Objectives:

- 4.3 TWh of end-use energy savings by 2016

<table>
<thead>
<tr>
<th>Overview</th>
<th>2009</th>
<th>2000-2009 (% / year)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Primary intensity (EU=100)(^1)</td>
<td>115</td>
<td>-1.9%</td>
</tr>
<tr>
<td>CO₂ intensity (EU=100)</td>
<td>120</td>
<td>-1.6%</td>
</tr>
<tr>
<td>CO₂ emissions per capita (in tCO₂ / cap)</td>
<td>7.7</td>
<td>-0.9%</td>
</tr>
<tr>
<td>Efficiency of thermal power plants (in %)</td>
<td>31</td>
<td>-0.4%</td>
</tr>
<tr>
<td>Rate of electricity T&amp;D losses (in %)</td>
<td>6</td>
<td>-2.4%</td>
</tr>
<tr>
<td>CO₂ emissions per kWh generated (in gCO₂ / kWh)</td>
<td>352</td>
<td>0.0%</td>
</tr>
<tr>
<td>Energy intensity (EU=100)</td>
<td>93</td>
<td>-4.2%</td>
</tr>
<tr>
<td>Share of industrial CHP in industry consumption (in %)</td>
<td>5</td>
<td>-6.0%</td>
</tr>
<tr>
<td>Unit consumption of steel (in toe/t)</td>
<td>0.33</td>
<td>-3.5%</td>
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</table>

\(^1\) The European Union, as the best-performing region, is used as the benchmark.

Latest update: February 2011
A rapid growth is seen in the consumption of the transport sector, which has become the largest consuming sector in Slovenia, with 36 percent of final consumption in 2009 compared with 25 percent in 1990. The households and services sectors account for 32 percent of final consumption (21 percent and 11 percent, respectively), a share similar to that of industry.

At 5,600 kWh in 2009 electricity consumption per capita is close to the EU average, after having been slightly higher since 2001. Since 1990, electricity has covered about 20 percent of final energy consumption. Power consumption increased regularly between 1990 and 2008 (+1.8 percent/year) but fell by 11 percent in 2009, since industrial demand for electricity fell strongly. Industry accounts for 50 percent of power consumption in Slovenia, but the share of that sector is declining (65 percent in 1990) due to the sharp increase in the electricity consumption of the service sector (from 9 percent in 1990 to 24 percent in 2009).

Oil covers 36 percent of total energy consumption (primary consumption) in Slovenia, followed by coal (21 percent) and gas (12 percent). Nuclear power and hydroelectricity account for 11 percent and 5 percent of primary consumption, respectively, while net electricity imports and biomass cover 7 percent each.
1.3. Energy efficiency and CO₂ trends: slow improvements
Between 1990 and 2009 primary energy intensity (primary energy consumption per unit of GDP) decreased slightly, by 1 percent/year. That fall was driven by the reduction in final energy intensity (final energy consumption per unit of GDP). Final energy intensity decreased twice as fast after 2000. Slovenia’s primary energy intensity is 15 percent higher than the EU average.

Those energy intensity reductions contributed to most of the decrease in CO₂ intensity (CO₂ emissions per unit of GDP).

2.2. Power generation trends by source: 65% CO₂-free generation
CO₂-free generation accounts for 65 percent of the electricity mix in Slovenia (2009), with 35 percent of nuclear power and 29 percent of hydroelectricity (less than 1 percent of biomass-fired generation and no wind power). Coal-fired generation accounts for 32 percent. Oil disappeared from power generation in 2000. Gas accounts for just 3 percent of the electricity mix.

2.3. Efficiency of the power sector: low efficiency of thermal power generation
Low-efficiency generation (coal and nuclear power) accounts for 67 percent of the electricity mix. The efficiency rate of thermal power generation equals 31 percent, which is below the EU average (39 percent). It increased slightly between 1993 and 2007 thanks to the introduction of gas-fired generation facilities (combined cycle power generation now account for 6 percent of the thermal capacity).

Figure 4: Energy and CO₂ intensity trends

Figure 5: Power generation by source

2 Power generation
2.1. Policies: 39% of renewables in electricity consumption by 2020

The main measures include economic incentives, namely price support for renewables and high-efficiency cogeneration, direct financial stimuli and an appropriate tax policy. As of 2012, mandatory quotas could be imposed on energy suppliers with the aim of ensuring the renewable energy target is achieved by 2020.

In 2008, amendments to the Energy Act were adopted to promote renewable electricity and cogeneration of heat and electricity through price regulation (feed-in tariffs and premiums). A new scheme to support green electricity production was adopted in 2009, followed by a decree on support for electric power produced from renewable energy sources and a decree on support for electric power produced from high-efficiency cogeneration. Certificates of origin are also in use in
The rate of T&D losses has been decreasing since 1990, from 7.8 percent to 5.7 percent in 2009, which is below the EU average.

Despite a high share of CO₂-free generation, CO₂ emissions per kWh produced are slightly above the EU average, at around 350 gCO₂/kWh. On average, the carbon factor has been decreasing since 1993, in spite of a few periodical peaks (rising share of coal in power generation). The CO₂ emission factor has also dropped dramatically since 1993.

The target set in Slovenia’s National Energy Efficiency Action Plan is to achieve 840 GWh of energy savings in industry by 2016. Financial incentives (€15m, ie, $15m) will be granted to promote efficient electricity use, to replace low-efficiency electric motors and air-compressors, and to install frequency
converters, energy-saving pumps and ventilators. Between 1997 and 2007, the Fund for Efficient Energy Use granted soft loans to the industrial sector for the energy rehabilitation of buildings and the replacement of low-efficiency technologies.

Slovenia will also introduce financial incentives (non-returnable investment funds and soft loans) to support R&D projects and energy audits for small- and medium-sized industrial companies (subsidies cover up to 50 percent of the audit cost). Following the energy audits, SMEs can benefit from investment subsidies (CHP or renewable electricity generation facilities under 10 MW). The existing system of guaranteed electricity purchase prices for electricity produced by high-efficiency cogeneration will, in the future, be expanded to industrial CHP facilities.

In 1997 Slovenia introduced an environmental tax for air pollution from CO₂ emissions, applicable to industrial combustion plants; until 2008, facilities concerned by this tax could benefit from an exemption by signing voluntary agreements to reduce greenhouse gas emissions.

3.2. Energy consumption trends: sharp drop since 2007
After a decrease between 1990 and 1993, industrial energy consumption grew by 2.6 percent/year until 2007; since then, it has fallen by 15 percent.

Gas and electricity are the most consumed fuels in Slovenian industry, with 36 percent and 35 percent, respectively, of industrial consumption in 2009 (about the same as in 1990). Industrial consumption of coal and oil has been decreasing regularly since 1990, and their shares fell from 8 percent and 15 percent, respectively, to 4 percent and 12 percent in 2009. Biomass and heat now account for 7 percent and 5 percent, respectively, compared with 4 percent and 3 percent in 1990.

The share of energy-intensive branches in industrial energy consumption grew from 41 percent in 1990 to 56 percent in 2009, despite a 5 percent decline in the steel industry over that same period. The share of the chemical industry rose to 11 percent, that of the paper industry to 13 percent, and that of the non-metallic minerals industry to 16 percent.

3.3. Energy intensity trends: significant improvements since 2000
Between 1995 and 2008 industrial energy intensity decreased by 3.2 percent/year. Over the given period the energy intensity of the chemical and steel industries decreased at the rapid rates of 3.7 percent/year and 4.6 percent/year, respectively, while the unit consumption (energy consumption per unit produced) of the paper and non-metallic minerals sectors rose by 1.1 percent/year and 5.3 percent/year, respectively. Signifi-
cant improvements took place between 2000 and 2008, since the energy intensities of all energy-intensive branches decreased; industrial energy intensity fell by 4.6 percent/year.

**Figure 13: Trends in the energy intensity of industrial branches**

The share of CHP generation in industrial electricity consumption fell rapidly between 1990 and 2007 (-13 percentage points) and, at 5 percent in 2009, is far below the EU average (17 percent).

**Figure 14: Share of industrial CHP in industrial consumption**

Between 2000 and 2007 the energy intensity of the manufacturing industry (ie, excluding mining and construction) dropped by 4.2 percent/year. That decrease is mainly linked to energy efficiency gains in industrial branches; the effect of changes in the structure of the total value added was marginal.2008. That structural effect was even more noticeable over the period 2000-2008, when it accounted for around 50 percent of the reduction in the energy intensity of the manufacturing industry.

**Figure 15: Trend in energy intensity of manufacturing and structural effect**

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