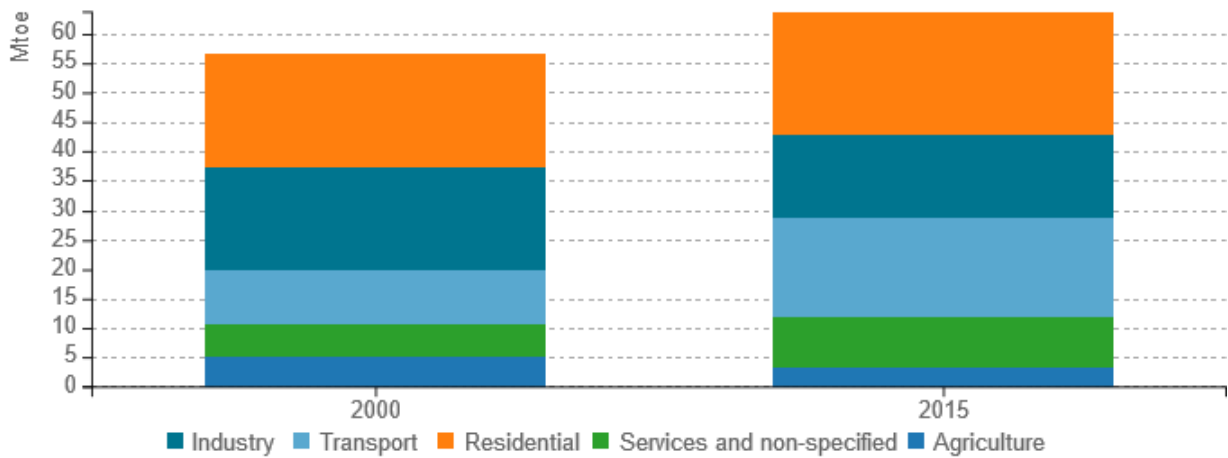


# Energy efficiency trends and policies

## Overview

Final energy consumption in Poland was increasing by 0.8%/year from 2000 reaching 64 Mtoe in 2015 (at normal climate). The biggest consumer was the household sector, which share amounted to 32% in 2015, followed by transport with 27% share. Energy use of third biggest consumer - industry - decreased by around 1.2%/year during given period and accounted for 22% of final energy consumption in 2015. Service sector, due to a rapid growth of consumption (+2.9%/year) increased its share to 13.5% of total final consumption.

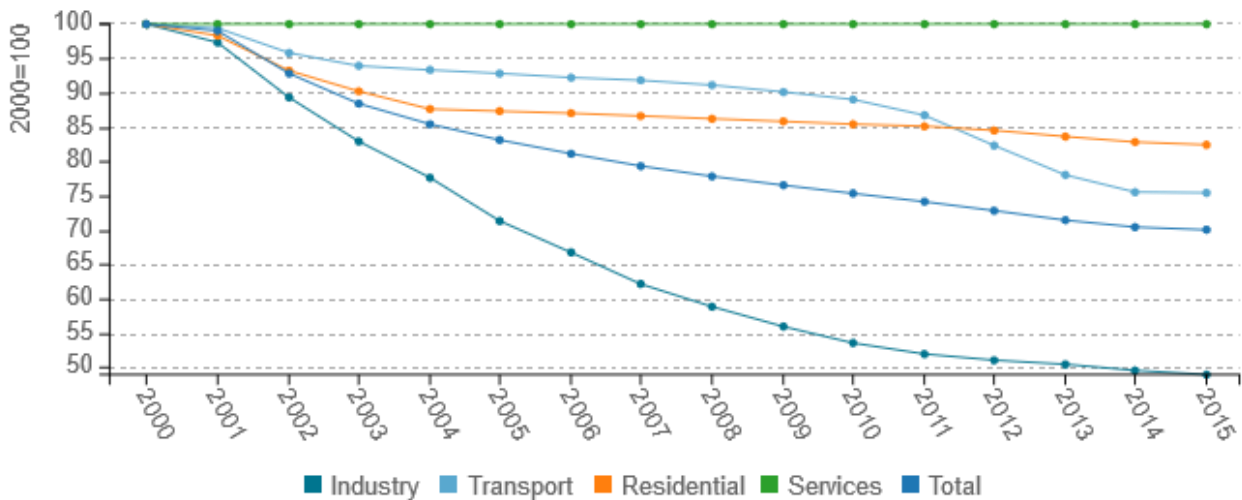
Figure 1: Final energy consumption by sector (normal climate)



Source: ODYSSEE

Energy efficiency in Poland was improving by 2.2%/year over the period 2000-2015. Most progress was registered during the first half of the period (3.3%/year during 2000-2007 in comparison with 1.5%/year over 2007-2015). The most significant improvement was achieved in industry, where energy efficiency improved by 4.7%/year. In the residential sector, we can observe few progress since 2004 (0.6%/year) prior to 3.3%/year from 2000 to 2004. Energy efficiency of transport was improving by 1.2%/per year until 2010, with an acceleration since (3.3% /year).

Figure 2: Technical Energy Efficiency Index



Source: ODYSSEE

Table 1: Sample of cross-cutting measures

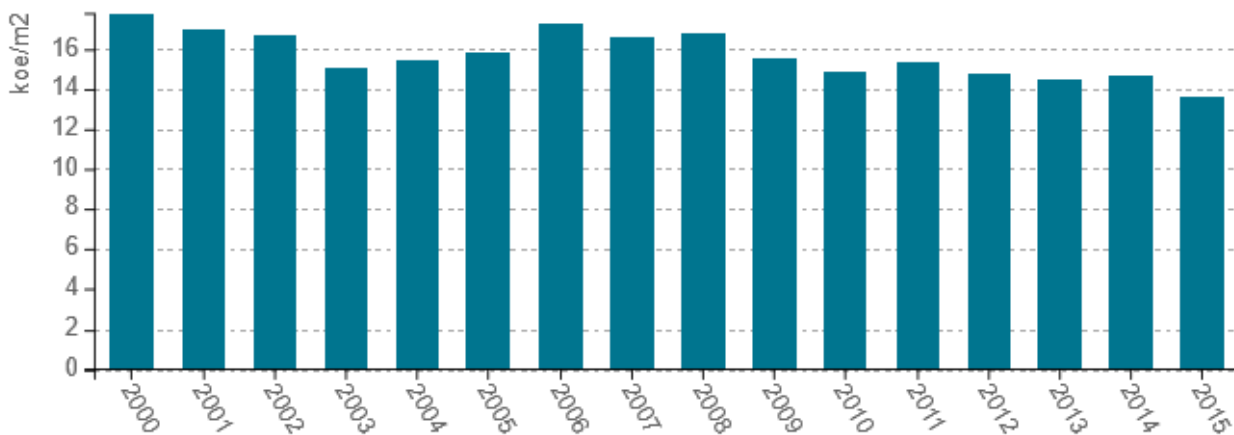
Measures	NEEAP measures	Description	Expected savings, impact evaluation	More information available
Energy efficiency improvement scheme (White Certificates) under the Energy Efficiency Law (EEL)	yes	The EEL requires energy sales companies, which sell energy to final customers to obtain energy efficiency certificates, hereinafter referred to as „white certificates”, and submit those certificates for redemption to the President of the Energy Regulatory Office White certificate could be obtained for measures improving energy efficiency in 3 categories: (i) increasing energy savings by end-users; (ii) increase energy savings by energy producers from devices used for their production needs; (iii) reducing the electricity, heat or natural gas loss in transmission or distribution.	Assumed 2,2 Mtoe of primary energy savings up to 2020.	<a href="#">Link</a>

Source: MURE

### Buildings

Energy consumption per m2 in households with climatic correction was decreasing on average by 1.8% per year in years 2000-2015. After being quite stable until 2006, the energy consumption per m2 has decreased by around 2,6%/year from 2006 to 2015. Energy consumption for water heating reaches 0.2 toe/dwelling (16% of total consumption), 0.1 toe/dwelling for cooking (8.3%) and 0.13 toe/dwelling for electrical appliances (10.0%). Consumption for water heating and cooking have been stable over years while consumption of electrical appliances grew by 1.3%/year.

Figure 3: Energy consumption of space heating per m2



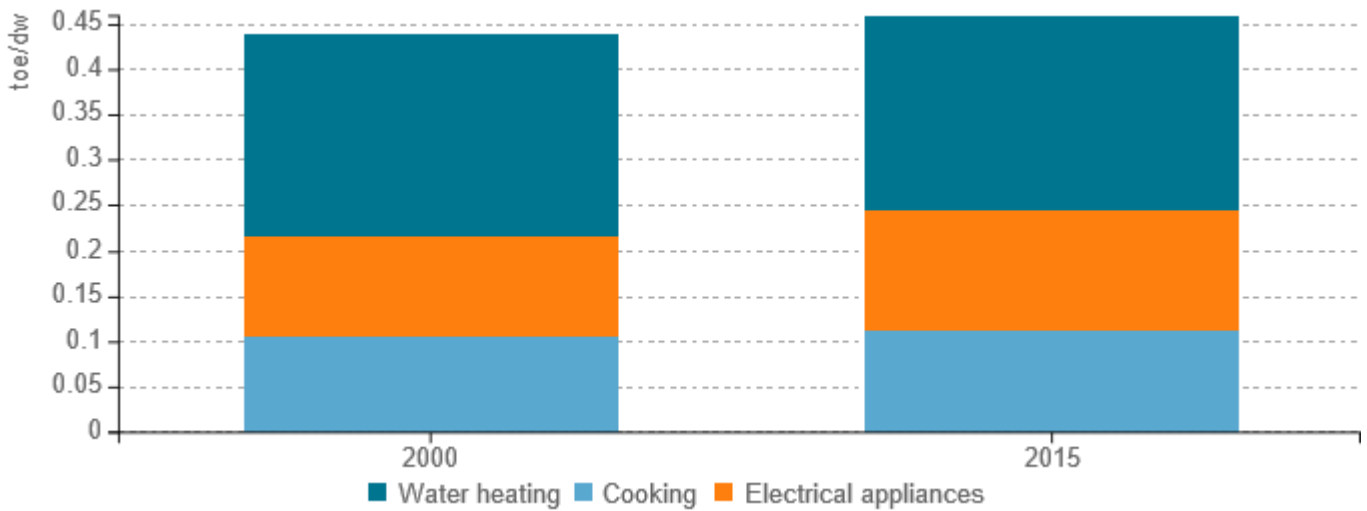
Source: ODYSSEE



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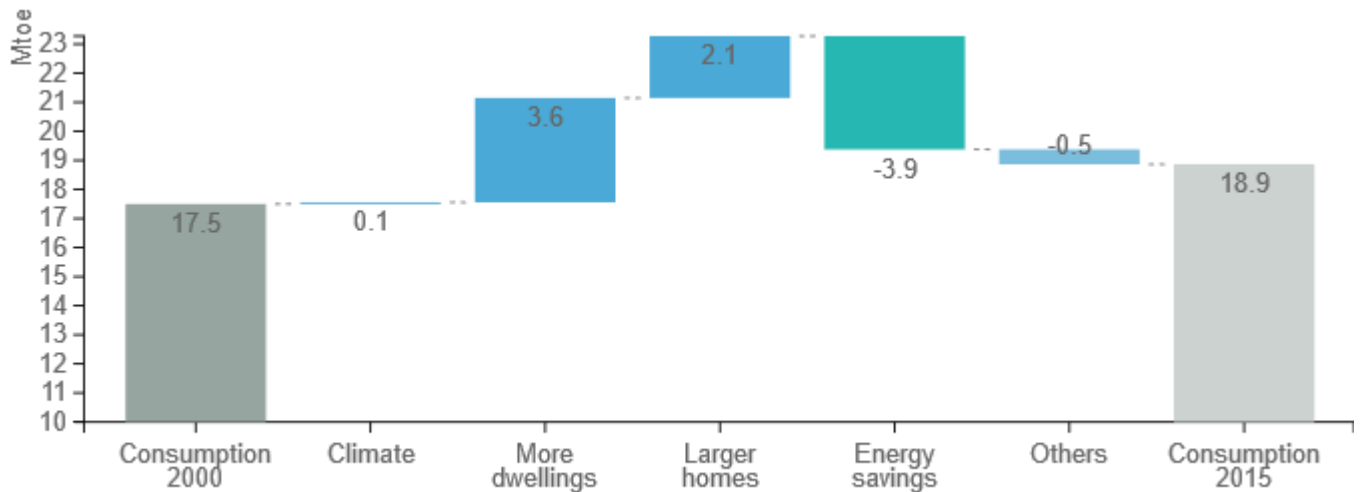
Figure 4: Energy consumption by end-use per dwelling



Source: ODYSSEE

Energy consumption in households grew by 1.4 Mtoe between 2000 and 2015. More and larger dwellings were the major factors influencing the consumption increase (by 3.6 Mtoe and 2.1 Mtoe respectively). Achieved energy savings (3.9 Mtoe) have partially offset the growing number of dwellings and larger homes.

Figure 5: Main drivers of the energy consumption variation in households

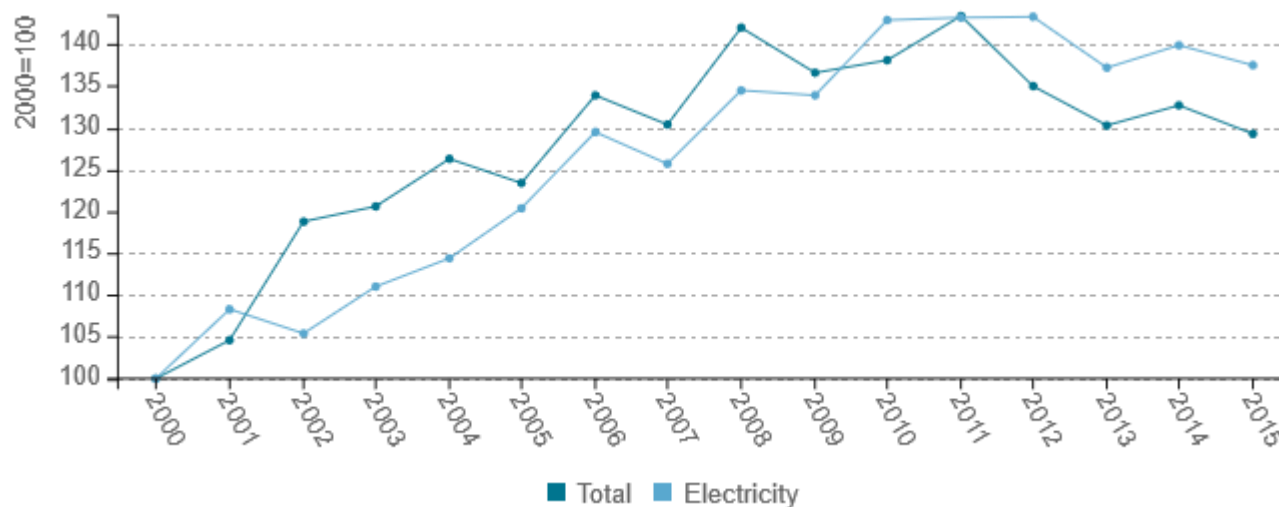


Source: ODYSSEE

Both energy and electricity consumption per employee were growing after 2000: on average energy consumption is 35% higher in 2015 compared to 2000. Since 2011, energy consumption per employee tends to decrease due to fast employment growth accompanied with little energy consumption increase. For electricity the decrease is less important due to more electrical equipment but often more efficient.



Figure 6: Energy and electricity consumption per employee (normal climate)



Source: ODYSSEE

Table 2: Sample of policies and measures implemented in the building sector

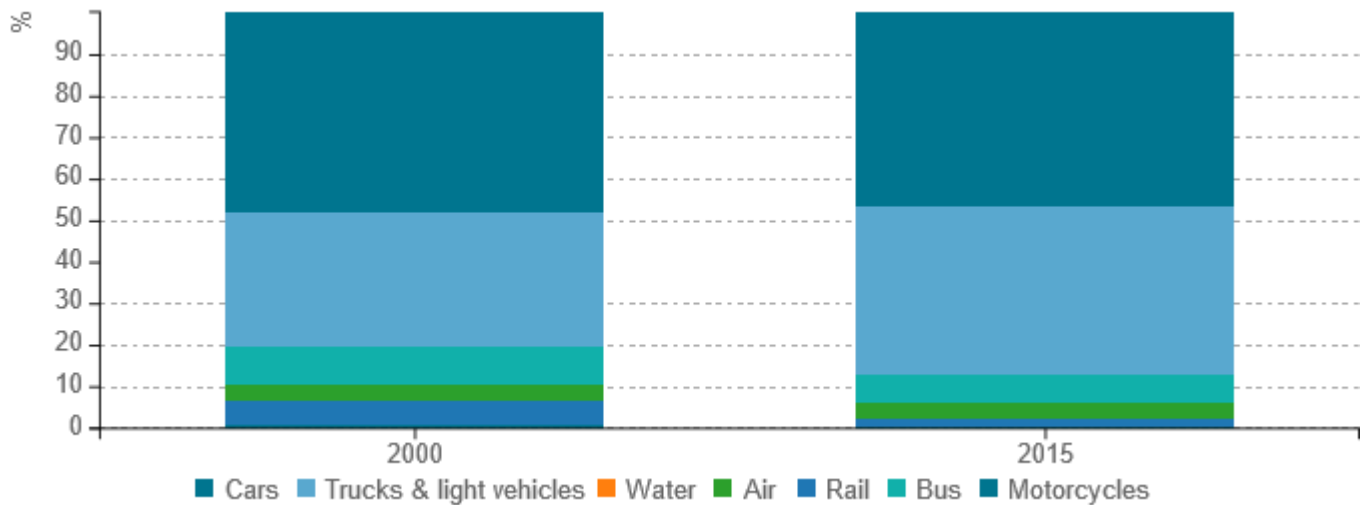
Measures	Description	Expected savings, impact evaluation	More information available
Priority Programme Improvement if Air Quality	The aim of the programme is to reduce/avoid CO2 emission in public buildings by reducing energy consumption and RES deployment. Realisation of programme is predicted for years 2016-2022.	Reduction of primary energy consumption 562900 GJ/year; CO2 reduction of 47200 Mg/year	<a href="https://www.nfosigw.gov.pl/">https://www.nfosigw.gov.pl/</a>
Thermo-modernization and Renovation Fund	The Fund's primary objective is to provide financial assistance to investors undertaking thermo-modernization and repair projects and to pay compensation to owners of residential buildings.	The fund is functioning from 1999. The value of cumulated energy savings predicted for 2020 is 9444 GWh.	<a href="https://www.bgk.pl/files/public/Pliki/Fundusze_i_programy/FTiR/">https://www.bgk.pl/files/public/Pliki/Fundusze_i_programy/FTiR/</a>

Source: MURE

**Transport**

Highest consumption in transport was achieved by cars (representing 47% of the sector’s consumption in 2015) followed by trucks (40% share in 2015 in comparison with 32% in 2000). The share of air remained unchanged (4 %). Bus represented 7% of the consumption and 0.3% for motorcycles in 2015.

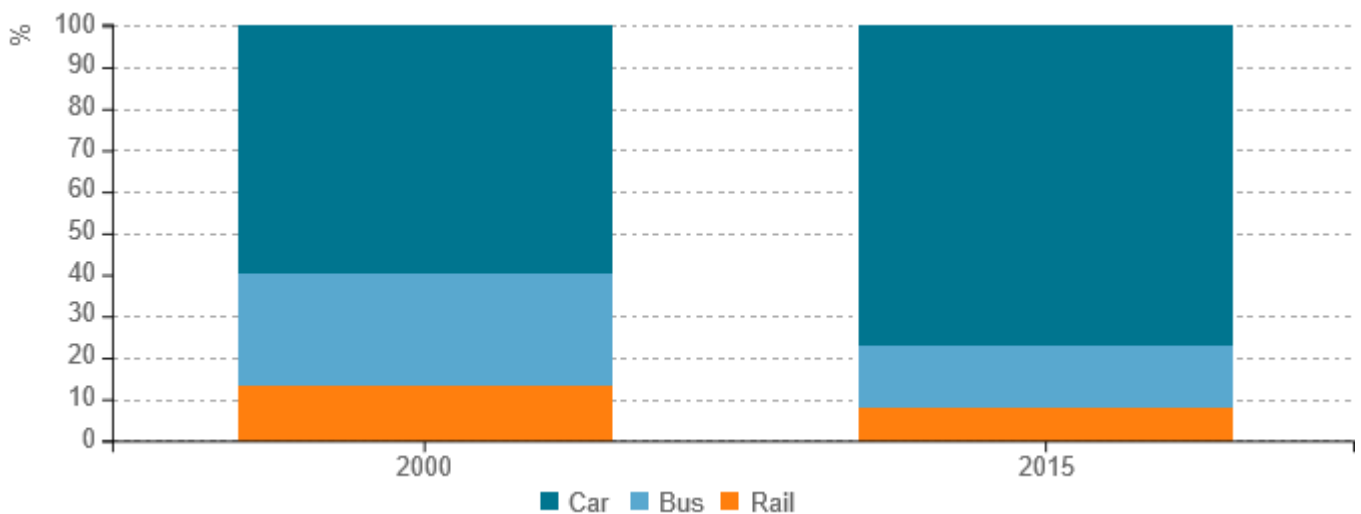
*Figure 7: Split of the transport energy consumption by mode*



Source: ODYSSEE

During 2000-2015 period the shift towards bigger private cars is observed. The traffic of cars was increasing since 2000 (by 2.9%/year). The share of public transport (in total passenger traffic) decreased from 27% to 15% in case of buses and from 13% to 8% in case of trains.

*Figure 8: Share of transport in passenger traffic*

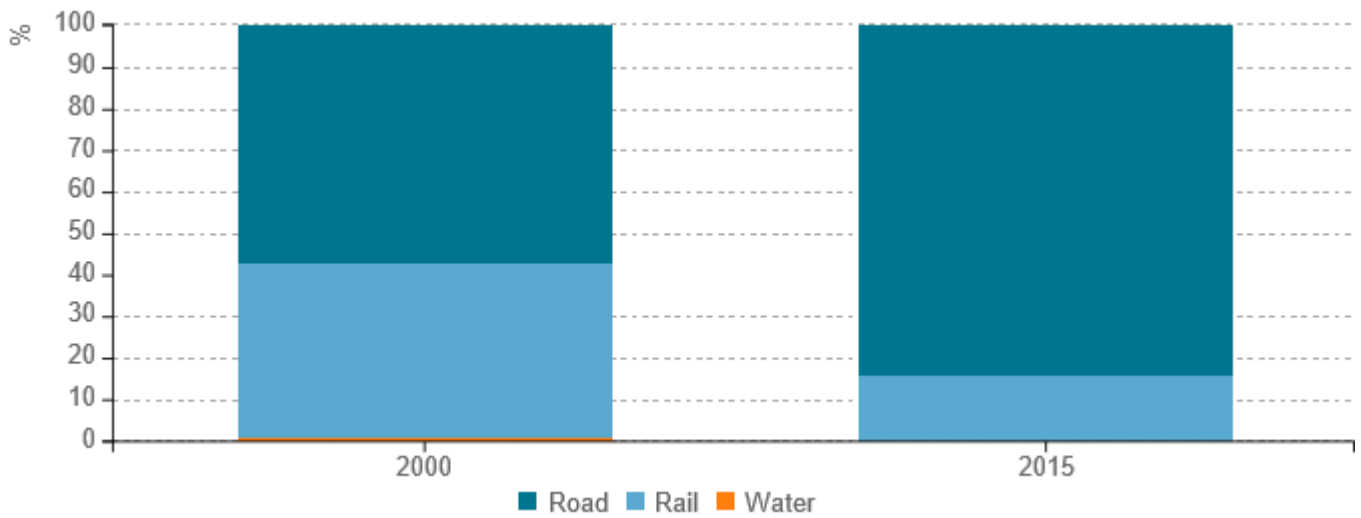


Source: ODYSSEE

Road freight transport was developing very rapidly since 2000 and its share in total freight traffic grew from 57% in year 200 to 84% in 2015. At the same time the use of trains decreased in absolute terms by 7% but its share fell from 42% to 16%. Water freight transport is marginal in Poland.



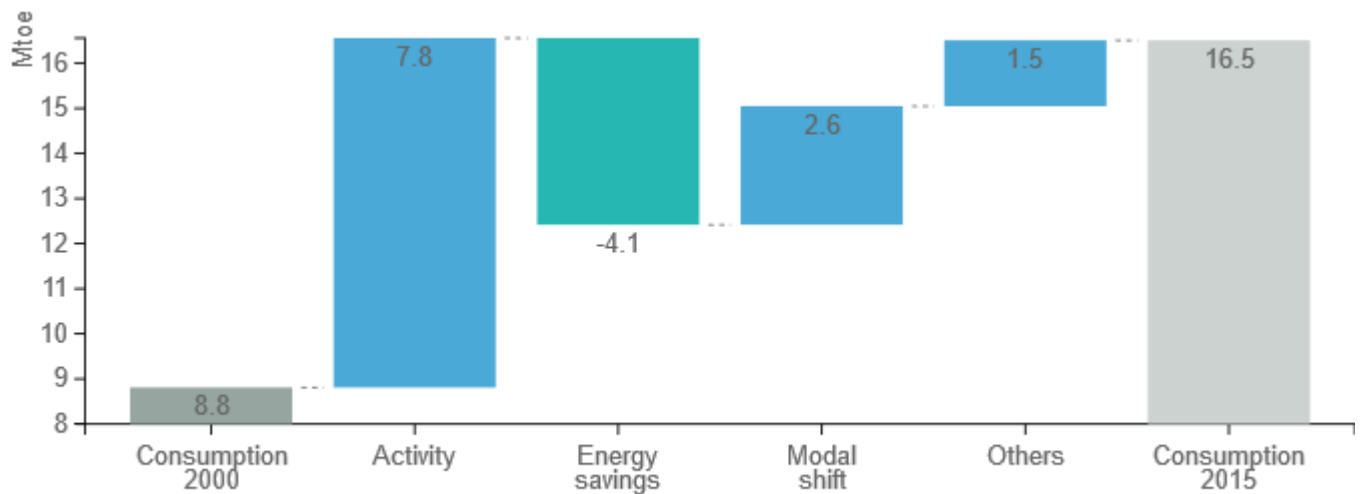
Figure 9: Share of modes in freight traffic



Source: ODYSSEE

Transport energy consumption has almost doubled since 2000 mainly driven by the effect of the growth in traffic (for passenger and goods) and modal shift from public vehicles to private cars and from trains to road in case of goods. Energy savings (4.1 Mtoe) counterbalanced partially the effect of these 2 factors.

Figure 10: Main drivers of the energy consumption variation in transport



Source: ODYSSEE



Table 3: Policies and measures into force in the transport sector

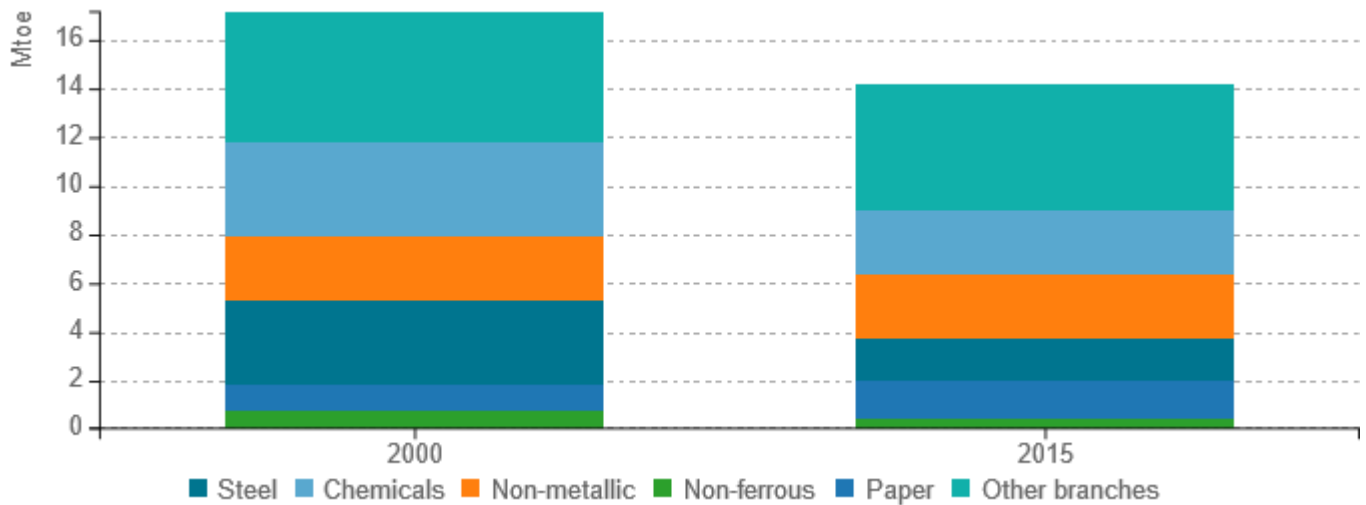
Measures	Description	Expected savings, impact evaluation	More information available
GEPARD - Emission free public transport	In framework of Green Investment Scheme. The aim is to avoid air pollutants emission by lowering the energy and fuel consumption in public transport. Period of realisation: 2017-2020. Budget: 200 mln PLN.	CO2 reduction - at least 3600 Mg/year; NOx - 30,3 Mg/year; benzoapyrene: 0,000027 Mg/year.	<a href="#">Link</a>

Source: MURE

### Industry

The share of three biggest energy consuming industries (chemical, non-metallic minerals, steel) has decreased from 58% in 2000 to 49% in 2015. Non-metallic minerals consumption remained almost unchanged and became supreme, while chemicals and steel with consumption down by 32% and 50% respectively became second and third largest energy consumer.

Figure 11: Final energy consumption by branch

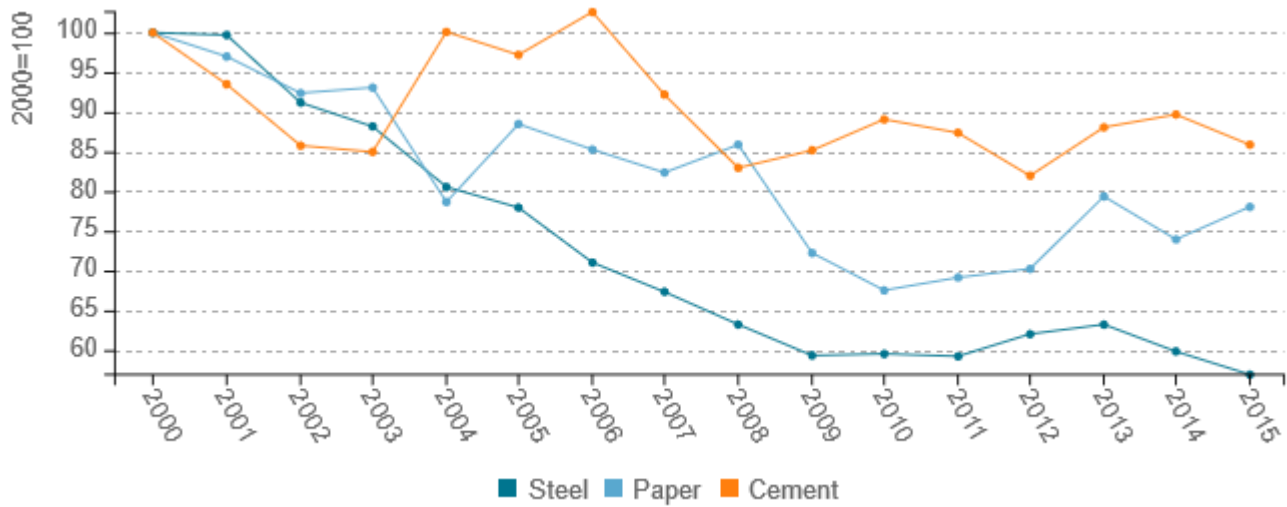


Source: ODYSSEE

Unit consumption of steel decreased by 43% since 2000, despite little improvement since 2009. Since this date, the production was increasing by 4.2%/year, contrary to the consumption which was increasing slower (3.5%/year). Unit consumption of cement is irregular, with a more stable trend since 2008.



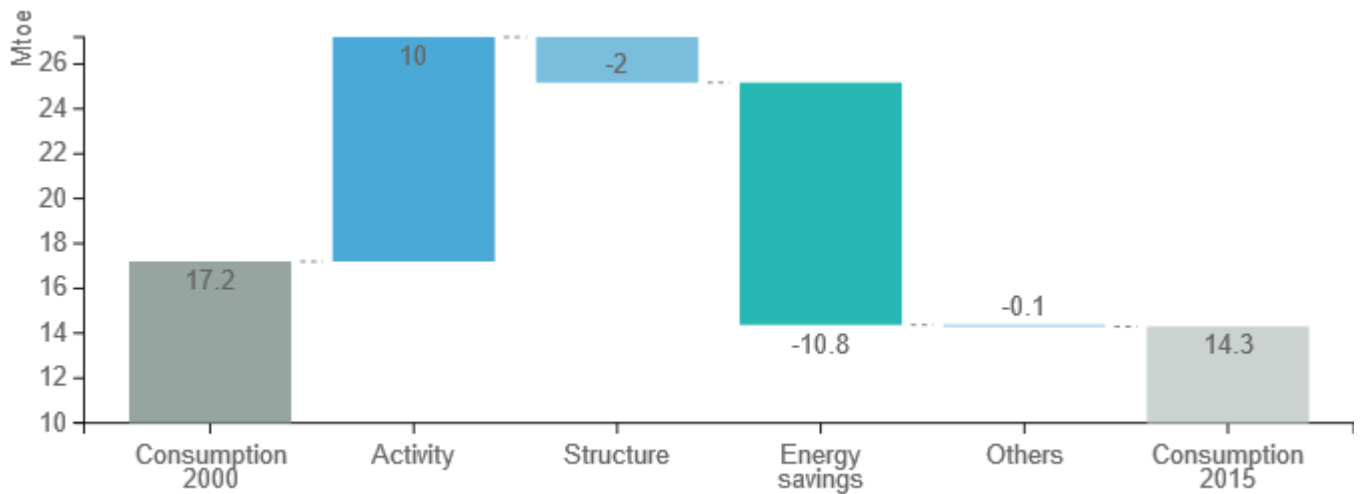
Figure 12: Unit consumption of energy-intensive products (toe/t)



Source: ODYSSEE

Growth of activity in industrial branches contributed to increase the energy consumption since 2000 (+10 Mtoe). On the opposite energy savings (11 Mtoe) and structural changes (towards less energy intensive production) led to decrease the consumption. As a result, energy consumption of industry has decreased by 1.2%/year since 2000.

Figure 13: Main drivers of the energy consumption variation in industry



Source: ODYSSEE





Table 4: Policies and measures into force in industry

Measures	Description	Expected savings, impact evaluation	More information available
Improvement of Energy Efficiency Part 3 - Energy efficiency Investments in SMEs	Priority measures, which are being undertaken: investments resulting 20% of energy savings, thermo-modernisation of buildings, renewables deployment.	Reduction of primary energy consumption – 102630 MWh	<a href="#">Link</a>
Infrastructure and Environment Operation Programme 2014-2020 (activity 1.2) – Support for Energy Efficiency and Renewables Deployment in industrial enterprises	Modernisation and development of production lines of improved energy efficiency; Deep thermo-modernisation of industrial buildings; Technologies improvement; Modernization of local heat generators, including RES deployment; Heat recovery adaptation.	Budget: 150,32 million EURO (from Coherent Fund)	<a href="#">Link</a>

Source: MURE

