Hungary
Energy efficiency report

Objectives:
- 9% of end-user energy savings by 2016 (16 TWh/year)
- 3.6 TWh/year energy savings target for the industrial sector by 2016

Overview

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<th>2010</th>
<th>2000-2010 (%/year)</th>
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| Primary intensity (EU=100)¹ | 119   | -                  | -1.9%  | +
| CO₂ intensity (EU=100)   | 111   | -                  | -2.9%  | +
| CO₂ emissions per capita (in tCO₂/cap) | 5     | +                  | -0.7%  | -

Power generation

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<th>2010</th>
<th>2000-2010 (%/year)</th>
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| Efficiency of thermal power plants (in %) | 33    | -                  | 1.0%   | +
| Rate of electricity T&D losses (in %)         | 10    | --                 | -3.2%  | +
| CO₂ emissions per kWh generated (in gCO₂/kWh) | 300   | +                  | -3.1%  | ++

Industry

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<th>2000-2010 (%/year)</th>
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| Energy intensity (EU=100) | 72    | ++                 | -3.6%  | +
| Share of industrial CHP in industrial consumption (in %) | 4     | --                 | -2.9%  | --
| Unit consumption of steel (in toe/t)             | 0.33  | -                  | -1.5%  | +

++ Among best countries  + Better than the EU average¹  - Below the EU average¹  --Among countries with the lowest performances

Latest update: April 2012

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

1.1. Policies: 1.4 Mtoe energy savings target for 2016

Hungary's National Energy Efficiency Action Plan (NEEAP) for the period 2008-2016 lays down a final energy savings target of 9 percent between 2008 and 2016, ie 1.4 Mtoe (15.9 TWh). Of those savings 37 percent should be achieved in the residential sector, 26 percent in public administration, 23 percent in industry, 8 percent in transport and 7 percent through cross-sectoral measures.

According to the new Renewable Plan adopted in January 2011, by 2020 energy savings should amount to 10 percent. Energy savings in public institutions should be supported by the New Széchenyi Plan (2011).

The Environment and Energy Operational Program (KEOP, 2007-2012) aims to contribute to the targets set by the NEEAP and focuses on achieving greater energy efficiency in public buildings, modernizing district heating and reducing heat losses, and achieving efficiency gains in the competitive sector.

1.2. Energy consumption trends: few changes in energy consumption since 1990

Hungary's energy consumption per capita is about 25 percent below the European average (2.5 toe/capita in 2010).

Total energy consumption has remained relatively stable since 1990. After a fall between 1990 and 1992, primary energy consumption increased slightly until 2005 and has been declining since then. In 2009 alone it decreased by 6.1 percent as a consequence of the global economic slowdown. In 2010, energy consumption grew by 2.3 percent.

![Figure 1: Energy consumption trends by sector](source: Enerdata)

In Hungary, the shares of the power sector and industry in total energy consumption are lower than the European averages. The power sector (including own uses and losses) accounts for 20 percent of energy consumption, while the share of industry (including non-energy uses) fell to 18 percent in 2010, from 29 percent in 1990.

Gas and oil cover more than 2/3 of final energy consumption, with 35 percent and 33 percent, respectively, in 2010, followed by electricity with 16 percent. The share of coal in final consumption is declining rapidly, from 13 percent in 1990 to 4 percent in 2010, to the advantage of biomass (from 3 percent to 6 percent) and electricity (from 13 percent to 16 percent).

Hungary's electricity consumption per capita is about 40 percent lower than the EU average (3,600 kWh in 2010). After a fall between 1990 and 1993, electricity consumption rose by 1.8 percent/year until 2008. In 2009,
electricity consumption fell by 5.7 percent, in line with the reduction in the demand from industry and from the residential-tertiary sector. It grew by 2.1 percent in 2010.

The residential and services sector is the largest electricity consumer in Hungary, with 66 percent of electricity consumption in 2010, and its share is increasing (50 percent in 1990). The share of electricity consumed by industry fell over the period, from 46 percent in 1990 to 31 percent in 2010.

**Figure 2: Electricity consumption trends by sector**

![Figure 2: Electricity consumption trends by sector](source: Enerdata)

### 1.3. Energy efficiency trends: significant energy intensity reduction

Total energy consumption per unit of GDP (primary energy intensity) has decreased by 1.9 percent/year since 1990. This gain in overall energy efficiency was faster than the improvement in the EU (1.3 percent/year between 1990 and 2010), but Hungary's primary energy intensity, measured at purchasing power parity, remains 19 percent higher than the EU average.

Hungary's energy consumption per unit of GDP decreased by 1.9 percent/year between 1990 and 2010. Over this period, industry drove the reduction in energy intensity. Efficiency gains in the power sector were limited during this period. However, the replacement of oil and coal-fired facilities by high efficiency gas-fired units since 2000 contributed to 21 percent of the reduction in primary intensity between 2000 and 2010.

**Figure 3: Energy intensity trends**

![Figure 3: Energy intensity trends](source: Enerdata)
2. Power generation: low, but improving efficiency

The efficiency of the power sector in Hungary is poor, since low-efficiency technologies (nuclear and coal-fired power plants) dominate the power mix. However, over the years the electricity sector has improved its efficiency, from 29 percent in 1990 to 34 percent in 2010; this was achieved through efficiency improvements in thermal power plants, an increasing share of CCGT facilities in the thermal mix (from 8 percent in 1990 to 20 percent in 2010) and a shift to gas.

Figure 4: Efficiency of power generation and thermal power plants

Source: Enerdata

The rate of transmission and distribution losses (T&D) was nearing 9.8 percent in 2010, ie 50 percent higher than the EU average, despite a significant decrease between 1993 and 2010 (~30 percent). Those losses were over 13 percent between 1993 and 2001, and were mainly caused by electricity theft rather than technical problems.

Figure 5: Thermal electricity capacity, by technology

Source: Enerdata

Figure 6: Electric T&D losses

Source: Enerdata
3. Industry

3.1. Policies: target of up to 3.6 TWh/year in energy savings by 2016

The second National Energy Efficiency Action Plan (2011) sets an energy savings target for the industrial sector of 13.05 PJ (3.6 TWh) by 2016. Measures to reduce the energy use of industrial companies should save 11.05 PJ (3.1 TWh), while the additional 2 PJ (0.6 TWh) savings should be achieved through the improvement of the district heating network. The measures include the technological modernization of SMEs and the energy-efficient renovation of industrial, agricultural and commercial buildings, which will be financed through grants and credits under the New Széchenyi Plan.

Moreover, to reach the 3.6 TWh industrial energy savings target, Hungary will continue the Energy Efficiency Credit Fund included within the Poland and Hungary Assistance for Restructuring their Economies (PHARE) program since 2000, which includes a soft-loan credit facility to support energy-efficiency investments by small and medium enterprises (mainly for the installation of CHP units and the reconstruction of heating systems). The PHARE program could save 1.4-1.6 TWh by 2016. The Environment and Energy Operational Program (KEOP), which aims to reduce energy use in industrial buildings through subsidies for small and medium enterprises, could help save 1.9-2.2 TWh by 2016.

Since 2008, large energy consumers in the industrial sector have been obliged to employ energy managers and to deliver an energy consumption report, followed by an energy savings plan and implementation report. These two measures are expected to save 0.8-1.5 TWh by 2016. In 2008, voluntary agreements were launched in the energy-intensive sectors with the aim of reducing energy use, applying more efficient technologies, and developing products with higher energy efficiency indicators.

In 2003, a feed-in tariff scheme for CHP installations was adopted, including industrial cogeneration facilities (not belonging to the district heating network) under 50 MW. Industrial companies that install CHP facilities or renewable systems can benefit from subsidies, as established in the Environment Protection and Infrastructure Operative Program (EIOP).

3.2. Energy consumption trends: falling energy consumption in industry

Energy consumption in industry fell by 57 percent between 1990 and 2010. It dropped by 33 percent between 1990 and 1992 and declined by 1.7 percent/year until 2008. In 2009, industrial consumption fell by 20 percent due to the economic crisis and in 2010 recovered only slightly.
The share of natural gas in the energy consumption of the industrial sector has decreased steadily since 1990 (49 percent) and now stands at 34 percent. Electricity represents 27 percent of industrial energy consumption, up from 18 percent in 1990. Biomass and coal consumption have increased over time, reaching 4 percent and 17 percent, respectively, in 2010. Oil represents just 5 percent, compared with 14 percent in 1990.

The share of energy-intensive industries in industrial energy consumption is around 60 percent and has been relatively stable since 1990. In 2010, steel and chemicals each accounted for about 20 percent. The energy consumption of the non-metallic minerals branch (mainly cement), which had been stable since 1992, fell dramatically in 2009, and now stands at 14 percent (16 percent in 1990). The share of paper is low, at 6 percent.

3.3. Energy intensity trends: noticeable energy efficiency improvement

Between 1992 and 2009 industrial energy intensity decreased by 5.9 percent/year. That improvement was due to efficiency gains in the steel sector, ie the largest industrial branch in terms of energy consumption (-4.2 percent/year), and to a lesser extent to a significant fall in the energy intensity of the non-metallic minerals branch (-7.6 percent/year). Changes in the structure of industry (rising share of industrial branches with lower energy intensity) also contributed to the improvement in industrial energy efficiency. The increases in the specific energy consumption of other energy-intensive industries have limited the effect of these energy efficiency improvements.
The share of industrial CHP in the electricity consumption of Hungarian industry is far below the EU average (around 4 percent in 2010 compared with 19 percent in the EU) and has been falling since 1996.

Figure 11: Share of industrial CHP in industrial consumption

Between 1992 and 2009 the energy intensity of the manufacturing industry (ie excluding construction and mining) fell substantially, by 5.9 percent/year. This improvement was due to large efficiency gains in the industrial branches and, to a lesser extent, to changes in the structure of the industrial value added: the share of the equipment sector -ie the branch with the lowest energy intensity- in the total value added of manufacturing increased by nearly 15 percentage points between 2000 and 2009.

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