

Energy efficiency in the years 2011–2021

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↑ 0.5%

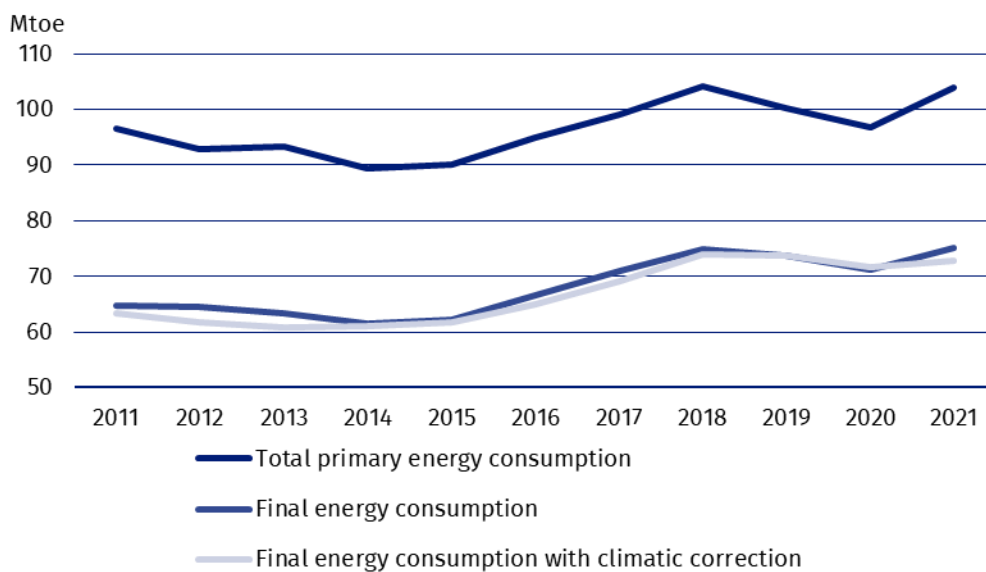
An increase of energy efficiency in Poland in 2021 compared to 2020.

Poland's energy efficiency increased by 0.5% in 2021 compared to 2020. Between 2011 and 2021, the annual cumulative growth rate of energy efficiency amounted to 0.9%. Primary energy intensity of GDP decreased by an average of 2.6% per year during this period, while final energy intensity of GDP decreased by 1.5%. The fastest rate of energy efficiency improvement was observed in transport (by 2.3%).

Total primary energy consumption increased between 2011 and 2021 from 96.6 Mtoe to 104.0 Mtoe (i.e. cumulative annual growth rate - 0.7%). In contrast, **final energy consumption increased** from 64.7 to 75.2 Mtoe during the analysed period (i.e. a cumulative annual growth rate of - 1.5%). Both total and final consumption reached its peak in 2018 (104.1 Mtoe and 74.9 Mtoe respectively).

In 2021 total primary energy consumption amounted to 104.0 Mtoe, while final energy consumption to 75.2 Mtoe

Chart 1. Total primary energy consumption and final energy consumption



Primary energy intensity of GDP in 2021 increased by 10.5% compared to the previous year, while **final energy intensity of GDP** increased by 9.8%.

Compared to 2011, the primary energy intensity of GDP in 2021 decreased by 20.3% and final energy intensity of GDP by 13.8%. With climatic corrections, the rate of improvement was slightly higher (21.0% and 15% respectively).

Table 1. The annual cumulative growth rate of energy efficiency of GDP (%/year)

Rate of improvement	2012–2016	2017–2021	2012–2021
Primary energy intensity of GDP	-3,98	-0,49	-2,25
Primary energy intensity of GDP with climatic corrections	-3,95	-0,70	-2,33
Final energy intensity of GDP	-3,31	0,38	-1,48
Final energy intensity of GDP with climatic corrections	-3,26	0,07	-1,61

Households

In 2021 household energy consumption accounted for 20.2% of final energy consumption. The most commonly consumed energy carrier was solid fossil fuels with a share of 21.9% in 2021. This was followed by natural gas (20.6%), heat (18.3%) electricity (11.9%) liquid fuels (2.8%). The consumption of other energy carriers, which included solid biofuels and ambient heat, was 24.4%. The consumption of other energy carriers, which included solid biofuels and ambient heat, amounted to 24.4%.

The most important direction of energy use was space heating, with a 65.4% share in 2021. Water heating consumed 17.1% of energy, lighting and electrical appliances 9.2% and preparing meals 8.3%.

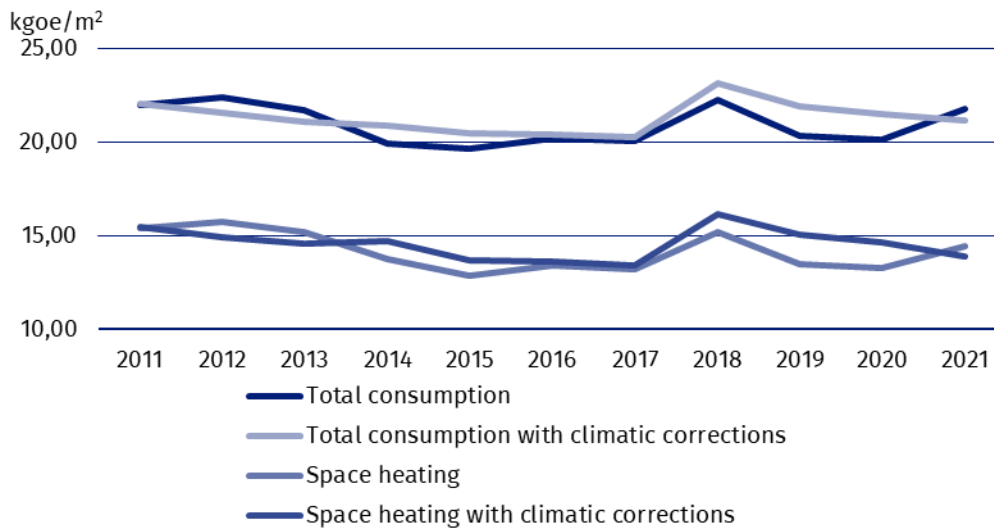
Table 2. Structure of energy consumption in households by directions of use in 2016–2021 (%)

Specification	2016	2017	2018	2019	2020	2021
Total	100.0	100.0	100.0	100.0	100.0	100.0
Space heating	66.5	66.1	68.5	66.4	66.1	65,4
Water heating	15.9	16.2	15.5	16.1	16.3	17.1
Cooking	8.0	8.0	7.4	8.1	8.1	8.3
Lighting and electrical appliances	9.7	9.7	8.6	8.7	9.3	9.2

In 2021 space heating accounted for 65.4% of energy consumed by households

The household energy consumption rate per m² showed a decreasing trend. The volume of consumption in 2021 amounted to 21.8 kgoe/m², compared with 22.0 kgoe/m² in 2011 (cumulative annual decrease of 0.1%/year). Adjusted for climatic corrections, consumption per m² decreased by 0.4%/year.

Chart 2. Energy consumption in households per m²



Industry

Final energy consumption in industry reached its lowest value in 2012 (14.8 Mtoe). In the following years slight fluctuations in consumption were observed, with a significant increase from 2016 onwards, up to 17.9 Mtoe in 2019. In 2021, energy consumption in industry increased by 2.3% in comparison to the previous year and amounted to 17.3 Mtoe.

In 2021, compared to 2011, consumption of electricity increased by 27.6%. Increases were also recorded in the consumption of natural gas (by 33.6%), heat (by 53.6%) and other energy carriers (by 40.3%). A decrease in consumption of liquid fuels (down 4.9%) and coal (down 18.4%) was also observed.

The highest rate of reduction in energy intensity of value added in 2021 compared to 2012 was recorded in the machinery and mineral industry, slightly lower in the primary metals, and the lowest in the textile industry.

Table 3. Average annual rate of changes of energy intensity of industry in the years 2012–2021 (in %)^a

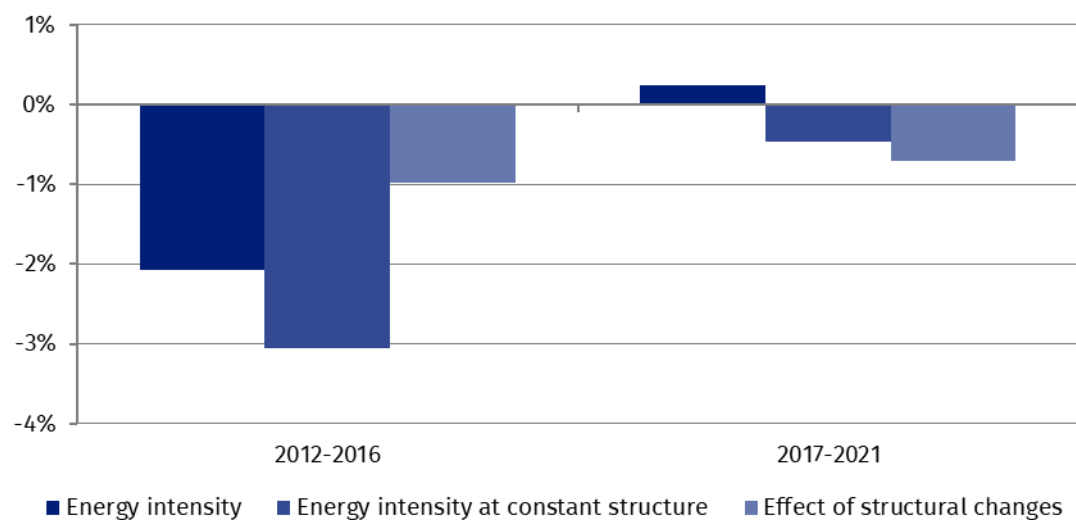
Specification	Average annual rate of changes
Food	-1,4
Textile	-0,2
Wood	-1,4
Paper	-1,5
Chemical	-1,4
Mineral	-3,7
Primary metals	-3,1
Machinery	-4,1
Transport equipment	-0,8
Other	-2,1

^a Provisional data

Between 2017 and 2021, the cumulative growth rate of energy intensity of manufacturing industry amounted to 0.25%/year. Structural changes contributed to its decrease by 0.7%/year, while energy intensity in a fixed structure, i.e. after eliminating the impact of changing shares of individual industries in the total volume of manufacturing industry, decreased by 0.5%/year.

Between 2017 and 2021, structural changes resulted in a reduction in the energy intensity of the manufacturing industry by 0.7%/year

Chart 3. Energy intensity of manufacturing – role of structural changes (%/year)

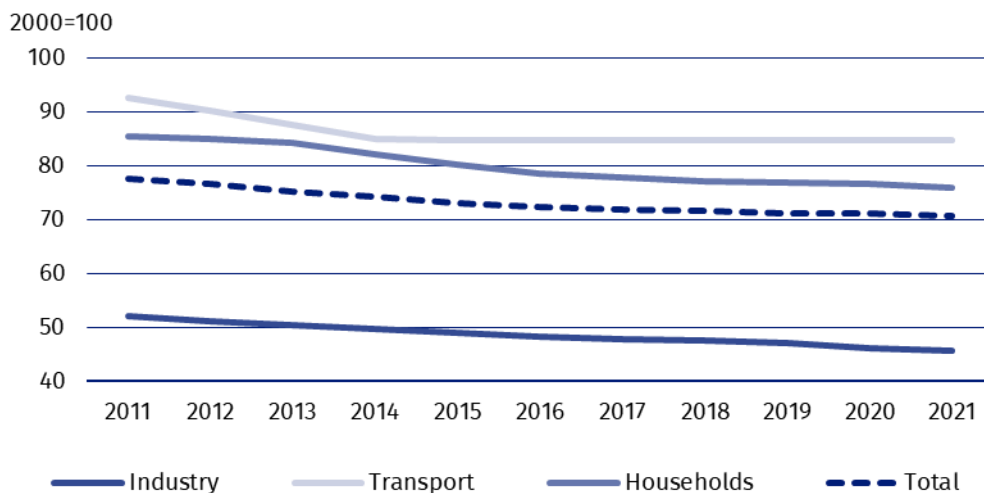


ODEX indicator

The ODEX indicator (base year 2000=100) decreased from 77.5 to 70.7 points between 2011 and 2021. The cumulative rate of improvement amounted to 0.9%/year. The fastest rate of improvement (by 1.3%/year) was in industry, for which the value of indicator was 45.7 points in 2021. The slowest rate of improvement was observed in the transport sector, where the annual improvement between 2012 and 2021 amounted to 0.9%. In the household sector, the average rate of improvement was 1.2%, with the value of indicator of 75.9 points.

The fastest rate of improvement (1.3%/year) was recorded in industry, the slowest - in transport (0.9%/year)

Chart 4. ODEX indicator



Decomposition of energy consumption

The largest impact on the change in consumption came from economic activity contributing to an increase in energy demand by 11.7 Mtoe in 2021 compared to 2011. For households, the factors contributing to the increase in energy demand were an increase in the number of dwellings and a change in lifestyle (larger dwellings) as well as weather conditions. Structural changes in industry reduced energy consumption by 0.4 Mtoe, while transport increased by 1.6 Mtoe. Energy savings amounted to 5.8 Mtoe, the largest was achieved in households (2.4 Mtoe). Weather conditions increased energy consumption by 1 Mtoe and other factors decreased energy consumption by 0.1 Mtoe.

Economic activity had the greatest impact on the increase in energy demand

Table 4. Influence of factors on the change in final energy consumption from 2011 to 2021 (Mtoe)

Specification	Industry	Households	Transport	Services	Agriculture	Total
Consumption change	2,4	1,7	6,1	0,0	0,1	10,3
FACTORS						
Activity	5,2	-	3,8	3,2	-0,5	11,7
Stock of dwellings	-	1,3	-	-	-	1,3
Lifestyle	-	1,1	-	-	-	1,1
Structural changes	-0,4	-	1,6	-	-	1,2
Energy savings	-2,0	-2,4	-1,4	0,0	-	-5,8
Weather conditions	-	0,7	-	0,3	-	1,0
Others	-0,5	1,1	2,1	-3,4	0,5	-0,2

When quoting Statistics Poland data, please provide information: "Source of data: Statistics Poland", and when publishing calculations made on data published by Statistics Poland, please provide information: "Own study based on Statistics Poland data".







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Data available in databases

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Terms used in official statistics

[Primary energy](#)

[Derived energy](#)

[Energy consumption](#)