Latvia
Energy efficiency report

Objectives:
- 3.5 TWh of end-user energy savings in 2016, of which 170 GWh in industry
- 6.1 TWh of end-user energy savings in 2020

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<th>Overview</th>
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<td>Primary intensity (EU=100)¹</td>
<td>115</td>
<td>-2.7% ++</td>
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<td>CO₂ intensity (EU=100)</td>
<td>98</td>
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<td>CO₂ emissions per capita (in tCO₂/cap)</td>
<td>3.3</td>
<td>1.4% ++</td>
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<th>Power generation</th>
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<td>Rate of electricity T&amp;D losses (in %)</td>
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<td>184</td>
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<th>Industry</th>
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<td>Unit consumption of steel (in toe/t)*</td>
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<td>-3.3% ++</td>
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*2010 and 2000-2010 for steel

++ Among best countries  + Better than the EU average ¹  − Below the EU average ¹  −− Among countries with the lowest performances

Latest update: April 2013

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

1.1. Policies: 3.5 TWh of energy savings in 2016

Latvia adopted its first National Energy Efficiency Action Plan (NEEAP) in 2008 and the second version in June 2011. The NEEAP set an energy savings target of 3.5 TWh (300 ktoe) in 2016, 78 percent of which must be achieved in the household sector, 12 percent in the services sector, 6 percent in the transport sector and 5 percent in industry. By 2020, primary energy savings should reach 7.8 TWh, including 6.1 TWh in end-use sectors.

Latvia’s Law on End-use Energy Efficiency was adopted in January 2010 to comply with EU requirements. Its objectives are to define the main principles of the NEEAP, implement energy efficiency monitoring and create the conditions for the development of a market for energy efficiency services, including ESCOs (Energy Service Companies).

Most energy efficiency measures concern the household sector. Latvia’s Energy Development Guidelines 2007-2016 aim to reduce the average heat consumption in buildings by at least 11 percent over the period and to improve energy efficiency in heat production installations. In 2008 Latvia adopted a new Building Energy Performance Law, establishing the requirements for the certification of energy auditors and energy certificates for buildings. Information campaigns and energy audits are the two key measures introduced to improve energy efficiency in the household and services sectors.

Latvia also aims to improve the energy efficiency of district heating, which is the main source of heating in the country. More specifically, it aims to raise the efficiency of heat production from 77 percent in 2006 to 90 percent by 2016. Heat distribution losses should also decrease from 16 percent to 14 percent by 2016.

1.2. Energy consumption trends: low energy consumption per capita

Latvia’s energy consumption per capita is 44 percent below the EU average (less than 1.9 toe in 2011). Total energy consumption (primary consumption) increased rapidly between 2000 and 2007, by 3.3 percent/year. Since 2008, it has been following a downward trend (-11 percent between 2007 and 2011, despite a 4.6 percent hike in 2010).

The energy consumption of the power sector is very low and relatively stable (5 percent of total consumption in 2011); this low share is explained by the large share of hydropower (around 50 percent of power generation in 2011) and by significant electricity imports (20 percent of power consumption in 2011). Industrial energy consumption also remained stable and represented 19 percent of total energy consumption in 2011. The shares...
of both these sectors are low compared with neighboring countries. The residential and services sectors account for more than 50 percent of total consumption.

Gas covered 31 percent of total energy consumption in 2011 (22 percent in 1995), followed by biomass (30 percent, from 22 percent in 1995), oil (27 percent, from 41 percent) and coal (3 percent, from 6 percent). Hydropower and electricity imports cover the remainder.

Electricity consumption per capita is half that of the EU average (about 2,750 kWh/cap in 2011). Electricity accounts for 13 percent of final energy consumption, compared with 10 percent in 1995. Indeed, electricity consumption grew by 5 percent/year between 2000 and 2008, triggered by a soaring consumption in the household and services sector (+6.6 percent/year). Electricity consumption fell by around 8 percent in 2009, and has remained stable since then. Industry accounts for 26 percent of power consumption.

1.3. Energy efficiency trends: rapid improvement in energy intensities

Latvia’s energy intensity (energy consumption per unit of GDP) has been decreasing very rapidly, by 3.6 percent/year on average between 1995 and 2011. Since 2000, improvement was slower (2.7 percent/year) though significantly higher than the EU average. Most of that reduction was achieved in the residential and services sector, which is the largest energy consumer; industry contributed to 14 percent of the reduction.
2. Power generation

2.1. Policies: rehabilitation of power plants and promotion of CHP

The NEEAP includes measures aimed at improving energy efficiency in power generation, such as the rehabilitation of Daugava and other hydropower facilities, and of the Riga TEC thermal power plant (introduction of CCGT). Latvia also aims to raise the share of cogeneration in power production: according to Latvia’s Energy Development Guidelines 2007-2016, electricity produced from highly-efficient CHP using biomass should account for 8 percent by 2016. In 2009, tax exemptions were introduced for for CHP plants and electricity production from renewables.

Measures will be taken to improve energy efficiency in the transmission and distribution of electricity (reconstruction of substations and modernization of distribution networks to develop a smart network).

2.2. Efficiency of the power sector: high efficiency

The average efficiency of Latvia’s power sector is high, at 48 percent in 2011, owing to the large share of hydropower in electricity generation. The efficiency rate has increased by 9 percentage points since 1995, as the efficiency of thermal power plants grew significantly, from 14 percent in 1995 to 32 percent in 2011. This improvement is due to the growing share of gas-fired generation and the introduction of a large gas combined cycle unit (CCGT) in 2008; CCGT is now dominant in the thermal production capacity. The efficiency rate of thermal power plants is slightly lower than the EU average.

The rate of transmission and distribution losses has been decreasing rapidly since 1996, by 16 percentage points. It is now 10 percent, i.e. about 54 percent higher than the EU average.

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![Figure 4: Efficiency of power generation and thermal power plants](image1)

![Figure 5: Thermal electricity capacity, by technology](image2)

Source: Enerdata

![Figure 6: Electric T&D losses](image3)

Source: Enerdata
3. Industry

3.1. Policies: 170 GWh of energy savings in industry by 2016

Latvia’s National Energy Efficiency Action Plan set a target of 170 GWh of energy savings in the industrial and agricultural sector by 2016 (about 15 ktoe). By 2020, total energy savings should reach 337 GWh. The NEEAP includes two main financial measures: financial support for energy audits and for energy efficiency investments in buildings.

Energy audits were introduced in the mid-1990s, and are aimed at improving technical processes and restructuring the operations of industrial enterprises. Latvia also leads information campaigns on the most effective technical solutions to increase the use of energy-efficient and innovative technologies.

Voluntary agreements can be signed by industrial companies; the objective of these agreements is to achieve energy savings in industry of at least 10 percent.

3.2. Energy consumption trends: low industrial consumption

Industrial energy consumption grew by 3.3 percent/year between 2000 and 2007; it fell in 2008 and 2009 as Latvia was hit by the global economic downturn and soared in 2010 (+19 percent). In 2011, industrial energy consumption dropped to its 2007 level (-8.8 percent).

![Figure 7: Trends in industrial energy consumption](image)

The share of gas in the energy consumption of industry increased rapidly between 1995 and 2002, and then fell below its 2000 level (24 percent in 2011). The shares of biomass grew significantly, from 7 percent to 34 percent in 2011. The share of electricity tended to increase until 2003 and has been declining since then (19 percent in 2011). The share of coal increased from 2 percent in 1995 to 8 percent in 2011. Oil consumption decreased dramatically over time and now accounts for 13 percent (down from 36 percent in 1995).

Between 2000 and 2008, the share of energy-intensive industries in industrial energy consumption remained stable at around 40 percent. Since the 2009 economic crisis, their share has fallen (36 percent in 2011). Non-metallic minerals and steel are the largest consuming sectors (19 percent and 13 percent, respectively, in 2011, compared with 11 percent and 24 percent, respectively, in 2000). The chemical sector accounts for 3 percent of industrial energy consumption while the share of paper is marginal (1 percent).
3.3. Energy intensity trends: efficiency gains in the steel sector

The energy intensity of the Latvian industry increased rapidly (+7.1 percent/year) between 2000 and 2010. That poor performance is mainly explained by structural changes in manufacturing industry. Energy efficiency improvements were marginal in the non-metallic mineral branch (0.5 percent/year drop in the energy intensity of this sector over the period). Significant efficiency gains were posted in the steel branch (-3.3 percent in the unit consumption, i.e. energy consumption per ton of steel produced), but the share of this sector eroded from 2000 to 2010. Efficiency gains in the paper sector were also significant (8.6 percent/year decrease in the unit consumption of paper), but the share of this branch in industrial energy consumption is low and, accordingly, its impact on industrial energy intensity was minimal. A small increase in the energy intensity of the chemical sector was reported between 2000 and 2010 (+2.5 percent/year).

Source: Enerdata, Odyssee
Despite a high share of CHP capacity (all thermal power plants), CHP in industry is very limited (4 percent in 2011). This can be explained by the reduced shares of the paper and chemical sectors, which are branches in which CHP usually plays an important role.

**Figure 3: Share of industrial CHP in industrial consumption**

![Graph showing share of industrial CHP from 1995 to 2011](Source: Enerdata)

The energy intensity of the manufacturing industry (i.e., excluding construction and mining) rose by 7.1 percent/year between 2000 and 2010. Most of the progression is explained by structural changes, mainly an increasing share of non-metallic minerals, the most energy intensive branch, in total industrial value added.

**Figure 4: Trends in the energy intensity of manufacturing and structural effect**

![Graph showing energy intensity trends from 2000 to 2010](Source: Enerdata)