Objective: about 0.5 Mtoe of end-user energy savings by 2016

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<tr>
<th>Overview</th>
<th>2011</th>
<th>2000-2011 (%/year)</th>
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</thead>
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<tr>
<td>Primary intensity (EU=100)</td>
<td>99</td>
<td>+ -1.8% +</td>
</tr>
<tr>
<td>CO₂ intensity (EU=100)</td>
<td>107</td>
<td>- -1.7% -</td>
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<tr>
<td>CO₂ emissions per capita (in tCO₂/cap)</td>
<td>4.3</td>
<td>++ 0.7% ++</td>
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<tr>
<td><strong>Power generation</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Efficiency of thermal power plants (in %)</td>
<td>37</td>
<td>- 1.5% ++</td>
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<tr>
<td>Rate of electricity T&amp;D losses (in %)</td>
<td>11.1</td>
<td>-- -2.3% +</td>
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<tr>
<td>CO₂ emissions per kWh generated (in gCO₂/kWh)</td>
<td>306</td>
<td>+ 0.1% --</td>
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<td><strong>Industry</strong></td>
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<td>Energy intensity (EU=100)</td>
<td>105</td>
<td>- -1.1% -</td>
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<tr>
<td>Share of industrial CHP in industrial consumption (in %)</td>
<td>13</td>
<td>- -1.2% --</td>
</tr>
<tr>
<td>Unit consumption of steel (in toe¹)</td>
<td>0.40</td>
<td>-- -5.6% ++</td>
</tr>
</tbody>
</table>

*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: April 2013

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

1.1. Policies: energy savings target of about 0.5 Mtoe for 2016

Croatia adopted its National Energy Efficiency Action Plan for the period 2008-2016, which lays down a final energy savings target of 0.47 Mtoe (5.5 TWh) in buildings, transport and small industries (excluding sectors under ETS) by 2016. Non-ETS industry accounts for about 17 percent of this target.

In the building sector, almost all European Directives have been transposed into Croatian legislation, including building regulation, mandatory energy certification of buildings and mandatory energy labeling of household appliances.

Croatia has also introduced financial support for energy efficiency. Loans are available from the Croatian Bank for Reconstruction and Development and from the Environmental Protection and Energy Efficiency Fund (FZOEU).

1.2. Energy consumption trends: rapid increases in a low energy consumption

The country's energy consumption per capita is 40 percent lower than the European Union average: in 2011, it stood at around 2 toe/capita.

Total energy consumption increased by 2.6 percent/year between 2000 and 2007, but has decreased since then (-2.8 percent/year) due to the global economic downturn.

The share of industry (including non-energy uses) has been rather stable since 2000, at around 25 percent of total energy consumption (down from about 30 percent in 1995). The power sector accounts for just 16 percent, due to large electricity imports from Slovenia.

Figure 1: Energy consumption trends by sector

Electricity consumption per capita was 3,600 kWh in 2011, ie almost 40 percent lower than the European Union average. However, electricity consumption has been increasing at a faster pace than in the rest of the region (by almost 4 percent/year between 1995 and 2008). It was then affected by the global crisis, which led to a lower power demand from industry and, to a lesser extent, the residential and tertiary sector. The share of industry has decreased substantially since 1995, from 27 percent to 22 percent in 2011.
1.3. Energy efficiency trends: larger decrease in energy intensity in recent years

Total energy consumption per unit of GDP (total energy intensity), measured at purchasing power parity, was on a par with the EU average in 2011. It has fallen by 1.8 percent/year since 2000, ie at a similar pace as the EU average, with industry contributing to one third of that decrease and power generation to around 20 percent.

2. Power generation: energy efficiency improvements in thermal power plants

The efficiency of the power sector is quite high because of the large share of hydropower in electricity generation; it fluctuates around 50 percent according to the availability of water, reaching a peak of 60 percent in 2010 due to a peak in hydropower production. Since 2000 the efficiency of thermal power plants has risen by 6 percentage points thanks to the increase in gas combined cycle units, which accounted for 20 percent of the total thermal capacity in 2011 (compared with 5 percent in 2000).
The rate of transmission and distribution losses (T&D) has fallen by 5 percentage points since the beginning of the 2000s. However, it remains far above the European average. In 2011, it was around 11 percent of the distributed volumes (compared with the EU average of 6.5 percent).

3. Industry

3.1. Policies: support for cogeneration and energy audits

In the industrial sector, the main incentive for energy efficiency is the Environmental Protection and Energy Efficiency Fund (FZOEU). It provides loans for energy audits and investments in energy efficiency projects.

In 2007 a feed-in tariff scheme for cogeneration plants was adopted. Tariffs vary depending on the capacity and the type of installation.
3.2. Energy consumption trends: growth of energy needs in industry

Energy consumption in industry increased by 2.5 percent/year between 2000 and 2008. The global economic downturn led to a large drop in the country's industrial energy demand (-16 percent in 2009). Although industrial energy consumption increased again in 2011, it has not yet recovered its pre-crisis level.

The share of electricity in industrial energy consumption is increasing slightly and in 2011 stood at 20 percent (up from 18 percent in 1995). Gas and coal are the main energy sources in industry with 31 percent and 24 percent, respectively, of consumption in 2011. The shares of oil and gas decreased significantly between 2000 and 2011 (-12 percentage points and -5 percentage points, respectively), whereas the use of coal is increasing. In 2011 oil accounted for 18 percent of industrial energy consumption, whereas biomass has maintained its share of around 5 percent.

Energy-intensive industries account for more than half of the sector’s energy consumption. The non-metallic minerals industry (mainly cement) is the largest industrial consumer with around 30 percent of total industrial energy consumption; its market share increased substantially between 1995 and 2002, growing from 24 percent to 35 percent, before decreasing slightly. Between 1995 and 2010, the shares of the steel and chemical industries decreased by 4 percentage points and 5 percentage points, respectively, whereas the paper industry has roughly maintained its market share in industry's energy consumption, with about 6 percent of the total.
3.3. Energy intensity trends: moderate energy intensity reduction

Consumption per unit of industrial value added (energy intensity) decreased by 2.5 percent/year between 2000 and 2010. The largest energy efficiency increase was seen in the steel industry, with a reduction of almost 6 percent/year in the specific energy consumption per ton of steel.

![Figure 10: Trends in the energy intensity of industrial branches](image)

*Including construction and mining

Source: Enerdata, Odyssee

Combined heat and power generation accounted for 13 percent of industry's electricity consumption in 2011. This share has increased in recent years thanks to incentive measures to promote its development.

![Figure 11: Share of industrial CHP in industrial consumption](image)

Source: Enerdata
Between 2000 and 2010, energy efficiency improvements in the manufacturing industry (ie excluding mining and construction) were slightly higher than reflected by the energy intensity reduction, since this improvement was partly offset by structural changes towards more energy-intensive branches (ie increase in the share of the non-metallic minerals, steel and paper industries in the industrial value added).

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

![Graph showing trends in energy intensity](chart.png)

Source: Odyssee