Austria
Energy efficiency report

Objectives:
- 22 TWh of end-user energy savings by 2016
- 20% reduction in energy intensity by 2020

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<th>Overview</th>
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<th>2000-2009 (% / year)</th>
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<td>Primary intensity (EU=100)</td>
<td>92</td>
<td>+ 0.1%</td>
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<tr>
<td>CO₂ intensity (EU=100)</td>
<td>85</td>
<td>++ -0.6%</td>
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<tr>
<td>CO₂ emissions per capita (in tCO₂ / cap)</td>
<td>7.7</td>
<td>- 0.2%</td>
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<td>2000-2009 (% / year)</td>
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<td>Efficiency of thermal power plants (in %)</td>
<td>38</td>
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<td>145</td>
<td>++ -1.8%</td>
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<tr>
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<td>2008*</td>
<td>2000-2008* (% / year)</td>
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<td>107</td>
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<td>Share of industrial CHP in industry consumption (in %)</td>
<td>18</td>
<td>+ 1.6%</td>
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<tr>
<td>Unit consumption of steel (in toe / t)</td>
<td>0.31</td>
<td>+ -2.6%</td>
</tr>
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*2008 and 2000-2008 for steel

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

Latest update: January 2011

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

1.1. Policies: 22 TWh of energy savings by 2016

Under its National Energy Efficiency Action Plan (NEEAP), Austria plans to achieve an energy savings target of 9 percent of its average annual consumption over the period 2001-2005, ie, 22 TWh (1.9 Mtoe), by 2016. Austria aims to reduce its primary energy intensity by at least 20 percent by 2020.

Since the household sector accounts for about 31 percent of energy consumption, energy saving measures are particularly focused on buildings. Austria provides about €2.4bn/year ($3.2bn/year) in funding for housing support programs, including building renovations and subsidies for energy-efficient or renewable heating systems. Efficiency standards were reinforced in 2006. By 2020 Austria also aims to have achieved the thermal renovation of all buildings constructed between 1950 and 1980.

The klima:active program, launched in 2004, aims to reduce heating costs and CO₂ emissions in buildings, notably through the modernization of large residential buildings, support for passive housing (active climate protection standard for 50 percent of new buildings) and information campaigns directed at households.

The National Renewable Energy Action Plan 2010 aims to increase the share of renewable energy in final energy consumption to 34 percent by 2020.

1.2. Energy consumption trends: declining consumption since 2005

Austria’s total energy consumption (primary consumption) per capita is 17 percent higher than the EU average, at around 3.9 toe/cap. Primary consumption increased rapidly between 1990 and 2005 (+2.1 percent/year) and has been declining since then (-1 percent/year).

At over 7,200 kWh, electricity consumption per capita in Austria is about 30 percent higher than the EU average. Electricity consumption rose by 45 percent between 1990 and 2007, but has been declining since (-0.9 percent/year). However, electricity’s share in final consumption remained stable at around 18 percent between 1990 and 2009. Industry is the largest consuming sector, with 48 percent of electricity consumption, closely followed by the households and services sector (47 percent).
1.3. Energy efficiency and CO₂ trends: low efficiency gains
Between 1990 and 2009 primary energy intensity (primary energy consumption per unit of GDP) declined by 0.5 percent/year. The decrease in final energy intensity (end-use energy consumption per unit of GDP) was even slower, at 0.3 percent/year. The faster decrease in primary energy intensity can be explained by efficiency gains in the power sector or, more specifically, by the falling share of low-efficiency technologies (coal and oil) in power generation (from 18 percent in 1990 to 9 percent in 2009). Between 2000 and 2009 primary and final energy intensities grew slightly (+0.1 percent/year).

CO₂ intensity (CO₂ emissions per kWh generated) decreased twice as fast as energy intensity over the 1990-2009 period (-1.1 percent/year). That better performance is linked to fuel substitutions: the cumulated share of oil and coal in primary consumption dropped by 10 percentage points over the period.

2. Power generation
2.1. Policies: 15% of renewables (excluding hydropower) in the electricity mix by 2020
The Green Electricity Act was adopted in 2002 to create a promotional framework for renewable and CHP electricity (green certificates and feed-in tariffs). It was amended in 2008, fixing a 15 percent renewable energy target (excluding large hydropower) in electricity generation for 2015. That goal will be attained through new capacities (700 MW of wind power, 350 MW of hydropower plants under 20 MW and 100 MW of biomass). The National Renewable Energy Action Plan 2010 plans to raise the share of renewables in electricity consumption to 71 percent by 2020.

The feed-in tariffs established in 2008 for electricity generated from renewable sources were updated in February 2010. They have been fixed for 13 years in the case of wind, PV and geothermal technologies, and for 15 years in the case of combustion facilities (biomass, biogas and waste). Austria also introduced certificates of origin for electricity from renewable sources; those renewable energy certificates (RECS) are tradable.

Voluntary agreements on energy efficiency have been signed between the association of energy industries and the Federal Ministry of Economy, Family and Youth; electricity companies (including distributors) are required to reach an energy saving target of 420 GWh by 2016.

2.2. Power generation trends by source: 75% of CO₂-free generation
Austria’s electricity mix is dominated by CO₂-free generation (three quarters of power production). Hydropower is the largest source, with 62 percent (65 percent in 1990), followed by biomass (8 percent) and wind (4 percent). The shares of coal and oil were halved between 1990 and 2009, with coal accounting for 7 percent (14 percent in 1990) and oil for 2 percent (4 percent in 1990). Gas-fired generation accounts for 17 percent.
2.3. Efficiency of the power sector: high efficiency rate thanks to hydropower

The dominant share of hydroelectricity in the power mix contributes to the high efficiency rate of Austrian power generation. The efficiency rate of thermal power plants is in line with the EU average, at 38 percent. Combined-cycle gas turbines account for 31 percent of the thermal capacity.

The average rate of T&D losses is low (18 percent below the EU average) and declining. In 2009 it reached 5.4 percent, ie, 1 percentage point lower than in 1990.

Average CO₂ emissions per kWh produced are low, at 145 gCO₂/kWh in 2009, ie, nearly 60 percent below the EU average. That carbon factor has been decreasing since 2003, when the share of coal-fired generation dropped from 16 percent to 7 percent.
3. Industry

3.1. Policies: industrial benchmarks and promotion of CHP

Sectoral benchmarks were introduced in 2004 to assess energy efficiency and potential improvements in Austrian industry. Companies were encouraged to compare their performance with industry leaders and to identify Best Practice Examples for energy savings in each branch. Energy audits are voluntary and in certain länder (provinces) they are subsidized. Companies can obtain subsidies from the Federal Environment Fund to finance up to 30 percent of the investment cost in renewable energy, energy efficiency projects, and use of waste heat.

The CHP law was enacted in 2009: new plants are entitled to subsidies according to their size (up to 10 percent of the total investment), while existing or modernized CHP plants can benefit from the partial reimbursement of their operating costs.

3.2. Energy consumption trends: rising industrial energy consumption

Industrial energy consumption grew by 2 percent/year between 1990 and 2008; in 2009, it fell by 1.3 percent, owing to the global economic crisis.

Since 1990 gas and electricity have been the most consumed energy sources in industry (31 percent and 29 percent in 2009, respectively). Overall, the industrial consumption of coal and oil remained stable over the period, while their shares in total consumption declined from 30 percent and 12 percent in 1990 to 14 percent and 9 percent in 2009, respectively. The consumption of heat and biomass grew steadily: biomass now accounts for 14 percent of industrial consumption, while heat supplies 3 percent.

The share of energy-intensive industries has decreased slightly since 2000, from 69 percent to 62 percent in 2009. Steel is the largest consuming branch, with 22 percent of industrial energy consumption, followed by the paper (17 percent), non-metallic minerals (12 percent) and chemical (11 percent) branches.
3.3. Energy intensity trends: limited progress in energy efficiency

The decrease in the energy intensity of Austria’s industry was limited between 1990 and 2009 (-0.9 percent/year), despite significant efficiency gains in certain energy-intensive branches: above 2 percent/year in the case of the paper and chemical industries and 1.5 percent/year for the steel industry. However, the energy intensity of the non-metallic minerals industry increased by 1.5 percent/year over the period, limiting the efficiency gains in industry.

Between 2000 and 2008, the decrease in the energy intensity of the manufacturing industry (i.e., excluding mining and construction) was due to effective increases in the sector’s energy efficiency. The structural effect, which reflects the influence of changes in the structure of the industrial value added, was insignificant over the period. Thus, when calculated at constant structure the energy intensity decreased at the same pace of 2 percent/year over the period.