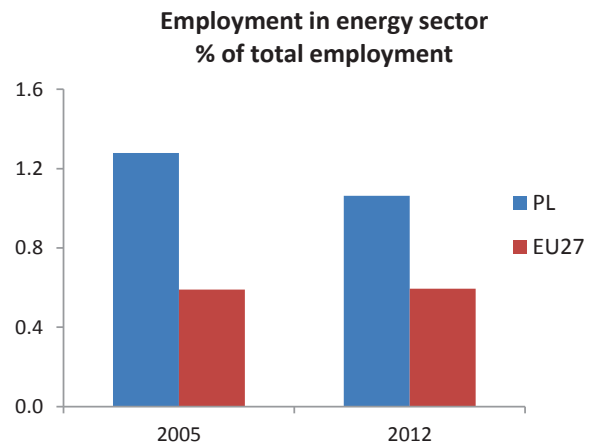
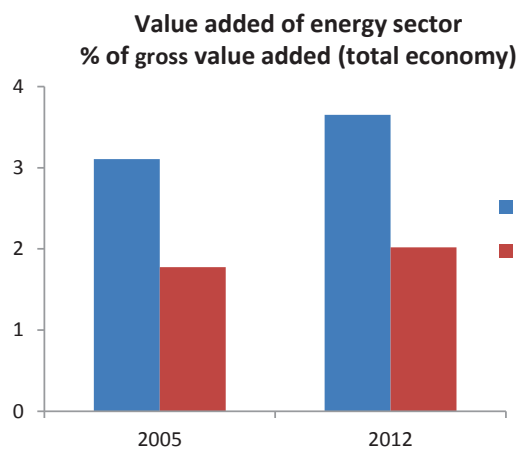
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Macroeconomic relevance of energy

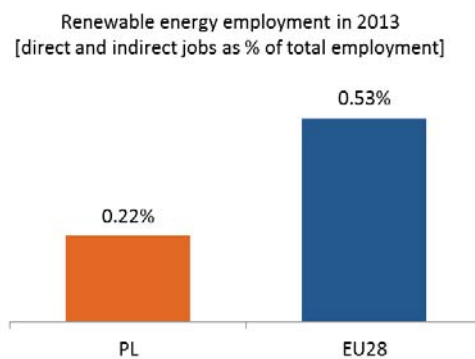
IMPORTANCE OF THE ENERGY SECTOR

At 3.6% of total gross value added in 2012, value added of the energy sector in Poland is considerably higher than the EU average, and has increased from 3.1% in 2005. In parallel, the share of employment in the energy sector in total employment has decreased importantly (from 1.3% to 1.1%) but is still more than double the EU average (0.6% in 2012).



Source: EUROSTAT – National Accounts

According to EurObserv'ER, in 2013, the share of direct and indirect renewable energy related employment in total employment of the economy in Poland was at about 0.22%, below the EU average of 0.53%.

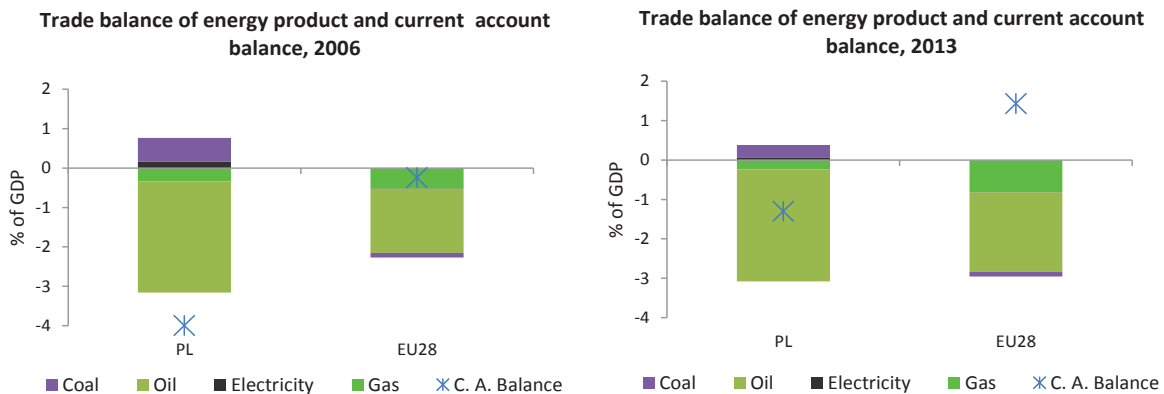


Source: European Commission, based on EurObserv'ER and EUROSTAT

TRADE BALANCE OF ENERGY PRODUCTS

Similarly to the EU average, the energy trade balance of Poland is overall negative, with oil as the main driver. Regarding coal, Poland has been a net importer of coal over the large majority of the 2006-2013 period, although not in the specific years presented in the graph below. Overall, Poland experiences a below EU average energy trade deficit (expressed as percentage of GDP). Decreasing

oil prices and a consequently lower deficit in oil trade have a positive effect on the overall current account balance, which in 2014 was only slightly negative in Poland (-1.3% of GDP in 2014, down from -4% in 2006).



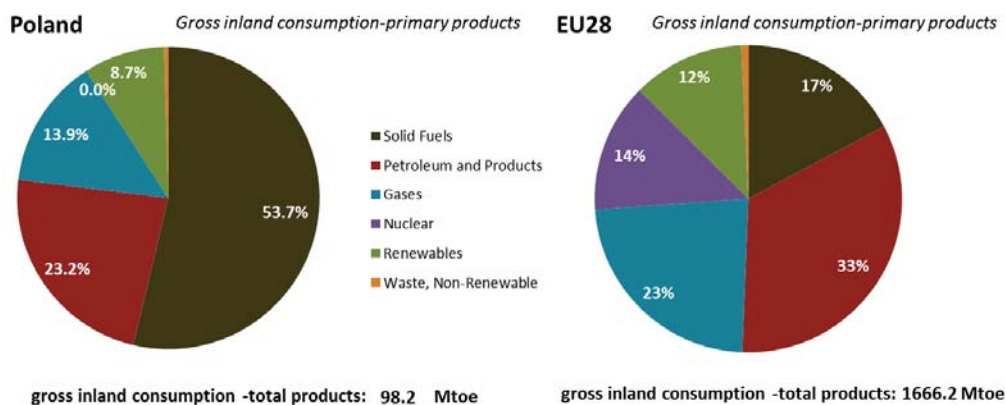
Source: EUROSTAT (COMEXT)

1. Energy Security, solidarity and trust

ENERGY MIX

The energy mix in Poland differs substantially from the one of the EU28, in particular due to a much higher share of solid fuels. Compared to 1995, the share of renewable energy increased more than the EU average (from less than 4% to 9% of gross inland energy consumption), while the share of gas increased by 5 percentage points. The main decrease concerns the use of solid fuels (17 percentage points).

Gross inland energy consumption in 2013



Source: European Commission, based on EUROSTAT

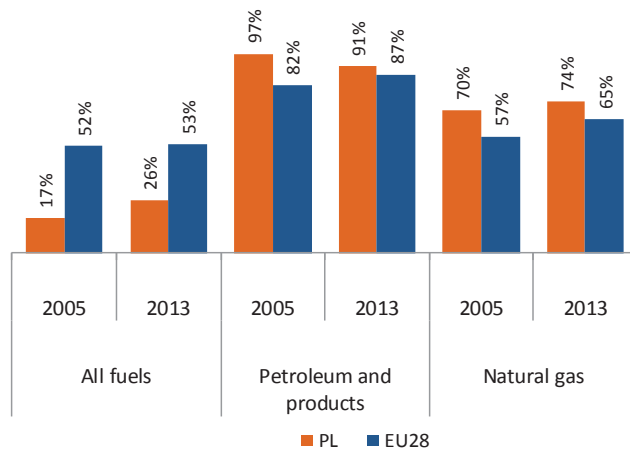
IMPORT DEPENDENCY

Poland has an overall low import dependency, although increasing, mostly due to the presence of national sources of solid fuels. The overall increase is mostly due to lower exports of hard coal. However, import dependency is high for crude oil, and also above EU average as regards gas. Poland imports a significant share of its crude oil and gas needs from Russia¹, i.e. about 95% and 64%,

¹ Top non-EU gas suppliers table is based on EUROSTAT data. The share of imports from non-EU countries is calculated as the ratio between volumes of imports from that specific non-EU supplier and total imports (from EU and non-EU)

respectively, of total imports in 2013², which translates into a relatively high country supplier concentration index. However due to the recent investments in gas infrastructure improvements are seen in this regard. Poland experiences a below EU average energy trade deficit (expressed as percentage of GDP).

Import dependency 2013



Top non-EU gas suppliers in 2013 (% in total imports)

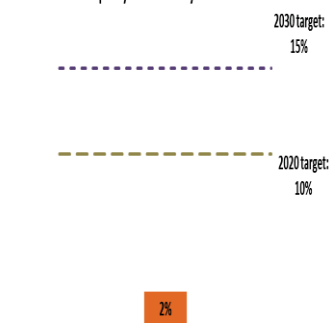
Poland		European Union	
country	[%]	country	[%]
Not specified	77.1	Russia	39.0
		Norway	29.5
		Algeria	9.7
		Qatar	6.7

Source: European Commission, based on EUROSTAT

2. A fully-integrated internal energy market

INTERCONNECTIONS

Interconnection capacity for electricity in 2014



Source: European Commission based on ENTSO-E scenario outlook and adequacy forecast 2014

Note: Reference to 2030 target is based on October 2014 European Council conclusions stating that "the Commission will also report regularly to the European Council with the objective of arriving at a 15% target by 2030"

According to the methodology proposed by the Commission, the interconnection level in electricity was 2% in 2014 for Poland. The 10% by 2020 target will not be reached based on the current policies without meaningful changes in trade and transit rules. Implementation of a flow-based approach to capacity allocation should take place. Moreover, considerable investments in grids (build-up and modernization) that are undertaken by the Polish transmission system operator will contribute to the optimization of their utilization, creating more room for regional exchange. The new Lithuania-Poland electricity interconnection and back-to-back converter stations (LitPol Link) was listed as a key infrastructure project in the European Energy Security Strategy (EESS) and is an important step towards inclusion of the Baltic States into the European energy market.

5 projects out of 33 key security of supply infrastructure projects are relevant for Poland. Out of these, the 3 most important ones are: the Poland-Czech Republic gas interconnector 'Stork II', allowing Poland to increase import capacities from the Western European gas market or ship gas (including from the new LNG terminal in Świnoujście at the Germany-Poland maritime border) to its southern neighbours; Poland – Slovakia cross-border gas pipeline which will

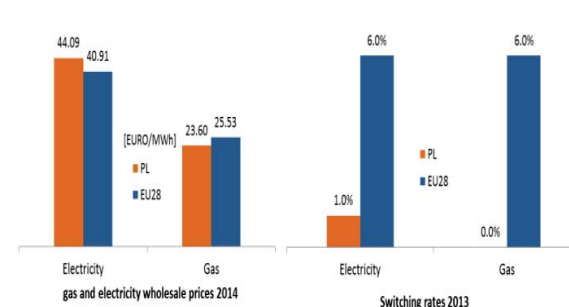
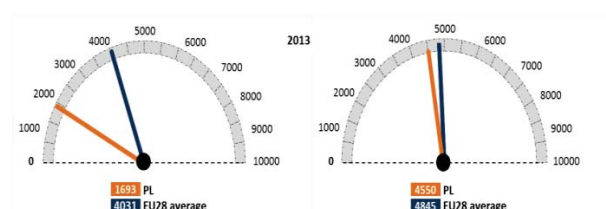
countries). For Poland in particular, there is a very high share of gas imports declared as 'not-specified' which seems to include most of gas imports from Russia.

² Figures based on Eurostat (2014 figures might differ).

connect the Polish and Slovak transmission systems, and Poland – Lithuania gas interconnector 'GIPL', which is critical to end the gas isolation of the Baltic States. All existing gas interconnections with other Member States play a crucial role in guaranteeing the energy security of Poland in case of a crisis. Maintaining uninterrupted supplies from neighbouring, especially the German, gas markets is a prerequisite for the stable operation of the national grid and for supplies to vulnerable consumers during potential disruptions. Availability of transmission capacity on the Polish-German interconnection points should therefore be ensured permanently and independently from internal German grid management solutions.

ELECTRICITY AND GAS MARKETS

Market concentration index for power generation (left) and gas supply (right) (2013) (Herfindahl index – 10000 means monopoly)



Sources: ESTAT and European Commission Calculations

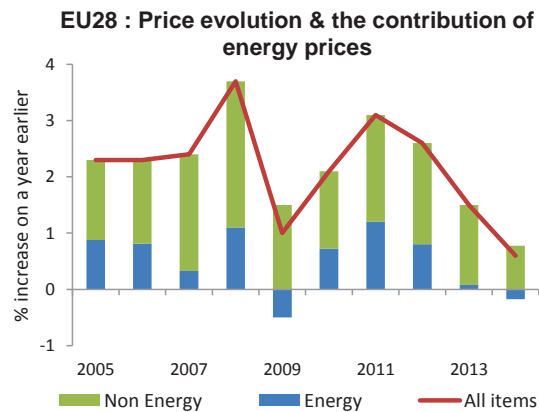
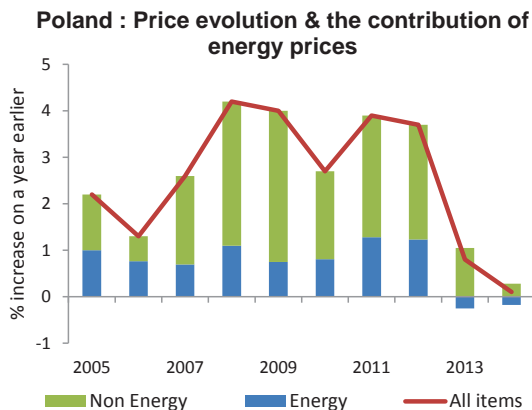
Sources: European Commission based on ESTAT, CEER and Platts Power Vision

Concentration on the power generation market has recently decreased and can now be considered as quite low. Wholesale electricity prices are above EU average while the ones for gas are below. The wholesale gas supply market remains concentrated, in line with EU average. 150 enterprises have been granted gas trade licences until now, but retail price regulation is preventing market entry of competitors in the gas market, although market conditions are improving. The Energy Regulatory Office granted exemptions from the price regulation for segments of the gas market, where competition is developing. However these measures have not proven so far to be sufficient to boost competition on the market and change the current market structure. Historical reasons, such as long term contracts with suppliers from third countries, also affect the potential for competition. Household retail prices for electricity and gas are below the EU average. Consumer satisfaction for electricity and gas³ is slightly below and above average EU level respectively, and has been improving since 2012.

CONTRIBUTION OF ENERGY TO CONSUMER PRICE EVOLUTION

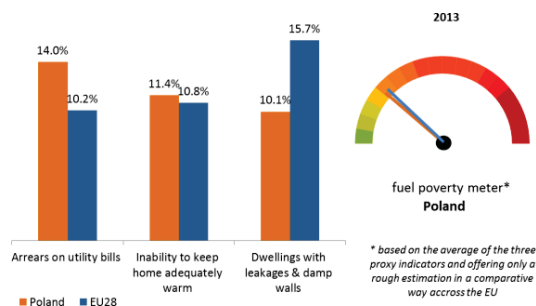
Inflation of consumer prices has decreased importantly in Poland between 2011 and 2014 (from 3.9% to 0.1%) which represents a faster decline than the EU average (from 3.1% to 0.6%). In Poland and in the rest of the EU, oil prices have declined in 2014, driving overall inflation down.

³ 10th Consumer Markets Scoreboard (June 2014), http://ec.europa.eu/consumers/consumer_evidence/consumer_scoreboards/10_edition/index_en.htm



Source: DG ECFIN based on Eurostat

VULNERABLE CONSUMERS

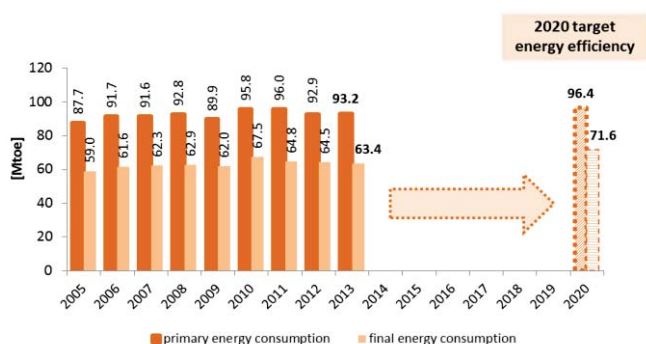


Based on a EUROSTAT survey on income and living conditions, three proxy indicators are used to assess fuel poverty in the EU. This issue in Poland is in line with EU average. Arrears on utility bills are more frequent than for the EU average. Consumers with financial difficulties may apply for energy allowances.

Source: European Commission, based on EUROSTAT SILC survey

3. Energy Efficiency and moderation of energy demand

ENERGY EFFICIENCY TARGET 2020 (96.4 Mtoe primary energy and 71.6 Mtoe final energy)



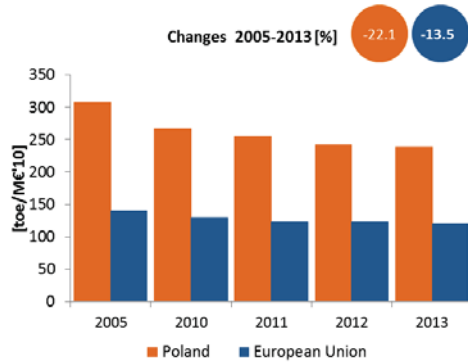
Source: European Commission, based on EUROSTAT and on national energy efficiency targets as declared by the MS under the EED

Poland's 2020 energy efficiency target is 96.4 Mtoe expressed in primary energy consumption (71.6 Mtoe expressed in final energy consumption). When comparing the trend of primary energy consumption with the GDP development over the past decades, it can be seen that there is evidence of a relatively strong decoupling of both. Even if Poland's current primary energy consumption (93.2 Mtoe in 2013) is below its 2020 target, it could continue its current, ambitious efforts regarding energy efficiency to keep the primary energy consumption at this level or increase it only slightly which will be challenging in light of relatively high economic growth forecasted for the coming years.

ENERGY INTENSITY

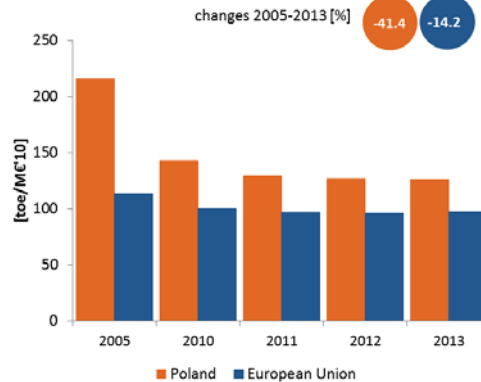
Primary energy intensity in Poland is significantly above EU average, although it has decreased since 2005 at a faster pace than the EU average. A high energy intensity reduction is recorded in the industrial sector, i.e. about 41% between 2005 and 2013, and is now getting close to EU average.

Primary energy intensity of the economy



Source: European Commission based on EUROSTAT and European Commission/AMECO

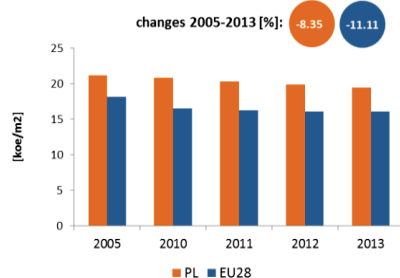
Final energy intensity in industry



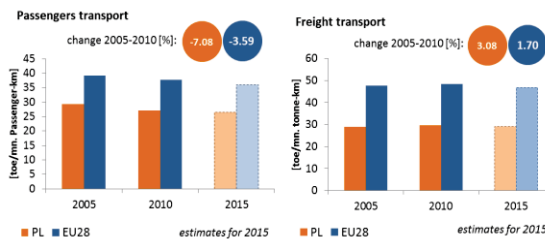
Source: European Commission based on EUROSTAT and European Commission/AMECO

Specific energy consumption by households is above EU average and decreased at a slightly lower pace than the EU average. The specific energy intensity of passengers transport decreased between 2005 and 2010. The specific energy intensity for freight transport is lower than EU average.

Final energy consumption per m2 in residential sector, climate corrected *Specific energy intensity for passenger cars and freight transport⁴*



Source: European Commission based on Odyssee database

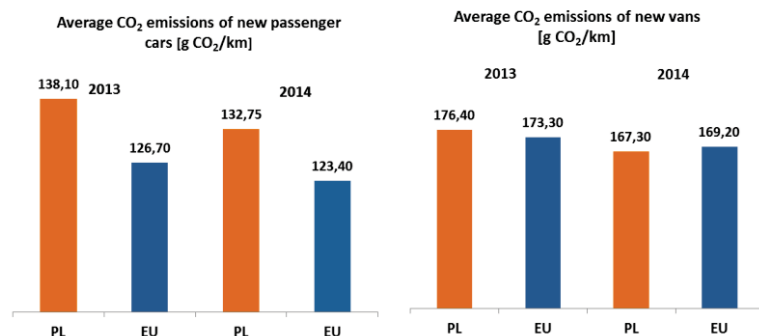


Source: PRIMES model background data and estimations based on EU Commission and EU MS inputs

EU legislation sets mandatory CO₂ emission reduction targets for new cars and vans. By 2021, the fleet average to be achieved by all new cars is 95 grams of CO₂ per kilometre. For new vans, the fleet average is set at 147 g/km by 2020.⁵

⁴ Statistics on energy demand for passengers and freight transport are not available and model estimates have been used instead. These issues should be borne in mind when comparing energy intensity in freight or passenger transport between Member States, which should be regarded as merely indicative.

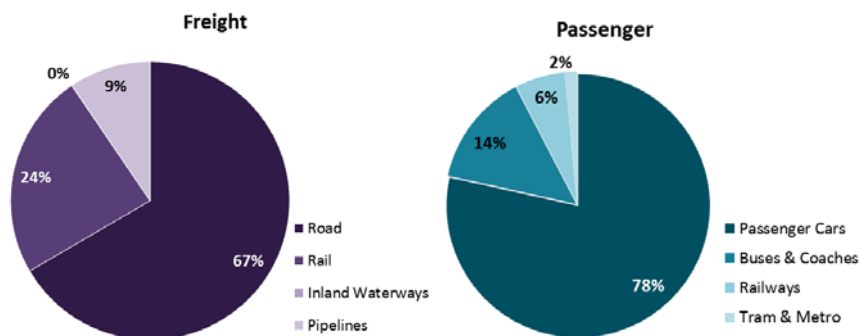
⁵ Source of the data: <http://www.eea.europa.eu/publications/monitoring-co2-emissions-from-passenger>, http://ec.europa.eu/clima/policies/transport/vehicles/cars/index_en.htm and http://ec.europa.eu/clima/policies/transport/vehicles/vans/index_en.htm.



Source: European Environmental Agency. 2014 values are provisional. 2013 EU average refers to EU-27.

Regarding transport performance, in EU-28 the inland freight modal shares are 71% by road, 17% by rail, 7% by inland waterways and 5% by pipelines. The respective inland passenger modal shares are 82% by private car, 9% by buses and coaches, 7% by railways and 2% by tram and metro. Compared to the European average, there is a higher use of public passenger transport, especially buses and coaches.

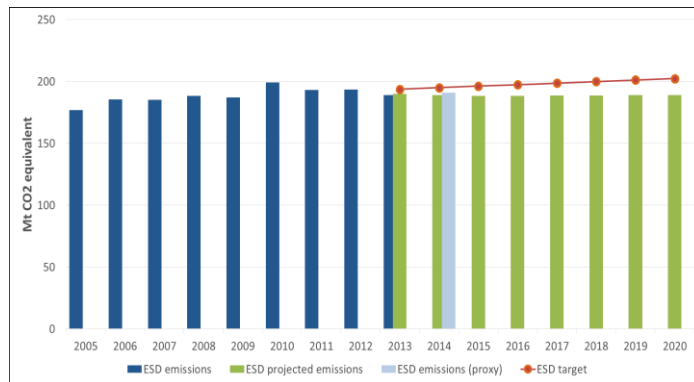
Modal shares Poland



Source: Eurostat and EU transport in figures 2015. Data refers to 2013. Modal shares based on tonne-kilometres for freight sector and passenger-kilometres for passenger sector, freight data based on activity within country territory. Estimates are made when data is missing.

4. Decarbonisation of the economy

NON-ETS GHG EMISSION REDUCTION TARGET 2020 (+14% by 2020 as compared to 2005 in the non-ETS sector)



Source: European Commission based on EEA. Based on preliminary inventory data.

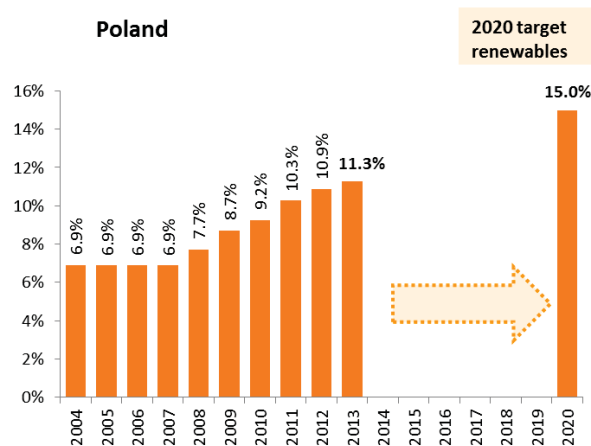
ESD (Effort Sharing Decision) emissions are the emissions from sectors not covered by the EU ETS.

Poland can increase its GHG emissions in such sectors by no more than 14% between 2005 and 2020.

According to its 2015 projections, Poland is expected to reach its 2020 target with a margin of almost 8% as compared to 2005. Between 2005 and 2014 (approximated data) Poland has increased its emissions by 8% (against 10% target), therefore overachieving their target by 2 percentage points.

Non-ETS Emissions (vs. 2005)	Projections/proxy	target
Projections with existing measures 2020	+6%	+14%
Proxy 2014	+8%	+10%

RENEWABLE ENERGY SHARE TARGET 2020 (15%)



Source: European Commission based on EUROSTAT

Poland is currently on track to meet its 15% target in 2020, with a renewable energy share of 11.3% in 2013.

In comparison to its National Renewable Action Plan (NREAP), Poland is in line with its indicative trajectory for renewable heating and cooling sector. However shares of renewable electricity and transport are below values envisaged by NREAP.

Therefore additional effort is needed to ensure that the 2020 target is actually met.

GREENHOUSE GAS EMISSION INDICATORS

- Due to its energy mix, carbon intensity of the Polish economy is the third highest in the EU.
- In 2014 the auctioning of EU ETS allowances generated an important source of revenues, amounting to EUR 78 million. Half of these revenues are used for domestic climate and energy-related purposes.

Largest Sectors of GHG Emissions in 2012(*)	Poland	EU Average
Energy/power industry	46%	33%
Transport	12%	20%
Industry	15%	19%
Agriculture (incl. forestry & fishery)	12%	12%
Residential & Commercial	11%	13%
Waste & others	4%	3%

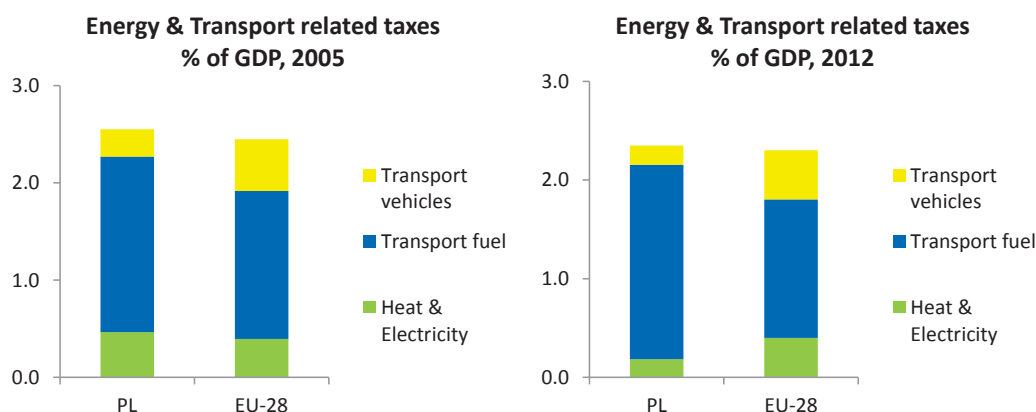
GHG Emissions	Poland	EU
EU ETS auctioning revenues in 2014 (EUR millions)	78	3205
Share of ETS emissions in 2013	52%	42%
GHG emissions/capita in 2013 (tCO ₂ equivalent)	10.4	8.5
Carbon intensity of the economy in 2013 (tCO ₂ equivalent/(EUR millions))	1012	328

Source: European Commission based on EEA
 (*)Sectoral breakdown for 2013 data not available.

ENERGY & TRANSPORT TAXATION

Energy and transport related taxes as a share of GDP is very close but slightly higher than the EU-average. Poland has a relatively high tax burden on transport fuels, while taxation on transport vehicles and heat and electricity are below average. The overall tax burden has slightly decreased since 2005, but the relative importance of transport fuel taxation has strengthened further.

The current design of environmental taxes does not provide a coherent set of incentives for efficient energy use and for reducing greenhouse gas emissions. Environmental taxes in Poland are not automatically indexed and despite the trend in the EU, vehicle taxation in Poland is not based on CO₂ emissions.

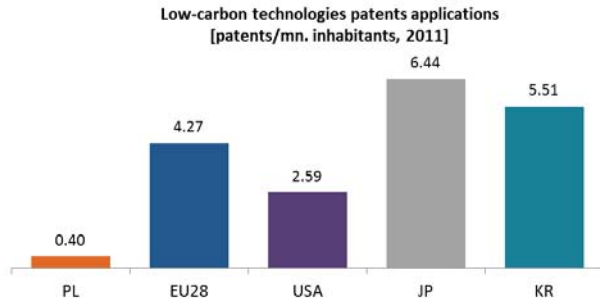
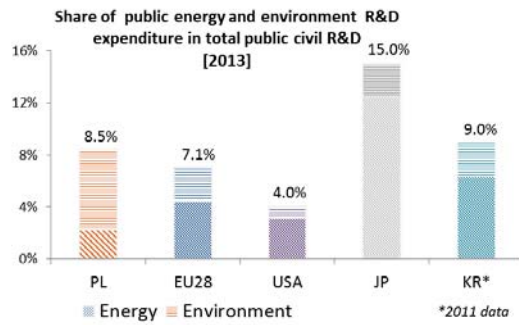


Source: Eurostat

5. Research, innovation and competitiveness

RESEARCH AND INNOVATION

Poland is above the EU average and the US, but below Japan and South Korea in terms of public support share allocated to research and innovation in the field of sustainable energy, low-carbon and environment. In terms of intensity of low-carbon technologies patents, Poland is much behind the EU average and main worldwide partners.

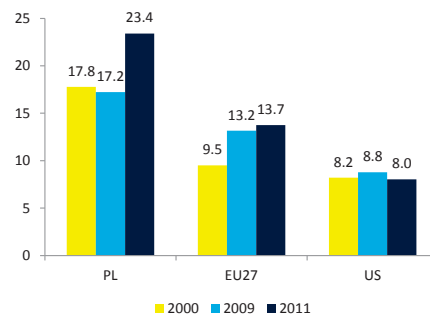


Source: European Commission based on EUROSTAT

COMPETITIVENESS

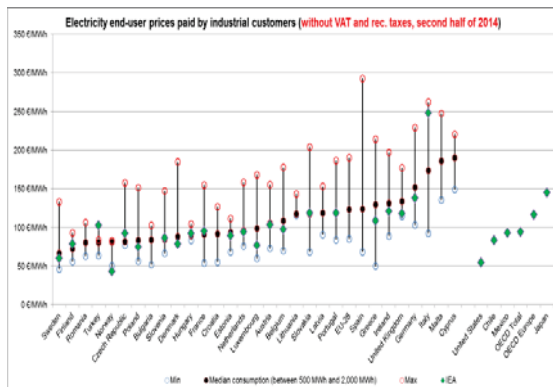
The real unit energy costs⁶ in Poland increased since 2000, and are now well above the EU average and the US. This is likely to reflect improvements of the energy intensity⁷ of the manufacturing sector as well as higher real energy prices.

Real unit energy costs (% of value added)

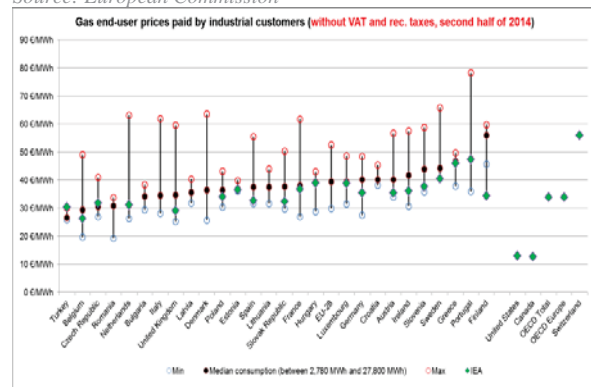


Median electricity prices paid by industrial customers remain however lower than EU and OECD averages.

Source: European Commission



Source: European Commission based on EUROSTAT and IEA



6. Post-2020 Energy and Climate policy Strategy

COMPREHENSIVE MEDIUM TO LONG-TERM STRATEGY (post-2020) FOR CLIMATE AND ENERGY

- The 2009 "Energy Policy of Poland until 2030" (EPP) outlines Poland's energy policy approach until 2030. The government is currently redrafting the Energy Policy in order to incorporate the 2050 time horizon.

⁶ This indicator measures the amount of money spent on energy sources needed to obtain one unit of value added.

⁷ The energy intensity presented here is derived from Use Tables of WIOD, see "Energy Economic Developments in Europe SWD(2014)19".

- The EPP has the overall objective of reducing GHG emissions, although it does not set specific targets for 2030. According to the EPP, CO₂ intensity of electricity generation is expected to decrease from the 2007 level of 0.95tCO₂/MWh, to less than 0.70tCO₂/MWh in 2030. The EPP also sets the general objective of achieving a zero-energy economic growth (i.e. without extra demand for primary energy).
- In addition, Polish Nuclear Power Program adopted by the Council of Ministers provides for the construction of two nuclear power plants by 2035 with combined capacity of 6 000 MW, which will contribute to reducing current emissions from the power sector by approx. 25%.
- The strategy "Energy Security and the Environment - prospect for 2020" was adopted in April 2014 by the Council of Ministers. The main goal of the Strategy is to create the conditions for the development of a competitive and efficient energy sector, ensuring sustainable and environment friendly development.
- No post-2020 climate-specific strategy has been established yet. Poland is currently preparing a *National Programme for Development of Low Emission Economy* covering amongst other topics the development of low-carbon energy sources and improvement of energy efficiency.

NATIONAL TARGETS, especially for 2030

Objective, 2030-2050	Targets	Comments
GHG reduction	No	
Renewable energy	No	
Energy Efficiency / savings	No	Objective of "zero-energy" economic growth and reducing energy intensity to EU-15 level

7. Regional cooperation

Regional cooperation requires development of markets, interconnectors and state interventions in coordination with the neighbouring countries. Poland in principle supports regional cooperation however the potential of such cooperation is not fully exploited by Poland. Poland is active in some of the Regional Groups on the regulatory side and prepares the infrastructure projects which are crucial for its neighbours. Poland is involved in cooperation with Visegrad Group countries (CZ, HU, PL and SK) in the field of energy policy, including gas market integration as well as research activities in the field of nuclear power (Gen IV reactors).

The work on the gas interconnector with Lithuania 'GIPL' entered into pre-investment phase. The agreement between the operators and the Commission (through the Innovation & Networks Executive Agency) on the EU financial support for this project was signed on 15 October 2015. GIPL constitutes the most important gas interconnector for the East Baltic Sea Region. It will (i) end the energy isolation of the Baltic Member States, (ii) allow Baltic States to diversify energy source, routes and counterparts, (iii) secure safe and reliable gas supply in case of disruptions of gas supply from Russia, and (iv) increase the competition in regional gas market.

8. Cohesion policy contribution

The EU Cohesion policy provides for important investment possibilities to implement energy policy objectives in Poland which will be complemented by national public and private co-financing, aiming at optimal leverage. It also ensures integrated territorial solutions to challenges by supporting capacity building, technical assistance and territorial cooperation, including the Baltic Sea Region macro-regional strategy in which Poland takes part.

Internal energy market: Over 2014-2020, EU Cohesion Policy will invest some EUR 1 300 million in smart energy storage and transmission systems, as well as some EUR 100 million in smart electricity distribution grids in Poland. This funding will be complemented by national public and private co-financing, aiming at optimal leverage. These investments are expected to contribute to around 543 000 additional users connected to smart grids.

Energy efficiency: Over 2014-2020, EU Cohesion Policy will invest some EUR 3 290 million in energy efficiency improvements in public and residential buildings and in enterprises, as well as in high-efficiency cogeneration and district heating in Poland. A further estimated EUR 13 000 million will be invested in supporting the move towards an energy-efficient, decarbonised transport sector. These investments are expected to contribute to around 102 000 households with improved energy consumption classification and a decrease of around 1 181 502 000 kWh per year of decreased primary energy consumption of public buildings, as well as to around 10 km of new railway lines, 2 210 km of reconstructed or upgraded railway lines, 190 km of new or improved tram and metro lines, and 10 km of new or improved inland waterways.

Decarbonisation: Overall, the EU Cohesion Policy investments in Poland over 2014-2020 are expected to contribute to an estimated annual decrease of GHG of around 4 281 000 tonnes of CO₂eq. Over 2014-2020, EU Cohesion Policy will invest some EUR 939 million in renewable energy in Poland. These investments are expected to contribute to around 960 MW of additional capacity of renewable energy production.

Research, Innovation and Competitiveness: Over 2014-2020, EU Cohesion Policy will invest significantly in R&I and in SME competitiveness in Poland. This will be based on one national strategy and 16 regional strategies for smart specialisation. For Poland, the national strategy includes a focus on the sustainable energy sector in three areas: highly-efficient, low-emission and integrated circuits of manufacturing, storage, transmission and distribution of energy; smart and energy efficient construction; and environmentally friendly transport solutions. Some of the regional smart specialisation strategies also identify similar priority areas (e.g. renewable energy, low-carbon economy, sustainable energy, advanced construction materials). At this stage, at least EUR 453 million is foreseen for investments in R&I and adoption of low-carbon technologies in Poland, but this might increase further in line with the evolving content of the smart specialisation strategy.