

Poland

Energy efficiency report



Objectives: 67.2 TWh of energy savings by 2016, including 2.9 TWh in industry

Overview	2011		2000-2011 (%/year)	
Primary intensity (EU=100) ¹	128	-	-2.5%	+
CO ₂ intensity (EU=100)	184	--	-3.1%	++
CO ₂ emissions per capita (in tCO ₂ /cap)	8.3	-	0.8%	--
Power generation	2011		2000-2011 (%/year)	
Efficiency of thermal power plants (in %)	32	-	0.0%	-
Rate of electricity T&D losses (in %)	8.4	-	-2.8%	++
CO ₂ emissions per kWh generated (in gCO ₂ /kWh)	731	--	-0.1%	-
Industry	2011		2000-2011 (%/year)	
Energy intensity (EU=100)	81	+	-6.4%	++
Share of industrial CHP in industrial consumption (in %)	19	+	0.8%	-
Unit consumption of steel (in toe/t)	0.306	-	-4.1%	++

*2010 and 2000-2010 for steel

++ Among the best performing countries + Above the EU average¹ - Below the EU average¹ --Among the worst performing countries

Latest update: February 2013

¹ The European Union, as the best performing region, is used as the benchmark.

1. Overview

1.1. Policies: 5.8 Mtoe of energy savings in 2016 (or 11%)

The second National Energy Efficiency Action Plan (NEEAP) lays down a final energy savings target of 11 percent by 2016 (5.8 Mtoe or 67.2 TWh), 38 percent of which should be achieved through the white certificate system, 19 percent through existing informational campaigns, 24 percent in the transport sector, 12 percent in the residential sector (Thermo-Modernization Program), 4 percent in industry and 3 percent in the public sector. This target was raised compared with the first NEEAP that set a target of 4.6 Mtoe in 2016 (53.5 TWh).

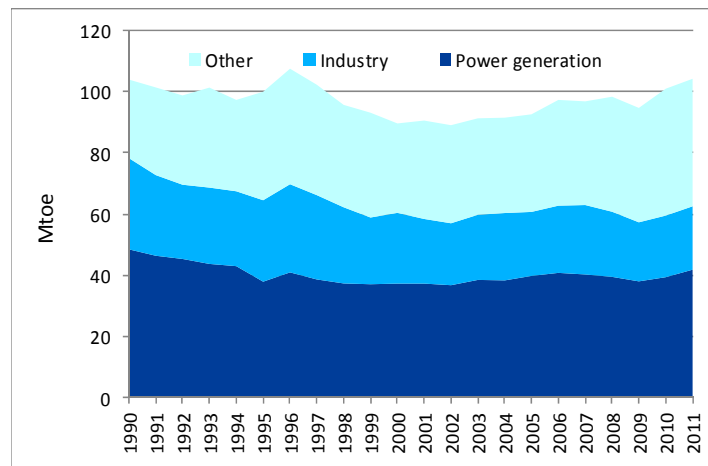
The Energy Efficiency Act was adopted in April 2011. The key measure is the introduction of white certificates as of 2013, imposed on companies that sell electricity, gas or heat. White certificates will be provided for energy consumption reduction by end users (about 80 percent), by generators (10 percent) and by electricity network operators (10 percent). The first tender for white certificates (550,000 toe) was announced in December 2012; offers had to be filed to the energy regulator URE by 30 January 2013.

The Energy Policy until 2030 (adopted in 2009) aims to achieve “zero-energy” economic growth by 2030 (ie raising the GDP without increasing energy consumption) and to reduce Poland's energy intensity to the EU-15 average.

1.2. Energy consumption trends: cut in industry's share

Poland's primary energy consumption per capita is 17 percent lower than the EU average, at 2.7 toe in 2011. Total energy consumption has increased by 1.4 percent/year, on average, since 2002.

Figure 1: Energy consumption trends by sector



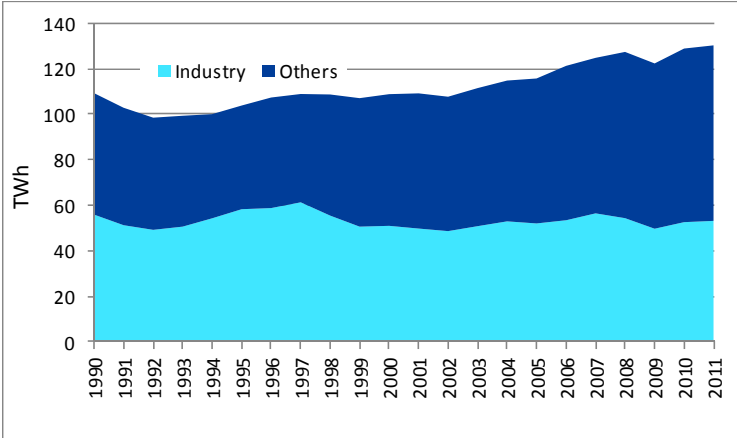
Source: Enerdata

The share of the power sector in total energy consumption has remained stable at around 40 percent (2011) over the last few years. The share of industry (including non-energy uses) fell from 29 percent to 20 percent following industrial closures.

Over the period 1990-2011 the share of coal and lignite in final energy consumption dropped from 31 percent to 18 percent, to the benefit of oil (34 percent of total consumption in 2011 compared with 17 percent in 1990) and natural gas (15 percent compared with 12 percent in 1990).

Poland's electricity consumption per capita reached 3,400 kWh in 2011, which is about 40 percent below the EU average. Total electricity consumption has been growing since 2000, at a rate of 1.6 percent/year, on average. This growth was propelled by the residential and service sector that now accounts for 57 percent of the electricity demand. Industrial electricity consumption remained roughly stable until 2000, and then decreased from 46 percent to 41 percent in 2011. The share of electricity in final energy consumption is increasing slowly: in 2011 it stood at about 15 percent, compared with 13 percent in 1990.

Figure 2: Electricity consumption trends by sector

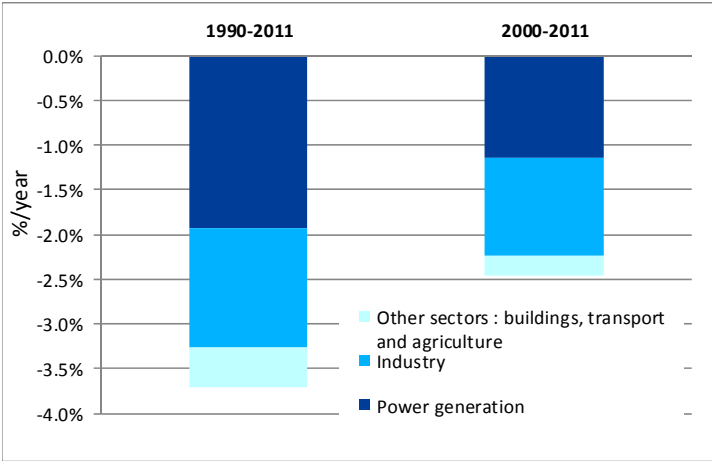


Source: Enerdata

1.3. Energy efficiency trends: rapid improvements over the 1990-2011 period

Total energy intensity (total energy consumption per unit of GDP) fell very rapidly in Poland, and much faster than the EU average: it dropped by 2.5 percent/year between 2000 and 2011 (and by 5.1 percent over the period 1990-2000). The power and industry sectors contributed equally to most of that reduction (around 90 percent).

Figure 3: Energy intensity trends



Source: Enerdata

2. Power generation

2.1. Policies: white certificates and promotion of CHP

In 2011 a white certificate system was implemented for energy companies selling energy to end consumers in Poland. As of 2013, those companies are obliged to present white certificates to the regulation office (URE), and to pay fees according to the number of missing white certificates. The certificates are awarded through yearly tenders, for projects achieving energy savings of at least 10 toe/year; 10 percent of the savings should be obtained in power generation and another 10 percent in electricity networks.

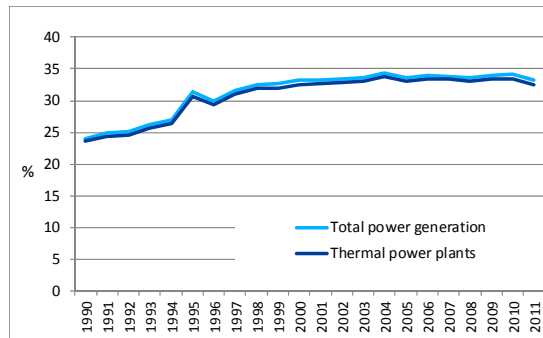
Poland aims to double power generation through highly efficient cogeneration technology between 2006 and 2020. The Energy Law of 1997 was amended in 2005 to introduce certificates of origin for CHP as well as a purchase obligation for energy distributors. Facilities included in this scheme are CHP installations fuelled by gas or with capacities under 1 MW ("yellow certificates") and other CHP installations ("red certificates").

Since 2009, the National Fund for Environmental Protection and Water Management (NFOSiGW) has made up to 1.5 billion zlotys (about 470 million dollars) in special funding available to support renewable and high-efficiency CHP projects. In January 2013, the Government approved a draft law to extend financial support for gas- or coal-fired CHP installations of up to 1 MW until March 2015; the existing support was due to end in March 2013.

2.2. Efficiency of the power sector: strong improvements during the 90s

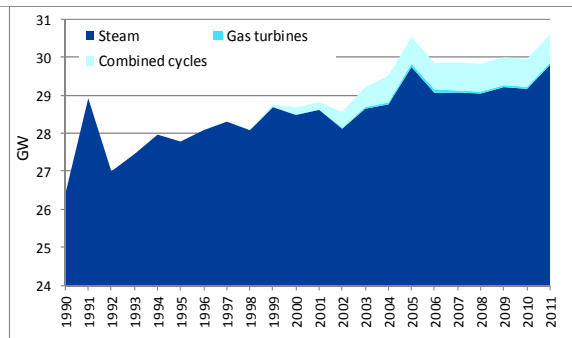
The efficiency of the electricity sector improved dramatically between 1990 and 2000, rising from 24 percent to 33 percent (stable until 2011). The introduction of gas-fired capacity is still limited (only 770 MW in 2011).

Figure 4: Efficiency of power generation and thermal power plants



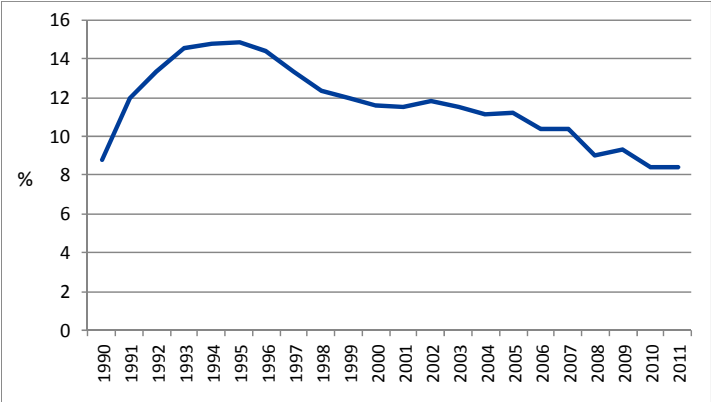
Source: Enerdata

Figure 5: Thermal electricity capacity, by technology



The rate of T&D losses in Poland is 8.4 percent (2011). It increased rapidly and reached 15 percent in 1995, but has dropped by 6 percentage points since then. Nevertheless, Poland's T&D losses are still among the highest in Europe (29 percent higher than the European average).

Figure 6: Electric T&D losses



Source: Enerdata

3. Industry

3.1. Policies: energy audits and co-financing of energy-efficiency investments

The second NEEAP (2011) aims to achieve 2.9 TWh of energy savings in the industrial sector and in SMEs by 2016. The National Fund NFOSiGW has designed two main measures to reach this target: grants for energy audits in companies with an annual consumption over 50 GWh and co-financing of investments in energy efficiency projects. The funding program for energy audits will be implemented until the end of the year 2014 with a budget of 40 million zlotys (about 13 million dollars); it will cover processes, buildings and energy consumption audits. The funding of investments for energy management systems and the modernization of industrial processes will be implemented until the end of the year 2015, with a budget of 780 million zlotys (245 million dollars).

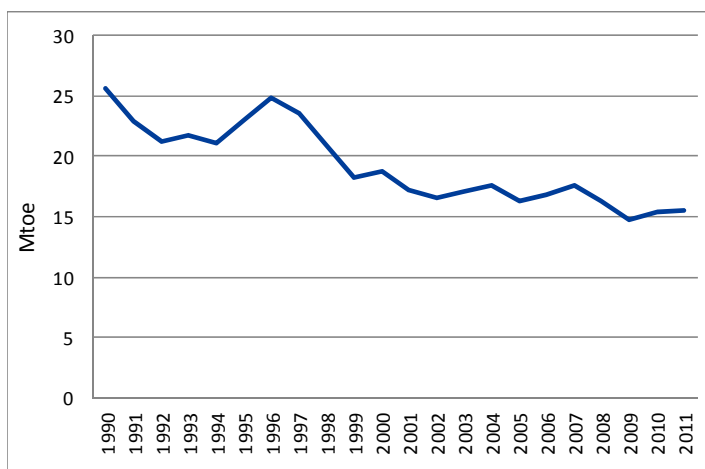
Voluntary agreements (coupled with the white certificate system) are under consideration.

Two other energy efficiency measures were already in place in industry, namely the Polish Energy Efficient Motor Program (PEMP) and the activities of the Energy Conservation Technology Centre (ECTC). The PEMP, a five-year program (2004-2009), was focused on energy-efficient motors in the manufacturing industry, the heating sector, water supply and mining. The ECTC is a joint project with the Japanese Government to promote energy conservation technologies in the Polish industrial sector.

3.2. Energy consumption trends: sharp drop since 1996

Industrial energy consumption decreased by 39 percent between 1990 and 2011, reducing its share in final energy consumption from 40 percent to 23 percent in 2011. This sharp drop is bound to the rapid deindustrialization observed in Poland since 1990 (the share of industry in the GDP fell from 50 percent in 1990 to 32 percent in 2010).

Figure 7: Trends in industrial energy consumption

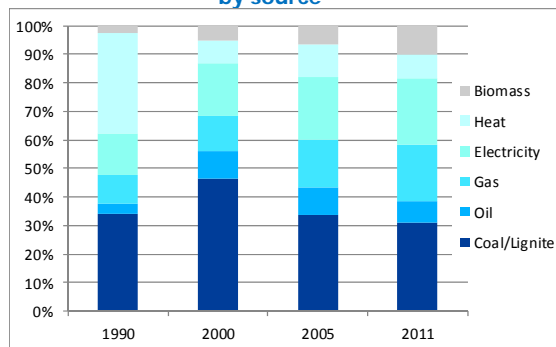


Source: Enerdata

Electricity consumption remained relatively stable between 1990 and 2011, but its share in the energy consumption of the industrial sector rose from 14 percent in 1990 to 23 percent in 2011. The share of coal and lignite dropped from 58 percent to 31 percent, while the share of gas consumption has been rising rapidly, from 8 percent in 1992 to 20 percent in 2011. Biomass represented 10 percent of industrial energy consumption in 2011.

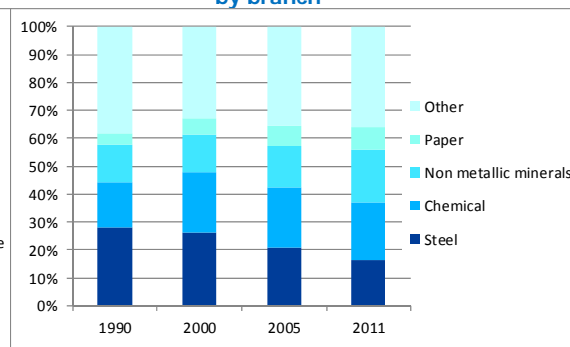
The share of energy-intensive industries (steel, chemical, paper and non-metallic minerals) has remained stable since 2000, at around 2/3 of industrial energy consumption. The sharp drop in the energy consumption of the steel industry (by 65 percent between 1990 and 2011) contributed to the decrease in the role played by this sector in industrial consumption. The share of the chemical branch rose from an average of 14 percent between 1990 and 2005 to 21 percent in 2011. The non-metallic minerals industry, and more specifically cement, now accounts for 19 percent of industrial energy consumption, and the paper industry for 8 percent.

Figure 8: Energy consumption of industry, by source



Source: Enerdata

Figure 9: Energy consumption of industry, by branch

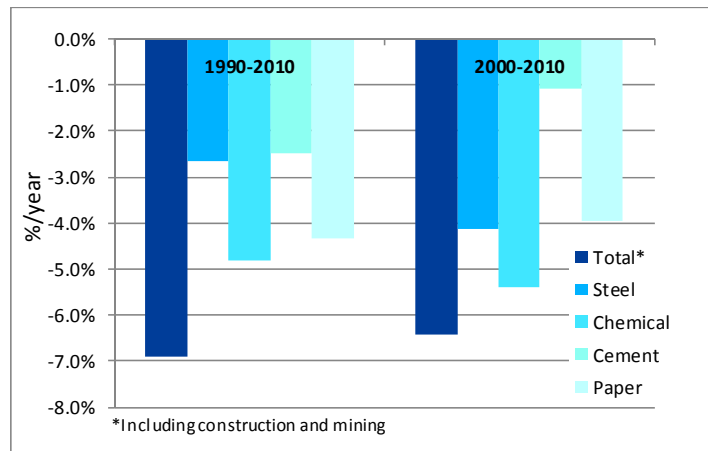


3.3. Energy intensity trends: rapid improvement in industry

The decrease in industrial energy intensity (consumption per unit of industrial value added) was much more rapid in Poland than on average in the EU between 2000 and 2011 (6.4 percent/year compared with 1.5 percent/year).

The largest improvements took place in the chemical sector (-5.4 percent/year, on average, between 2000 and 2010), and in steel and paper production (around 4 percent/year). Efficiency gains were more limited in the cement sector, which saw its unit consumption (energy consumption per ton of cement produced) drop by just 1.1 percent/year.

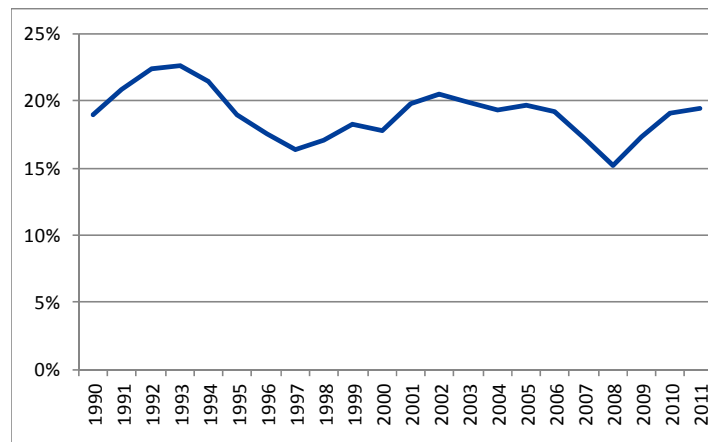
Figure 10: Trends in the energy intensity of industrial branches



Source: Enerdata, Odyssee

Combined heat and power generation (CHP) is well established in Poland and hovers around 19 percent (2011), which is the European average.

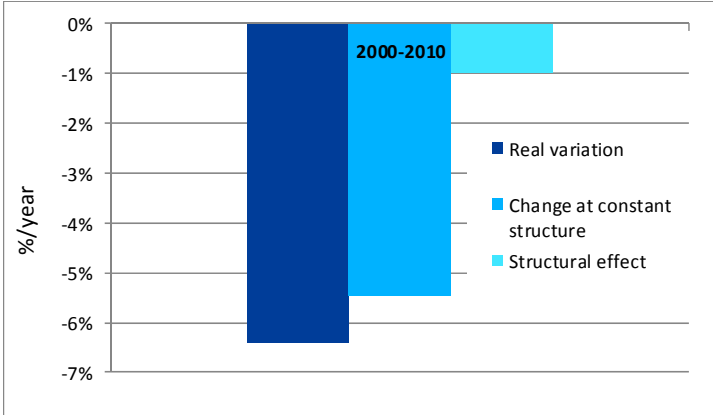
Figure 11: Share of industrial CHP in industrial consumption



Source: Enerdata

The energy intensity of the manufacturing sector (ie excluding construction and mining) decreased at the same rhythm as overall industrial energy intensity: 6.4 percent/year over the period 2000-2010. This decrease is mainly linked to energy efficiency gains (about 85 percent of the improvement) and to a lesser extent (around 15 percent) to changes in the structure of activities.

Figure 12: Trends in the energy intensity of manufacturing and structural effect



Source: Enerdata