Energy Efficiency Policies and Measures in Slovenia

ODYSSEE- MURE 2010

Monitoring of EU and national energy efficiency targets

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1 Executive Summary

- The trend of economic development in Slovenia was increasing in the period from 2000 to 2008 before a strong decrease in 2009. The average yearly growth of gross domestic products (GDP) within this period (2000-2008) was 4.3%/year. The private consumption in households increased by 29% in period (2000-2010) and by 30% in the period of highest economic growth (2000-2008). The VA of industry has increased by 25% in the period between 2000-2010 and by 47% in the period of highest economic growth (2000-2008).

- The final energy consumption in industry, transport, households and other sectors increased by 11.5% or 1.09%/year in the period 2000-2010. The main increase of consumption was in biomass (2.9%/year), followed by electricity (1.3%/year) and natural gas (0.9%/year). The final energy consumption was decreased within the period 2000-2010 in industry by -9% and other 17% and transport and decreased by 14% in the tertiary sector in the same period. The highest growth in energy consumption was in transport in the period between 2000 and 2007. This increase reflects the increase in the transit transport and “fuel tourism” as results of the lower price of vehicle fuels in Slovenia in comparison to the price in neighbor countries.

- The target of the Slovenian National Energy Efficiency Action Plan for 2008–2016 (NEEAP) on January 2008, is to achieve cumulative savings of at least 9% of the average final energy consumption under ES Directive (Non ETS) in the 2008–2016 period, or at least 4 232 GWh. The second NEEAP 2 for Slovenia has proposed different sets of measures in all sectors: 5 measures for households, 5 measures for industry, 3 measures for tertiary, 4 measures for transport, 4 measures for public sector and 3 multi-sectoral measures. There are also 4 measures supporting all sectors. The expected total energy savings due to the implementation of the measures referred to NEEAP 2 in 2016 are estimated at 7246 GWh, of which 1,557 GWh in households, 717 GWh in tertiary (of which 557 GWh in public sectors), 1,634 GWh in industry, 1,717 GWh in transport and 1,641 GWh in multisector.

- The energy efficiency objective of the new un-approved National energy program (NEP) is to achieve 20% improvement in energy efficiency by 2020 and 27% by 2030 compared to 2008. The other objectives of new NEP are:
  o 25% share of RES in gross final energy consumption by 2020 and a 30% share in 2030;
  o 9.5% reduction in greenhouse gas (GHG) emissions from the combustion of fuels by 2020 and an 18% reduction by 2030 compared to 2008;
○ reducing energy intensity by 29% by 2020 and 46% by 2030 compared to 2008;
○ 100% of nearly zero energy buildings, both new and renovated, by 2020 and in the public sector by 2018;
○ reduce import dependence to the level of 45% by 2030.

- The primary energy intensity of Slovenia decreased from about 340 ktoe/\text{M€}_{2000} in 2000 to 295 ktoe/\text{M€}_{2000} in 2010 or about -13% or -1.4%/year. More decrease was reached in the period 2001-2007, where the intensity decreased from 355 ktoe/\text{M€}_{2000} to 292 ktoe/\text{M€}_{2000}.
- The decrease of final energy intensity was more than 16% in the the period 2000-2010 from 245 ktoe/\text{M€}_{2000} in 2000 to 206 ktoe/\text{M€}_{2000} in 2010 or for -16% or 1.7%/year. Also more decrease was reached in the period 2000-2007 (-21%).
- The improvement of total energy efficiency (industry, transport, households) of Slovenia, measured by energy efficiency index ODEX, in the period from 2000 to 2010 has been 18.2% or 2.0%/year. The improvement of energy efficiency in Slovenia was higher than the energy efficiency of EU-27 average, which was 11.5% or 1.2%/year.
- The improvement of energy efficiency measured by ODEX in the period from 2000 to 2010 has been 20.7% or 2.3%/year in manufacturing industry, 24.6% or 2.8%/year in residential sector and 11.5% or 1.2%/year in transport.
- The total CO$_2$ emissions per capita were slightly increased by 0.7%/cap (from 4.41 to 4.44 kCO$_2$/cap.) in the period 2000-2010, but were decreased by -2.9%/cap (from 4.54 to 4.41 kCO$_2$/cap.) in case of energy consumption with climate correction in the same period. The direct CO$_2$ emissions per capita have increased by 2.4%/cap (from 7.23 to 7.41 kCO$_2$/cap.) in the observed period 2000-2010.
- The direct CO$_2$-emissions intensity has been decreased from 0.47 kCO$_2$/EUR$_{2000}$ to 0.38 kCO$_2$/EUR$_{2000}$ and the total CO$_2$-emissions intensity has decreased from 0.78 kCO$_2$/EUR$_{2000}$ to 0.63 kCO$_2$/EUR$_{2000}$ in the period from 2000 to 2010.
2 The Background to Energy Efficiency

2.1 Overall economic context

The growth of gross domestic product (GDP) happened in the period from 2000 to 2008, then strong dropping down in 2009 due to economic crisis, followed by a slow increase in 2010.

The trend of economic development in Slovenia was increasing in the period from 2000 to 2008 and a strong decrease in 2009. The average yearly growth of gross domestic products (GDP) within this period (2000-2008) was 4.3%/year. The decrease of GDP in 2009 reached -8% which was lower than the decrease of GDP of EU-27 (-4.3%). The average yearly increase in the whole observed period 2000-2010 was 2.7%/year, which is higher than in EU-27 (1.4%/year) in the same period. The yearly average growth of private consumption of households was 2.6%/year and the growth of value added (VA) of industry 2.3%/year in the same period as is shown in Table 1.

The highest increase of economic growth was in the period 2004-2008 where the average growth of GDP was 5.1%/year and VA of industry 5.8%/year (Table 1)

Table 1: Growth of GDP, private consumption, VA of industry in Slovenia for the period 2000-2010

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<tbody>
<tr>
<td>GDP</td>
<td>5.1</td>
<td>4.3</td>
<td>-8.0</td>
<td>2.7</td>
</tr>
<tr>
<td>Consumption of households</td>
<td>3.7</td>
<td>3.3</td>
<td>-0.1</td>
<td>2.6</td>
</tr>
<tr>
<td>VA Industry</td>
<td>5.8</td>
<td>5.0</td>
<td>-15.9</td>
<td>2.3</td>
</tr>
</tbody>
</table>

The GDP of Slovenia at constant prices (reference year 2000) in 2010 amounted to €24237 which presents 131% of GDP in 2000. The growth of GDP was the highest in the period (2004-2008) where the growth reached 40% in comparison to 2000 as is shown in Figure 1.

The private consumption in households and VA of industry increased for 29% and 25% in whole period (2000-2010) and for 30% and 47% in the period of highest economic growth (2000-2008) as is shown in Figure 1.
Figure 1: Trends of macro-economic developments in Slovenia in period 2000-2010

Figure 2 shows the yearly growth of GDP in Slovenia and EU-27 in the period 2000-2010.

Figure 2: Yearly growth of GDP in Slovenia and EU-27 for the period 2000-2010
2.2 Energy consumption trends: by fuel and by sector

The total final energy consumption in industry, transport, households and other sectors in Slovenia was 4.43 Mtoe in 2000 and 4.94 ktoe in 2010. The growth of final energy consumption in 2010 was 11.5% in comparison to 2000. The average yearly growth was 1.09%/year within the observed period from 2000 to 2010.

The main increase of consumption was in biomass (2.9%/year) followed by electricity (1.3%/year) and natural gas (0.9%/year) as is shown in Figure 3 and Table 2. Coal consumption in end-use decreased by 42% during the observed period.

Table 2: Growth of final energy consumption by energy sources

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<tbody>
<tr>
<td></td>
<td>[%]</td>
<td>[%/year]</td>
<td>[%]</td>
<td>[%/year]</td>
</tr>
<tr>
<td>Coal</td>
<td>-41.9</td>
<td>-22.8</td>
<td>-5.3</td>
<td>-6.3</td>
</tr>
<tr>
<td>Oil products</td>
<td>8.3</td>
<td>7.4</td>
<td>0.8</td>
<td>1.8</td>
</tr>
<tr>
<td>Natural gas</td>
<td>9.0</td>
<td>11.4</td>
<td>0.9</td>
<td>2.7</td>
</tr>
<tr>
<td>Electricity</td>
<td>13.7</td>
<td>12.6</td>
<td>1.3</td>
<td>3.0</td>
</tr>
<tr>
<td>Heat</td>
<td>-1.5</td>
<td>2.5</td>
<td>-0.2</td>
<td>0.6</td>
</tr>
<tr>
<td>Biomass</td>
<td>33.3</td>
<td>10.2</td>
<td>2.9</td>
<td>2.5</td>
</tr>
<tr>
<td>Total</td>
<td>11.5</td>
<td>8.4</td>
<td>1.1</td>
<td>2.1</td>
</tr>
</tbody>
</table>

The structure of final energy consumption by energy sources in 2000 and 2010 is shown in Figure 3. The share of renewable energy sources (biomass, geothermal and thermal solar energy) is increased for 2.7% in the period 2000-2010.

Figure 3: Structure of final energy consumption in Slovenia in 2000 and 2010
The highest growth of final energy consumption (2.1%/year) was in the period from 2002 to 2006. The main increase in this period was in electricity (3.0%/year) followed by gas (2.7%/year) and biomass (2.5%/year) as is shown in Table 2.

The highest increase in final energy consumption was in 2008 as result of the increase of oil products consumption in transport.

The final energy consumption was decreased within the period 2000-2010 in industry for -9% and other 17% and transport and decreased for 14% in the tertiary sector in the same period. The highest growth in energy consumption was in transport in the period between 2000 and 2007. This increase reflects the increase in the transit transport through Slovenia and “fuel tourism” as results of the lower price of vehicle fuels in Slovenia in comparison to the price in neighbour countries.

Structure of final energy consumption by sectors in Slovenia for the period 2000-2010 is shown in Figure 5.
2.3 The policy background to energy efficiency

The activities of Slovenia in the field of energy efficiency go back to the nineties of the previous century. The Slovenian National Assembly (Parliament) adopted different documents (strategies, laws) regarding the energy policy including the security, reliability and sustainability of energy supply and consumption. The adopted energy – environment strategies/acts are:

- Control of Pollution Act", 1993.
- Resolution on the Strategy of Use and Supply of Energy in Slovenia, January 1996,
- Energy Act, September 1999 and its amending in 2004, 2006 and 2008,
- Resolution on National Energy Program (ReNEP), April 2004,

The Energy Act adopted by the Slovenian National Assembly (Parliament) in September 1999 and its amending in 2004, 2006 and 2008 directly addresses energy efficiency and renewable energy resources with different clauses.

According to the Energy act, the Slovenian government adopted in 2004 "The Resolution on National Energy Programme (ReNEP)" [9].
The targets of Slovenian policy defined in the Resolution on National Energy Programme (ReNEP) are to:

- improve the energy efficiency by 2010 as for 2004:
  - in industry and service sectors for 10%,
  - in buildings for 10%,
  - in public sector for 15% and
  - in transport for 10%.
- double share of electricity production in CHP,
- increase the share of RES in primary energy balance to 12% in 2010:
  - increasing heat supply from RES from 22% to 25%,
  - increasing electricity from RES from 32% to 33.6,
  - achieving 2% share of biofuels for transport at the end of 2005.

The Agency for Efficient Energy Use (AURE) was established in 1995 as a body responsible for implementation of energy efficiency policy and utilization of renewable energy sources and in 2005 became under the ministry responsible for energy as a Department of Efficient Use and Renewable Sources of Energy within the ministry responsible for energy (actually: The Ministry of Infrastructure and Spatial Planning). The most of activities of AURE regarding the subsidies for the investment in energy efficiency and renewable sources of energy came under the Environmental Fund of the Republic of Slovenia (Eco Fund). Eco Fund is the biggest financial institution dedicated to the promotion of environmental investments in the Republic of Slovenia.

The main energy efficiency policy in the last years is connected to the EU Environmental and energy package 20-20-20. All implemented energy efficiency measures are the measures from the regulation to fulfil the obligatory targets for Slovenia.

The National Energy Efficiency Action Plan


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1 The Department of Efficient Energy Use and Use of Renewable Energy Sources is under the European Affairs and Investments Directorate within the Ministry of the Environment, and Spatial Planning (2005).
2 Eco Fund: Slovenian Environmental Public Fund (http://www.ekosklad.si/index.html)
The targets of the NEEAP is to achieve cumulative savings of at least 9% of the average final energy consumption under ES Directive (Non ETS) in the 2008–2016 period, or at least 4,232 GWh (including the energy savings resulting from the implementation of earlier activities in the 1995–2007 periods). Savings are to be achieved by means of various sectoral-specific, horizontal and multisectoral measures in all sectors (households, tertiary sector, industry and transport).

The first NEEAP 1 for Slovenia has proposed 29 sectoral, multi-sectoral and horizontal instruments to achieve the energy efficiency target. A large number of barriers will be removed by these instruments; these barriers are of an institutional, legislative, administrative, economic, financial, personnel nature, and also relate to awareness and information provision, etc.

The second NEEAP 2 for Slovenia has proposed different sets of measures in all sectors: 5 measures for households, 5 measures for industry, 3 measures for tertiary, 4 measures for transport, 4 measures for public sector and 3 multi-sectoral measures. Also there are 4 measures supporting all sectors. The expected total energy savings due to the implementation of the measures referred to NEEAP 2 in 2016 are estimated at 7,246 GWh of which 1,557 GWh in households, 717 GWh in tertiary (of which 557 GWh in public sectors), 1,634 GWh in industry, 1,717 GWh in transport and 1,641 GWh in multisector.

National energy program

The objectives of energy policy Energy Act define the strategy on energy end-use as defined in the National Energy Program (NEP).

According to the Energy Act (under approving) a proposal of the new National energy programme (NEP) was prepared for the period to 2030.

The energy efficiency objective of the new NEP is to achieve 20% improvement in energy efficiency by 2020 and 27% by 2030 compared to 2008. The other objectives of new NEP are:

- 25% share of RES in gross final energy consumption by 2020 and a 30% share in 2030 will contribute to the efficiency of conversion in transformations and energy end-use;
- 9.5% reduction in greenhouse gas (GHG) emissions from the combustion of fuels by 2020 and an 18% reduction by 2030 compared to 2008;
- reducing energy intensity by 29% by 2020 and 46% by 2030 compared to 2008;
• 100% of nearly zero energy buildings both new and renovated buildings by 2020 and in the public sector by 2018;
• reduce import dependence on the level of 45% by 2030.

The draft NEP proposal objectives are sub-effective final energy consumption, energy use in transport, local energy, combined heat and power generation, power generation.

The Slovenian parliament adopted amendments of the “Motor Vehicles Tax Act” on 28 January 2010, which imposes taxes on motor vehicles according to CO$_2$ emissions per km.

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3 Overall Assessment of Energy Efficiency Trends

3.1 Overall trends in energy intensity

The primary energy intensity\(^5\) of Slovenia decreased in the observed period from about 340 ktoe/M€\(_{2000}\) in 2000 to 295 ktoe/M€\(_{2000}\) in 2010 or about -13% (Figure 6). More decrease was reached in the period 2001-2007, where the intensity decreased from 355 ktoe/M€\(_{2000}\) to 292 ktoe/M€\(_{2000}\) in this period.

The decrease of final energy\(^6\) intensity was more than 16% in the same observed period from 245 ktoe/M€\(_{2000}\) in 2000 to 206 ktoe/M€\(_{2000}\) in 2010 or for -16% (Figure 6). Also more decrease was reached in the period 2000-2007 (-21%).

The yearly average decrease of primary and final energy intensity between the year 2000 and 2010 is -1.4%/year and -1.7%/year (Figure 6).

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\(^5\) The energy intensity indicator presents the relation between the energy consumption and gross domestic products.

\(^6\) Final energy consumption of end use sectors: industry, transport and tertiary sector.
There is a little variation (+/- 1%) between the primary and final energy intensity with and without climate correction (Figure 7).

The primary energy intensity in Slovenia with climate correction was 293 ktoe/M€\textsubscript{2000} in 2010, which is higher than the average of EU 27 (165 ktoe/M€\textsubscript{2000}) for about 78%, but the energy intensity at purchasing power parities (ppp 2005) and climate correction is higher only for 9%, where the energy intensity is 165 ktoe/M€\textsubscript{2005} in Slovenia and 151 ktoe/M€\textsubscript{2005} in EU (Figure 8).
3.2 Industry

The total final energy consumption of industry in Slovenia has decreased in the period 2000-2002 for -11% then increased in the next years to 2007 to over level in 2000. The energy consumption after the year 2007 fell down for 18% in 2010 regarding the consumption in 2000 (from 1553 ktoe in 2000 to 1277 ktoe in 2010) as is shown in Figure 10. The average decrease in final energy consumption of industry in the period 2000-2010 was -1.9%/year.
The trend of energy consumption of manufacturing industry was similar to the trend of industry. The energy consumption of manufacturing industry (Figure 9) decreased for -38% (-4.6%/year) in the observed period (2000-2010). The trend of energy consumption changed three times within the observed period. Energy consumption is first reduced then increased and again decreased. The energy consumption of manufacturing industry decreased for -20.2% (-10.6%/year) between 2000 and 2002 then increased for 8% (+2.6%/year) between 2002 and 2005 and in the period from 2005 to 2010 fell down for 28% (-6.2%/year) as is shown in Figure 9.
The energy consumption increased in food, wood, machinery & metal products, rubber and plastics and chemicals industrial branches. The energy consumption decreased in all other industrial branches. The trends and consumption of final energy consumption in industrial branches are shown in Figure 11 and Figure 12.
Figure 11: Trend of final energy consumption of industrial branches in Slovenia

Figure 12: The final energy consumption of industrial branches in Slovenia
Figure 13 shows the specific consumption of steel and paper in the period 2000-2010.

The decrease of specific energy consumption of steel is a result of implementation of energy efficiency measures and increase of the exploitation of steel production capacities in the period to 2008 followed by decrease of production in 2009 and higher production in 2010. The growth of steel production at the same production capacities contributes to improve the energy efficiency in industry.

The improvement of specific energy consumption in paper industry is a result of different energy efficiency measures and stopped production of cellulose.

The variation in final energy intensity and the impact of structure change for the period from 2000 to 2010 is shown in Figure 14. The impact of structure change is positive (more than 0 for the period) and its impact is negative.

The impact of structure change at adjusted economic structure and at ppp, 2005 is shown in Figure 14.
3.3 Households

The trend of final energy consumption in households in the period 2000-2010 was wavy (Figure 15): increase (2000-2003), decrease (2003-2007) and increase (2007-2010).

The energy consumption in households increased for 14% at the end of period (2010) than in the first year (2000), but the energy consumption with climate correction was in 2010 nearly level in 2000 (Figure 15).
The structure of energy consumption in household by energy sources for 2000, 2005 and 2010 is shown in Figure 16. The change of energy consumption structure shows stopped use of coal, reduced use of oil and increased use of biomass, gas and electricity consumption.

There is a change in data about the consumption of wood biomass from 2009, because the Statistical office has estimated a new methodology for energy consumption in households.

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7 The data about the wood biomass consumption increased from 6.456 TJ in 1999 to 15.000 TJ in 2000 and then decreased to 13.573 TJ from 2002 to 2008.
Figure 16: Structure of final energy consumption of households in Slovenia

Figure 17 shows the structure of energy consumption in households by end use for 2000, 2005 and 2010. The high growth of energy consumption for space heating in 2010 is a result of the correction of data about wood consumption in households from 2009.
There is an increase also in electricity consumption for household appliances (Figure 17). The trend of specific unit consumption of large electrical household appliances is shown in Figure 18. The trend of unit consumption of TV is increasing during the whole period but it is decreasing for all other electrical appliances (Figure 18).

Figure 18: Trend of unit consumption of large electrical appliances in Slovenia

The unit consumption of TV is increased for 81% in 2010 regarding the year 2000. The most decrease in unit consumption (improvement of energy efficiency) in the last ten years was in washing machines (-40%) followed by freezers (-24%), dishwashers (-19%), refrigerators (-17%) and dryers (-6%).

3.4 Services

The available statistical data of energy consumption in the services sector (including energy consumption of agriculture) are obtained as the difference between the total final energy consumption and energy consumption in industry, construction, transport and household and includes energy consumption in agriculture.

The energy intensity was decreased within the observed period (2000-2010) for -32%, but the electricity intensity has increased for 10% in 2010 in comparison to 2000 as is shown in Figure 19.
The energy and electricity consumption per employee in service sector for the period from 2000 to 2010 are shown in Figure 20.

The energy consumption (with climate correction) per employee in the period from 2000 to 2010 decreased for -23.7% (from 1.23 toe/emp./year To 1.04 toe/emp./year, but the electricity per employee has increased for 23.1% in the same period (from 4.39 MWh/emp./year to 5.41 MWh/emp./year) as is shown in Figure 20 and Figure 21.
Energy Efficiency Policies and Measures in [country name] in 2012

Figure 20: Final energy and electricity consumption per employee of service sector

Index of energy and electricity consumption by employee of service sector in the period from 2000 to 2010 is presented in Figure 21.

Figure 21: Index of energy and electricity consumption by employee of service sector
3.5 Transport

The total energy consumption of transport increased from 1310 ktoe in 2000 to 1872 ktoe in 2010.

Final energy consumption of transport was higher for 43% or 3.6%/year in 2010 in comparison to 2000 (Figure 22).

Figure 22: Final energy consumption in transport by mode

The energy consumption increased in road transport for 47% or 4%/year and decreased in rail transport for -6% or -0.6%/year, meanwhile the energy consumption of air transport did not change (Figure 23).
Energy Efficiency Policies and Measures in [country name] in 2012

The unit consumption by car and per car equivalent (car_{eq}) in road transport for the period 2000-2010 is presented in Figure 24.

![Figure 23: Trend of energy consumption in transport by mode](image)

Figure 24: Unit energy consumption per car in road transport
The unit consumption per car in the period 2000-2010 decreased for -2.7% or -0.3%/year meanwhile the unit consumption per car equivalent increased for 17.3% or in average 1.6%/year in the same period. The transport of personal car per year (mileage) in km decreased in 2010 in comparison to 2000, but the increase has been noticeable in mileage of trucks (+122%) and buses (86%).

3.6 Assessment of energy efficiency/savings through ODEX: total and by sector

The improvement of total energy efficiency (industry, transport, households) of Slovenia, measured by energy efficiency index ODEX in the period from 2000 to 2010 has been 18.2% or 2.0%/year. The improvement of energy efficiency in Slovenia was higher than the energy efficiency of EU-27 average, which was 11.5% or 1.2%/year. Figure 25 shows the index of total energy efficiency of Slovenia and EU-27 in the period from 2000 to 2010.

Figure 25: Total energy efficiency index (industry, transport, households) of Slovenia and EU 27
The improvement of energy efficiency of manufacturing industry in Slovenia, measured by ODEX in the period from 2000 to 2010 has been 20.7% or 2.3%/year.

The index of energy efficiency of manufacturing industry in Slovenia in the period from 2000 to 2010 is shown on Figure 26.

![Figure 26: Energy efficiency index of manufacturing industry in Slovenia](image)

The improvement of energy efficiency of households in Slovenia, measured by ODEX in the period from 2000 to 2010, has been 24.6% or 2.8%/year.

The index of energy efficiency of households in Slovenia in the period from 2000 to 2010 is shown on Figure 27.
The improvement of energy efficiency of transport in Slovenia, measured by ODEX in the period from 2000 to 2010, has been 11.5% or 1.2%/year.

The index of energy efficiency of transport in Slovenia in the period from 2000 to 2010 is shown on Figure 28.
3.7 \textbf{CO}_2\text{-emissions trends}

The total \text{CO}_2 emissions include direct and indirect\(^8\) emissions and follow the energy consumption of fossil fuels (transformation, final energy use).

The total \text{CO}_2 emissions per capita were slightly increased for 0.7%/cap (from 4.41 to 4.44 k\text{CO}_2/cap.) in the period 2000-2010, but were decreased for -2.9%/cap (from 4.54 to 4.41 k\text{CO}_2/cap.) in case of energy consumption with climate correction in the same period, as is shown in Figure 29.

The direct \text{CO}_2 emissions per capita have increased for 2.4%/cap (from 7.23 to 7.41 k\text{CO}_2/cap.) in the observed period 2000-2010 (Figure 29).

\(^8\) Direct \text{CO}2 emissions are emissions by fuel (fossil fuels) consumptions. Indirect \text{CO}_2 emissions are emissions of electricity and district heating generation.
The direct CO\textsubscript{2}-emissions intensity has decreased from 0.47 kCO\textsubscript{2}/EUR\textsubscript{2000} to 0.38 kCO\textsubscript{2}/EUR\textsubscript{2000} and the total CO\textsubscript{2}-emissions intensity has decreased from 0.78 kCO\textsubscript{2}/EUR\textsubscript{2000} to 0.63 kCO\textsubscript{2}/EUR\textsubscript{2000} in the period from 2000 to 2010 as is shown in Figure 30.
The direct and total CO₂-emissions intensity measured by kCO₂/EUR_{2000} has decreased for -20.1% and -19.1% in the period from 2000 to 2010 as is shown in Table 3.

**Table 3: Variation of the CO₂-emissions intensity in Slovenia (2000-2010)**

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>CO₂ emissions intensity of final consumers</td>
<td>-20.5%</td>
<td>-2.3%</td>
</tr>
<tr>
<td>CO₂ emissions intensity of final consumers with climate corrections</td>
<td>-23.4%</td>
<td>-2.6%</td>
</tr>
<tr>
<td>Total (direct and indirect) CO₂ emissions intensity</td>
<td>-19.1%</td>
<td>-2.1%</td>
</tr>
<tr>
<td>Total CO₂ emissions intensity (with climate corrections)</td>
<td>-21.0%</td>
<td>-2.3%</td>
</tr>
</tbody>
</table>
The trend of the direct and total CO$_2$ emissions intensity in the period from 2000 to 2010 is shown in Figure 31.

Figure 31: Trend of the direct and total CO$_2$ emissions intensity (2000-2010)
4 Energy efficiency measures

4.1 Recent Energy Efficiency Measures

The main energy efficiency measures in all end use sectors are the measures defined in the National Energy Efficiency Action Plan for 2008–2016 (NEEAP). The main legal documents for implementation of energy efficiency and utilization of renewable energy sources in Slovenia are the Energy act, Resolution on the National energy programme and Control of Pollution Act. The description of the energy efficiency measures and policies in Slovenia is available on the MURE database for all final energy consumers.

The Ministry responsible for energy (The Ministry of Infrastructure and Spatial Planning – Directorate for energy- the Department of efficient use and renewable sources of energy) is responsible for organizing and monitoring the implementation of energy efficiency measures. The financial incentives are mainly managed by Eco-Fund (Slovenian Environmental Public Fund) and large energy suppliers (suppliers of heat distribution system, supplying at least 75 GWh of heat annually, and suppliers of electricity, gas and liquid fuels, which supply at least 300 GWh of energy annually).

Residential Sector

The government substitutes the old Regulation on thermal insulation and efficient energy use in buildings from 2002 with the new Regulation on efficient use of energy in buildings. The Regulation defines the technical requirements, which have to be implemented for energy efficiency in buildings in the area of thermal insulation, heating, cooling, ventilation or their combination, preparation of hot water and lighting in buildings. The obligation for all new buildings is providing at least 25% of own renewable energy sources for operation systems in the building. The reduction of specific energy consumption for heating requirement (kJ/m²a) is estimated at 50% in comparison to the old regulation from 2002.

The financial incentives for a set of energy efficiency measures in households include measures for energy-efficient renovation and sustainable construction of residential buildings, energy efficient heating systems, energy efficiency for low income households.

The more effective recent energy efficiency measures in the residential sector are mainly focused on:
the energy-efficient renovation and sustainable construction of residential buildings: energy sanitation, building of new low energy buildings, building of new passive buildings,

energy efficient heating systems: high energy efficient boilers, special biomass boilers with very high efficiency, optimization of heating system operation, more efficient heating sub-stations in district heating systems, use of thermal solar systems and heat pumps for space heating and preparing of hot sanitary water,

energy efficiency for low income households: sanitation of buildings to achieve minimum of energy efficiency standard, distribution of energy-efficient household appliances, heating systems, energy efficient lighting and other measures.

Transport Sector

The main aims of the policy measures are to increase the environmental acceptability and energy efficiency of road motor vehicles, promotion and competitiveness of public transport, sustainable freight transport and construction of cycle paths and promotion of cycling.

The measure to increase energy efficiency of road motor vehicles aims to increase the environmental acceptability and energy efficiency of road motor vehicles in Slovenia. The measure includes regulation, financial and fiscal instruments:

− regulation: energy labelling of private vehicles, green public procurement, mandatory advertising measures,
− financial: financing of promotional and education activities, co-financing purchase of environmentally friendly and energy-efficient motor vehicles,
− fiscal: taxing of private and freight vehicles and buses.

The promotion and competitiveness of public transport include different instruments:

− promotion, awareness-raising and provision of information on the advantages of public transport,
− financial incentives, stimulative subsidising of public transport, and
− fiscal instruments for restricting private car access to city centres.

The main planned activities for promotion and competitiveness of public transport are:

− modal shift in the choice of private transport: introduction of unified (combined) tickets, price accessibility, harmonisation of timetables, increase in accessibility, frequency, punctuality, speed and quality of public transport routes, increase in car-park charges, establishment of intermodal terminals and information centres, introduction of school and education programmes,
- providing incentives for public transport providers to adapt their operations appropriately in order to increase their passenger kilometres (PKM): subsidy stimulus for public road transport with regard to the number of PKM, introduction of cordoned zone charges and payment stickers, incentivised tariff and zone systems,
- providing incentives for public transport providers to purchase compressed natural gas vehicles and
- systemic measures under the “Operation program for reduction of greenhouse gases”: cross financing: employers provide employees with a ticket (annual/monthly) for transport to and from work (financing public transport and encourages employees to actually use it), partial cross financing via additional public transport subsidies (lower price of monthly/annual tickets or even introducing free public transport).

The measures for promotion and sustainable freight transport are direct subsidies from the budget and taxes on road freight vehicles. The instruments to achieve the targets include financial incentives for the establishment of intermodality and an increase in rail freight transport and fiscal instruments for road freight transport.

The main activities for promotion and sustainable freight transport are:
- competitiveness of rail freight and intermodality: development of logistics centres, transshipment terminals and intermodal hubs, use of piggyback trains, inclusion of external costs in road tolls and other taxes on freight transport,
- increasing the efficiency of freight transport: subsidies for acquiring environmentally more appropriate vehicles (EURO 5), educating drivers and goods vehicle fleet operators.

The measures for construction of cycle paths and promotion of cycling include financial incentives for the construction of 500 km of cycle paths and support facilities, removing of obstacles to the acceptance of bicycles on trains and buses, and financing of promotional and education activities on the use of bicycles as an alternative mode of transport.

To limit CO₂ emissions from cars, an amendment of the “Motor Vehicles Tax Act” was adopted, which imposes taxes on motor vehicles according to CO₂ emissions per km.
Industrial Sector

The energy efficiency measures in industry focused on the efficient use of electricity, introduction of energy management system, increase of electricity generation from renewable energy sources and in combined heat and electricity production (CHP) systems and entry of green energy into market.

The set of energy efficiency measures in industry are:

- Financial incentives for efficient electricity consumption: electric motors, frequency regulation of motor revolutions, pumps and ventilators, systems for preparing compressed air, lighting.
- Financial incentives to raise energy efficiency in industry and the services sector and significantly increase the scope of environmentally friendly electricity generation from renewable energy sources (RES) and combined heat and electricity production (CHP) systems,
- Incentives for introducing energy management systems in industry,
- Schemes for efficient electricity consumption and reduction of greenhouse gas (GHG) emissions,
- Establishing a development scheme and other incentives for the commercial sector in the entry of green energy products into the market.

The financial incentives for efficient electricity consumption include measures (activities) to improve the following technologies: electric motors, frequency regulation of motor revolutions, pumps and ventilators, systems for preparing compressed air, and lighting.

The aim of financial incentives to increase the scope of environmentally friendly electricity is to significantly increase the scope of environmentally friendly energy production from renewable energy sources and combined heat and power systems in industry. The measure includes financial incentives in form of loans with favourable interest rates; form of subsidies and incentives in the framework of large liable entity programmes.

The incentives for introducing energy management systems in industry are in a form of financial incentives (subsidy) to introduce energy management systems in industrial companies: energy audits; the implementation of energy management systems; preparation of feasibility studies for investment in energy efficiency and RES.

Schemes for efficient electricity consumption and reduction of greenhouse gas (GHG) emissions is a financial instrument in form of scheme for exemption from payment CO₂
taxes for industrial companies liable to pay CO₂ taxes. The measure aims to reduce GHG emissions related to CO₂ taxes exemption.

Establishing a development scheme and other incentives for the commercial sector in the entry of green energy products into the market is a financial instrument in form of subsidies to develop energy efficient products, production processes, services and solutions, and especially for demonstration projects and in introducing these products to the market.

**Tertiary Sector**

The energy efficiency measures in tertiary sector aim to efficient use of energy in buildings, efficient use of electricity, introduction of energy management system, increase of electricity generation from renewable energy sources and in combined heat and electricity production (CHP) systems and green public procurement.

The set of energy efficiency measures in the tertiary sector are:

- Financial incentives for energy-efficient renovation and sustainable construction of buildings in the public sector,
- Financial incentives for efficient electricity consumption in the public sector,
- Schemes for efficient electricity consumption and reduction of GHG emissions,
- Financial incentives for efficient electricity consumption,
- Financial incentives to raise energy efficiency in industry and the services sector and significantly increase the scope of environmentally friendly electricity generation from RES and CHP systems,
- Introducing an energy management system in the public sector,
- Green public procurement.

The financial incentives for renovation and sustainable construction of buildings in the public sector aim to reduce energy consumption for heating and cooling.

The financial incentives for efficient electricity consumption aim to efficient use of electricity in public lighting, utility services and efficient use of electricity in the public sector.

The introduction of an energy management system is intended for efficient use of final energy in the public sector.

Through green public procurement, the public sector can achieve major effects in reducing energy consumption, and indirectly, through greater demand for new “green” products, services and technology, it can spur the development of the market and competitiveness.
Cross-cutting measures

The energy contracting (Third part financing TPF) is a financial instrument and presents an effective measure to improve energy efficiency on the consumption side and energy supply, and to reduce energy costs in all sectors.

The support scheme, with guaranteed purchase prices and operating support for electricity generated from RES and CHP is a financial measure to increase electricity generation from renewable energy sources and for high-efficiency cogeneration at the locations of end-use energy consumers.

4.2 Patterns and Dynamics of Energy Efficiency Measures

The illustration of energy efficiency measures by sector of activities in database MURE is in "spider graphs", where are:
- Coop: Co-operative Measures,
- Cros: Cross-cutting with sector-specific characteristics,
- Fina: Financial,
- Fisc: Fiscal/Tariffs,
- Gene: General Energy Efficiency / Climate Change / Renewable Programmes
- Info: Information/Education,
- Infr: Infrastructure,
- Le/I: Legislative/Informative,
- Le/N: Legislative/Normative,
- Mark: New Market-based Instruments,
- Nonc: Non-classified Measure Types,
- Soci: SocialPlanning/Organisation,

Residential Sector

The energy efficiency measures in the residential sector continue the successful measures from the previous years. The measures focused on the improvement of heating system (more efficient boilers especially condense boilers on natural gas, efficient wood biomass boilers, heat pumps). The energy efficiency measures are divided between financial and legal measures (Figure 32).
The obligatory distribution and calculation of actual heat costs presents a measure with high efficient impact on energy consumption because of the influence on the behaviour of consumers.

Figure 32: Energy efficiency measure patterns of the residential sector: development of measure by type over quantitative impact (SLO)

**Tertiary Sector**

The measures are, like in the residential sector, focused on energy-efficient renovation and sustainable construction of buildings and the improvement of energy performance of buildings in the public sector. The financial measures are focused on the efficient use of electricity for lighting and electrical appliances in service sector. The main high efficient measures are financial measures (Figure 33).
The energy efficiency measures in industry continue the successful measures in the previous years. The financial measures are focused on the efficient use of electricity and encouraging the investment in energy efficiency (Figure 34).

**Industrial Sector**

The energy efficiency measures in industry continue the successful measures in the previous years. The financial measures are focused on the efficient use of electricity and encouraging the investment in energy efficiency (Figure 34).
Transport Sector

The energy efficiency measures in the transport sector are more intensive, especially the second National energy efficiency action plan, than in the previous years (Figure 35). The measures under the National action plan include measures for financial stimulation for the purchase of electrical and hybrid passenger and environment friendly trucks, promotion and competitiveness of public transport.
Cross-cutting measures

Under the cross-cutting measures are all legal Acts, operation programmes and financial schemes, which define the targets and are obligatory for all actors to improve the energy efficiency using efficient technologies and implementation of different measures to improve energy efficiency, increase utilization of renewable energy sources and reduce CO2 emissions (Figure 36).
4.3 Innovative Energy Efficiency Measures

The Slovenian energy policy continues implementation and development of energy efficiency measures and increasing utilization of renewable energy sources to achieve targets of the energy and climate strategies and fulfilling the obligation from different EU Directives and international obligations (Kyoto protocol).

The targets of Slovenian energy efficiency policy are defined in different adopted documents (Energy Act, Resolution on the National energy program, Control of Pollution Act …) and in compliance with other development strategies. The purposes of all energy and environmental policies are to decrease energy dependency, energy intensity and greenhouse gasses emissions as well as increase of security of energy supply and increase the utilization of renewable energy sources.
The energy efficiency measures are intensively implemented after the approval of the first NEEAP. The second NEEAP includes a new additional measures in all sectors.

The next set of energy efficiency measures in residential sector (households) are interrelated measures, which significantly contribute to increase of energy efficiency in buildings, use of renewable energy sources and decrease of greenhouses gas emissions.

The first measure is a new Regulation on efficient use of energy in buildings, which defines new standard and technical requirements in buildings for thermal insulation, heating, cooling, ventilation or their combination, preparation of hot water and lighting in the buildings. The obligation of regulation for all new buildings and renovation of buildings is to assure at least 25% of needed energy for building from own renewable energy sources (thermal solar collectors, biomass boilers, heat pumps....).

The second measure is a financial incentive measure for energy efficient heating systems, which have an impact on the market of new efficient technologies in households (household electrical appliances, energy savings lumps...) and rapidly increase the installation of heat pumps (water-water, ground-water), wood biomass boilers, efficient condense gas or fuel boilers, solar thermal collectors in residential and tertiary sectors.

The third measure, “Energy advice network for citizens –ENSVET”, is a measure to advice and to assist in planning and implementation of energy efficiency measures in households. The consulting and assistance regarding the energy efficiency measures is very important and free of charge for all owners of houses, who want to invest in energy efficiency measures.

The fourth measure is a financial incentive measure for low income households, which include support for sanitation of buildings to achieve minimum of energy efficiency standard, distribution of energy-efficient household appliances, heating systems, energy efficient lighting and other measures.

One of the important energy efficiency measures in industry is “Establishing a development scheme and other incentives for the commercial sector in the entry of green energy products into the market”, which is a financial instrument in form of subsidies to develop energy efficient products, production processes, services and
solutions, and especially to demonstrate projects and to introduce these products to the market. The measure is linked to the green public procurement.

Through green public procurement, the public sector can achieve major effects in reducing energy consumption, and indirectly, through greater demand for new “green” products, services and technology, it can spur the development of the market and competitiveness.
4.4 Energy efficiency measure evaluations

4.4.1 Semi-quantitative Impact Estimates of Energy Efficiency Measures

The semi-quantitative of energy efficiency measures of all sectors are based on the available information from the MURE database. The semi-quantitative of energy efficiency measures in all sectors are shown in tables (Table 4, Table 5). The high efficient measures are measures for improvement of use of electricity (more efficient electrical motors and drivers: ventilation, compressed air, lighting).

Table 6, Table 7, Table 8).

Residential Sector

The improvements of heating systems and thermal insulation of buildings were the most efficient measures in the previous years with high contribution to energy savings in the residential sector.

Table 4: Instruments and Measures by Measure Type in the Residential Sector Implemented in Slovenia

<table>
<thead>
<tr>
<th>Type</th>
<th>Impact</th>
</tr>
</thead>
<tbody>
<tr>
<td>Appliances</td>
<td>L L</td>
</tr>
<tr>
<td>Cooking</td>
<td></td>
</tr>
<tr>
<td>Hot water</td>
<td>H</td>
</tr>
<tr>
<td>Lighting</td>
<td>L</td>
</tr>
<tr>
<td>Other targeted uses</td>
<td>M</td>
</tr>
<tr>
<td>Space cooling</td>
<td>H H</td>
</tr>
<tr>
<td>Space heating</td>
<td>H H L H</td>
</tr>
<tr>
<td>Total electric consumption</td>
<td></td>
</tr>
<tr>
<td>Total final consumption</td>
<td>L M M H L</td>
</tr>
<tr>
<td>Total fuel consumption</td>
<td>L H</td>
</tr>
</tbody>
</table>
Energy Efficiency Policies and Measures in [country name] in 2012

### Tertiary Sector

The measures for increase of heating systems and improvement of building performances are the high efficient measures in tertiary sector.

<table>
<thead>
<tr>
<th>Type</th>
<th>Impact</th>
</tr>
</thead>
<tbody>
<tr>
<td>Commercial appliances</td>
<td></td>
</tr>
<tr>
<td>Hot water (+electr.)</td>
<td>H</td>
</tr>
<tr>
<td>ICT</td>
<td></td>
</tr>
<tr>
<td>Lighting</td>
<td>L</td>
</tr>
<tr>
<td>Motive power/electric motors</td>
<td></td>
</tr>
<tr>
<td>Other targeted uses</td>
<td></td>
</tr>
<tr>
<td>Process heat (excluding hot water)</td>
<td></td>
</tr>
<tr>
<td>Space heating (total)</td>
<td>H H</td>
</tr>
<tr>
<td>Total electric consumption (Services)</td>
<td>M H</td>
</tr>
<tr>
<td>Total final consumption (Services)</td>
<td>L U L M</td>
</tr>
<tr>
<td>Total fuel consumption (Services)</td>
<td></td>
</tr>
<tr>
<td>VAC</td>
<td></td>
</tr>
<tr>
<td>not classified</td>
<td></td>
</tr>
</tbody>
</table>

Status:  
- = OnGoing  
C = Completed  
P = Proposed  
U = Unknown

Impact:  
L = Low,  
M = Medium,  
H = High,  
U = Unknown
Energy Efficiency Policies and Measures in Slovenia in 2012

Industrial sector

The high efficient measures are measures for improvement of use of electricity (more efficient electrical motors and drivers: ventilation, compressed air,….., lighting).

Table 6: Instruments and measures by targeted end use in industry sector implemented in Slovenia

<table>
<thead>
<tr>
<th>Type</th>
<th>Impact</th>
</tr>
</thead>
<tbody>
<tr>
<td>Electric motors and drives</td>
<td>H</td>
</tr>
<tr>
<td>Electrical processes</td>
<td></td>
</tr>
<tr>
<td>ICT</td>
<td></td>
</tr>
<tr>
<td>Lighting</td>
<td>H</td>
</tr>
<tr>
<td>Other targeted uses</td>
<td></td>
</tr>
<tr>
<td>Process cooling</td>
<td></td>
</tr>
<tr>
<td>Process heat and electricity generation</td>
<td></td>
</tr>
<tr>
<td>Space heating</td>
<td></td>
</tr>
<tr>
<td>Total electric consumption</td>
<td>H</td>
</tr>
<tr>
<td>Total final consumption</td>
<td>U U U</td>
</tr>
<tr>
<td>Total fuel consumption</td>
<td></td>
</tr>
<tr>
<td>VAC</td>
<td></td>
</tr>
<tr>
<td>not classified</td>
<td></td>
</tr>
</tbody>
</table>

Status:  = OnGoing,  = Completed,  = Proposed,  = Unknown
Impact: L= Low, M= Medium, H= High, U= Unknown
Transport sector

There are measures to use more efficient and environmental friendly vehicles for passengers and transportation of goods.

Table 7: Instruments and measures by targeted end use in transport sector implemented in Slovenia

<table>
<thead>
<tr>
<th>Type</th>
<th>Impact</th>
</tr>
</thead>
<tbody>
<tr>
<td>Behavior</td>
<td>H</td>
</tr>
<tr>
<td>Mobility</td>
<td></td>
</tr>
<tr>
<td>Modal shift</td>
<td>H</td>
</tr>
<tr>
<td>Non Technical</td>
<td></td>
</tr>
<tr>
<td>Occupancy</td>
<td></td>
</tr>
<tr>
<td>Other targeted end uses</td>
<td></td>
</tr>
<tr>
<td>Technical</td>
<td></td>
</tr>
<tr>
<td>Total electric consumption</td>
<td></td>
</tr>
<tr>
<td>Total final consumption</td>
<td>H H H L</td>
</tr>
<tr>
<td>Total fuel consumption</td>
<td>U</td>
</tr>
<tr>
<td>not classified</td>
<td></td>
</tr>
</tbody>
</table>

Status:  = OnGoing,  = Completed,  = Proposed,  = Unknown
Impact: L= Low, M= Medium, H= High, U= Unknown
### General cross-Cutting sector

Table 8: Instruments and measures by measure type in the general cross-cutting sector implemented in Slovenia

<table>
<thead>
<tr>
<th>General Energy Efficiency / Climate Change / Renewable Programmes</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1 General energy efficiency programme</td>
<td>H H H H</td>
</tr>
<tr>
<td>2 General climate change programme</td>
<td>H H</td>
</tr>
<tr>
<td>3 General renewables programme</td>
<td>H H H</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Legislative/Normative Measures</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>4 Heating Planning (e.g. for district heating, gas)</td>
<td></td>
</tr>
<tr>
<td>5 Priority access of renewables to the electricity grid</td>
<td></td>
</tr>
<tr>
<td>6 Priority access of CHP to the electricity grid</td>
<td></td>
</tr>
<tr>
<td>7 Service obligations for supply distribution companies</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Fiscal Measures/Tariffs</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>8 Preferential feed-in tariffs for renewables</td>
<td>H</td>
</tr>
<tr>
<td>9 Preferential feed-in tariffs for CHP</td>
<td>H</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Financial Measures</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>10 CO2 / energy efficiency /renewables funds</td>
<td>L H U U</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Co-operative Measures</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>11 Voluntary DSM measures of energy suppliers and distributors</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Market-based Instruments</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>12 Incentives facilitating Third Party Financing / ESCOs</td>
<td>U</td>
</tr>
<tr>
<td>13 White certificates</td>
<td></td>
</tr>
<tr>
<td>14 Green certificates</td>
<td></td>
</tr>
<tr>
<td>15 Green tariffs</td>
<td></td>
</tr>
<tr>
<td>16 Quota system for the promotion of renewables</td>
<td></td>
</tr>
<tr>
<td>17 Tender system for the promotion of renewables</td>
<td></td>
</tr>
<tr>
<td>18 Incentives for the producers of innovative technologies</td>
<td></td>
</tr>
<tr>
<td>19 Technology deployment schemes</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Non-classified Measure Types</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>20 Non-classified Measure Types</td>
<td>U U</td>
</tr>
</tbody>
</table>

**Status:**
- Ongoing
- Completed
- Proposed
- Unknown

**Impact:**
- L = Low,
- M = Medium,
- H = High,
- U = Unknown
4.4.2 Lessons from Quantitative Energy Efficiency Measure Evaluations

Evaluation of energy efficient heating systems in residential sector

The energy efficiency measure “Financial incentives for energy efficient heating systems in residential sector” aims to decrease the energy consumption for space heating in residential buildings with replacement of unsuitable boiler capacities with high energy efficient device (use of condensing and modular boilers, installation of special wood biomass boilers with very high efficiency), optimization of heating system operation through investments in thermostatic valves, regulation and hydraulic balance of heating system (automatic regulation valves for balancing aerial lines in multi-dwelling buildings, replacement of heating sub-stations in district heating systems), promoting the installation of ventilation system with high-efficiency heat recovery from waste air, use of thermal solar system for space heating and preparing of hot sanitary water, use of heat pump for space heating and preparing of hot sanitary water (utilization of air heat, heat of underground water, geothermal or under land heat).

The implementation of these measures has impact on the installation of heat pumps and solar thermal collectors. The number of installed heat pumps for heating and preparation of hot water in 2011 was 2,167 heat pumps with 8.5 MW of heat power and the area of all installed solar thermal collectors achieve 10,612 m2 in the same year.

Energy audits in industry and service sector

The energy efficiency measure “co-financing of energy audits in industry and service sector” was implemented only in 2008, within the first period (2008-2010) of the NEEAP.

The implementation of the measures in industry for 12 companies with combined energy consumption of 224.5 GWh/year, of which 100.8 GWh/year is electricity. The energy audits expected energy savings potential was identified through EEU measures with a payback period of up to three years at 12.3% or 27.7 GWh/year, and the potential reduction of CO₂ emissions at 8.7 kt/year.
The energy audits were implemented for 8 buildings in the service sector with combined energy consumption of 22.5 GWh/year, of which 8.8 GWh/year is in the form of electricity. The energy savings potential was identified through EEU measures with a payback period of up to five years and achieve 14.6% or 3.3 GWh/year, and the potential reduction of CO2 emissions to 1.2 kt/year.

The implementation of energy efficiency measures proposed in energy audits estimate reduce of fuel consumption in 2008 by 3.3 GWh/year and consumption of electricity by 2.1 GWh/year, and CO2 emissions by 2 kt/year.

The method for evaluation of energy savings of implementation of energy efficiency measures identified in energy audits is described in the annex 2 of the NEEAP.

The energy savings that result from performing energy audits are determined as the share of potential energy savings estimated on the basis of the energy audit carried out. Energy savings differ depending on the type of fuel/energy product and type of sector in which the energy audit was performed.

The reductions of CO2 emissions are calculated as the sum of reduced emissions owing to reduce of fuels and electricity consumption.

The calculation of energy savings of energy audits are defined by the following equation:

\[
P_{\text{KE}_{\text{EP}}} = P_{\text{p}} \cdot P_{\text{PE}} + P_{\text{pT}+G} \cdot P_{\text{T}+G} \quad \text{[kWh/leto]}
\]

\[
PE(\text{ESD})_{\text{EP}} = 2.5 \cdot P_{\text{p}} \cdot P_{\text{PE}} + P_{\text{pT}+G} \cdot P_{\text{T}+G} \quad \text{[kWh/leto]}
\]

\( P_{\text{KE}_{\text{EP}}} \): end-use energy savings [kWh/year] owing to energy audit

\( PE(\text{ESD})_{\text{EP}} \): ESD energy savings [kWh/year] owing to energy audit
Energy Efficiency Policies and Measures in [country name] in 2012

\[ PP_{EL} : \text{potential end-use energy savings [kWh/year] related to electricity consumption, estimated on the basis of the energy audit} \]

\[ PP_{T+G} : \text{potential end-use energy savings [kWh/year] related to heat or fuel consumption, estimated on the basis of the energy audit} \]

\[ p_{EL} : \text{factor of attained end-use energy savings that relate to electricity consumption as a result of the energy audit as a proportion of potential savings} \]

\[ p_{T+G} : \text{factor of attained end-use energy savings that relate to heat and fuel consumption as a result of the energy audit as a proportion of potential savings, Table 12} \]

### Table 9: Factors of energy savings in performing energy audits

<table>
<thead>
<tr>
<th>Sector</th>
<th>Factors of energy savings attained p</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>electricity</td>
</tr>
<tr>
<td>Buildings (service sector)</td>
<td>0,25</td>
</tr>
<tr>
<td>Industry</td>
<td>0,20</td>
</tr>
</tbody>
</table>

Reductions of CO2 emissions (ZEC in the equations) are calculated as follows:

\[
ZEC = PP_{EL} \cdot p_{EL} \cdot ef_{EL} + PP_{T+G} \cdot p_{T+G} \cdot ef_{G} \quad [\text{kgCO}_2/\text{leto}]
\]

\[ ef_{EL} : \text{emission factor [kgCO}_2/\text{kWh}] \text{ in electricity generation at power plants} \]

\[ ef_{G} : \text{emission factor (average) [kgCO}_2/\text{kWh}] \text{ for fuels in industry and the service sector} \]

Implementation of this method is based on data from energy audits.
5 National Developments under the EU Energy Efficiency Directive and the 20% Energy Efficiency Target of the EU

Slovenian energy policy in all the documents adopted in recent years have been focused on increasing of energy efficiency, utilization of renewable energy sources and reduce greenhouse gas emissions. The Slovenian National Assembly (Parliament) adopted different documents (strategies, laws) regarding energy policy, including the security, reliability and sustainability of the energy supply and consumption.

The “Environmental Protection Act” adopted in 1993 includes the stimulation for the energy efficiency measures and utilization of renewable energy sources and defines establishment of the Eco Fund (Slovenian Environmental Public Fund) as a financial institution for the purpose of providing loans at favourable interest rates for investments in the field of environmental protection.

The Resolution on National Energy Programme (ReNEP) has defined the targets of the energy efficiency policy by 2010 relation to 2004:

- improve the energy efficiency by 10% in buildings, transport, industry and service sectors, and by 15% in the public sector,
- double the share of electricity production in CHP,
- increasing the share of RES in the primary energy balance to 12% in 2010 by increasing heat supply from RES to 25%, electricity from RES to 33.6%, and 2% share of biofuels for transport at the end of 2005.

In 1995 the government established the Agency for Efficient Energy Use (AURE) as a body responsible for implementation of energy efficiency policy and utilization of renewable energy sources. After the reorganization of the government in 2005, the Agency (AURE) became a body under the ministry responsible for energy (The Department of Efficient Energy Use and Use of Renewable Energy Sources within the Ministry of the Environment, and Spatial Planning).

According to the EU policy the Slovenian government has been approved the first National Energy Efficiency Action Plan (NEEAP I) in 2008 and the proposal second NEEAP II in 2011.

The target of the NEEAP is to achieve cumulative savings of at least 9% of the average final energy consumption under ES Directive (Non ETS) in the 2008–2016 period or at least 4 232 GWh.
The first NEEAP 1 for Slovenia has proposed 29 sectoral, multi-sectoral and horizontal instruments to achieve the energy efficiency target. A large number of barriers will be removed by these instruments; these barriers are of an institutional, legislative, administrative, economic, financial, personnel nature, and also relate to awareness and information provision, etc.

The measure under NEEAP “Establishing a development scheme and other incentives for the commercial sector in the entry of green energy products into the market” is a financial instrument in form of subsidies to develop energy efficient products, production processes, services and solutions, and especially for demonstration projects and in introducing these products to the market.

The approved National Renewable Energy Action Plan for 2010 - 2020 for Slovenia under the energy climate package 20-20-20 already provides measures which contribute to increased energy efficiency (utilization of RES for space heating and hot water, promoting CHP and district heating,...).

The second important strategic document for Slovenia (in phase of adopting by Slovenian government) is the National energy program for the period to 2030 (NEP 2030), which considers the continued implementation of all measures proposed in the NEEAP to 2020.

The NEP 2030 is expected, in addition to measures in the NEEAP’s further measures, to achieve 20% energy efficiency improvement by 2020 according to the objectives of climate and energy package "20-20-20" and other measures to achieve 27% energy efficiency improvement by 2030.

The new proposal for the National energy program for the period to 2030 (NEP 2030) in Slovenia includes a set of measures to promote energy efficiency in all sectors (ETS and non ETS).

The expected improvement of energy efficiency is estimated regarding to the intensive implementation of measures by two strategies: Reference (REF) and intensive (INT).
Annex 1

Energy Efficiency Measure Summary by Country
### Residential Sector

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Status</th>
<th>Type</th>
<th>Starting Year</th>
<th>Semi-quantitative Impact</th>
<th>NEEAP Measure</th>
<th>EU-related Measure</th>
</tr>
</thead>
<tbody>
<tr>
<td>SLO12</td>
<td>Energy advice network for citizens</td>
<td>Ongoing</td>
<td>Information/Education, Unknown</td>
<td>1993</td>
<td>Low</td>
<td>Yes</td>
<td>No</td>
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<tr>
<td>SLO16</td>
<td>Stimulation of the investments in energy efficiency measures in households</td>
<td>Completed</td>
<td>Financial</td>
<td>1996</td>
<td>Medium</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>SLO2</td>
<td>EU-related: Recast Ecodesign Directive for Energy-related Products (Directive 2009/125/EC) - Rules on efficiency requirements for new hot-water boilers fired with liquid or gaseous fuels</td>
<td>Ongoing</td>
<td>Legislative/Informative, Legislative/Normative</td>
<td>2002</td>
<td>Low</td>
<td>No</td>
<td>YES</td>
</tr>
<tr>
<td>SLO14</td>
<td>Regulation on thermal insulation and efficient energy use in buildings</td>
<td>Completed</td>
<td>Legislative/Normative</td>
<td>2002</td>
<td>High</td>
<td>No</td>
<td>No</td>
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<tr>
<td>SLO18</td>
<td>Stimulation of the investments in utilization of RES in households</td>
<td>Completed</td>
<td>Financial</td>
<td>2002</td>
<td>Medium</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>SLO18</td>
<td>EU-related: Recast Ecodesign Directive for Energy-related Products (Directive 2009/125/EC) - Rules on minimum energy efficiency requirements for ballasts for fluorescent lighting</td>
<td>Ongoing</td>
<td>Legislative/Normative</td>
<td>2003</td>
<td>Low</td>
<td>No</td>
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</table>
## Energy Efficiency Policies and Measures in Slovenia in 2012

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Status</th>
<th>Type</th>
<th>Starting Year</th>
<th>Semi-quantitative Impact</th>
<th>NEEAP Measure</th>
<th>EU-related Measure</th>
</tr>
</thead>
<tbody>
<tr>
<td>SLO15</td>
<td>EU-related: Energy Labelling of Household Appliances (Directive 92/75/EC) - Rules on energy labelling of household appliance</td>
<td>Ongoing</td>
<td>Legislative/Informative</td>
<td>2004</td>
<td>Low</td>
<td>Yes</td>
<td>YES</td>
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<tr>
<td>SLO20</td>
<td>Financial incentives for energy-efficient renovation and sustainable construction of residential buildings</td>
<td>Ongoing</td>
<td>Financial</td>
<td>2008</td>
<td>High</td>
<td>Yes</td>
<td>No</td>
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<tr>
<td>SLO21</td>
<td>Financial incentives for the energy efficient heating systems</td>
<td>Ongoing</td>
<td>Financial</td>
<td>2008</td>
<td>High</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>SLO24</td>
<td>Compulsory division and calculation of heating costs in multi-dwelling and other buildings according to actual consumption</td>
<td>Ongoing</td>
<td>Legislative/Normative</td>
<td>2008</td>
<td>Low</td>
<td>Yes</td>
<td>No</td>
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<tr>
<td>SLO23</td>
<td>Scheme of energy efficiency for low-income households</td>
<td>Ongoing</td>
<td>Financial, Information/Education</td>
<td>2009</td>
<td>Low</td>
<td>Yes</td>
<td>No</td>
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<tr>
<td>SLO25</td>
<td>Rules on efficient use of energy in buildings</td>
<td>Ongoing</td>
<td>Legislative/Normative</td>
<td>2010</td>
<td>High</td>
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### Tertiary sector

<table>
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<tr>
<th>Code</th>
<th>Title</th>
<th>Status</th>
<th>Type</th>
<th>Starting Year</th>
<th>Semi-quantitative Impact</th>
<th>NEEAP Measure</th>
<th>EU-related Measure</th>
</tr>
</thead>
<tbody>
<tr>
<td>SLO6</td>
<td>Programme of energy audits of companies and buildings</td>
<td>Ongoing</td>
<td>Financial</td>
<td>1993</td>
<td>High</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>SLO1</td>
<td>Third party financing and contracting for efficient energy supply</td>
<td>Ongoing</td>
<td>Co-operative Measures</td>
<td>2001</td>
<td>Low</td>
<td>No</td>
<td>No</td>
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<tr>
<td>SLO7</td>
<td>Rules on the ventilation and air-conditioning of buildings</td>
<td>Ongoing</td>
<td>Legislative/Normative</td>
<td>2002</td>
<td>Low</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>SLO3</td>
<td>Financial incentives for energy efficient heating systems</td>
<td>Ongoing</td>
<td>Financial</td>
<td>2008</td>
<td>High</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>SLO4</td>
<td>Financial incentives for energy-efficient renovation and sustainable construction of buildings in the public sector</td>
<td>Ongoing</td>
<td>Financial</td>
<td>2008</td>
<td>Medium</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>SLO5</td>
<td>Financial incentives for efficient use of electricity</td>
<td>Ongoing</td>
<td>Financial</td>
<td>2008</td>
<td>Medium</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>SLO9</td>
<td>Financial incentives to raise energy efficiency in industry and the services sector and significantly increase the scope of environmentally friendly electricity generation from RES and CHP systems</td>
<td>Ongoing</td>
<td>Financial</td>
<td>2008</td>
<td>High</td>
<td>Yes</td>
<td>No</td>
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<tr>
<td>SLO15</td>
<td>Financial incentives for efficient electricity consumption in the public sector</td>
<td>Ongoing</td>
<td>Financial</td>
<td>2008</td>
<td>Low</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>SLO12</td>
<td>Green public procurement</td>
<td>Unknown</td>
<td>Co-operative Measures, Unknown</td>
<td>2012</td>
<td>Unknown</td>
<td>Yes</td>
<td>No</td>
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<tr>
<td>SLO14</td>
<td>Introducing an energy management system in the public sector</td>
<td>Ongoing</td>
<td>Legislative/Informative, Unknown</td>
<td>2012</td>
<td>Low</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>SLO10</td>
<td>Schemes for efficient electricity consumption and reduction of GHG emissions</td>
<td>Ongoing</td>
<td>Fiscal/Tariffs</td>
<td>2013</td>
<td>Low</td>
<td>Yes</td>
<td>No</td>
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</tbody>
</table>
## Energy Efficiency Policies and Measures in Slovenia in 2012

### Industrial sector

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Status</th>
<th>Type</th>
<th>Starting Year</th>
<th>Semi-quantitative Impact</th>
<th>NEEAP Measure</th>
<th>EU-related Measure</th>
</tr>
</thead>
<tbody>
<tr>
<td>SLO6</td>
<td>Programme of energy audits of companies and buildings</td>
<td>Ongoing</td>
<td>Financial</td>
<td>1993</td>
<td>High</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>SLO1</td>
<td>Third party financing and contracting for efficient energy supply</td>
<td>Ongoing</td>
<td>Co-operative Measures</td>
<td>2001</td>
<td>Low</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>SLO7</td>
<td>Rules on the ventilation and air-conditioning of buildings</td>
<td>Ongoing</td>
<td>Legislative/Normative</td>
<td>2002</td>
<td>Low</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>SLO3</td>
<td>Financial incentives for energy efficient heating systems</td>
<td>Ongoing</td>
<td>Financial</td>
<td>2008</td>
<td>High</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>SLO4</td>
<td>Financial incentives for energy-efficient renovation and sustainable construction of buildings in the public sector</td>
<td>Ongoing</td>
<td>Financial</td>
<td>2008</td>
<td>Medium</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>SLO5</td>
<td>Financial incentives for efficient use of electricity</td>
<td>Ongoing</td>
<td>Financial</td>
<td>2008</td>
<td>Medium</td>
<td>Yes</td>
<td>No</td>
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<tr>
<td>SLO9</td>
<td>Financial incentives to raise energy efficiency in industry and the services sector and significantly increase the scope of environmentally friendly electricity generation from RES and CHP systems</td>
<td>Ongoing</td>
<td>Financial</td>
<td>2008</td>
<td>High</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>SLO15</td>
<td>Financial incentives for efficient electricity consumption in the public sector</td>
<td>Ongoing</td>
<td>Financial</td>
<td>2008</td>
<td>Low</td>
<td>Yes</td>
<td>No</td>
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<tr>
<td>SLO12</td>
<td>Green public procurement</td>
<td>Unknown</td>
<td>Co-operative Measures, Unknown</td>
<td>2012</td>
<td>Unknown</td>
<td>Yes</td>
<td>No</td>
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<tr>
<td>SLO14</td>
<td>Introducing an energy management system in the public sector</td>
<td>Ongoing</td>
<td>Legislative/Informative, Unknown</td>
<td>2012</td>
<td>Low</td>
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<td>No</td>
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<tr>
<td>SLO10</td>
<td>Schemes for efficient electricity consumption and reduction of GHG emissions</td>
<td>Ongoing</td>
<td>Fiscal/Tariffs</td>
<td>2013</td>
<td>Low</td>
<td>Yes</td>
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<tr>
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<td>Title</td>
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<tr>
<td>SLO1</td>
<td>EU-related: Passenger Car Labelling on fuel economy rating (Directive 1999/94/EC) - Rules on consumer information on fuel economy and CO2 emissions in respect of new passenger cars</td>
<td>Ongoing</td>
<td>Information/Education/Training</td>
<td>2003</td>
<td>Low</td>
<td>No</td>
<td>YES</td>
</tr>
<tr>
<td>SLO7</td>
<td>Financial support for purchase of electrical or hybrid cars or motorcycles</td>
<td>Ongoing</td>
<td>Financial</td>
<td>2004</td>
<td>Low</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>SLO2</td>
<td>Resolution on National Programme on Road Traffic Safety</td>
<td>Ongoing</td>
<td>Unknown</td>
<td>2007</td>
<td>Low</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>SLO3</td>
<td>Promotion and competitiveness of public transport</td>
<td>Ongoing</td>
<td>Fiscal, Information/Education/Training, Infrastructure</td>
<td>2008</td>
<td>High</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>SLO4</td>
<td>Promoting sustainable freight transport</td>
<td>Ongoing</td>
<td>Financial, Information/Education/Training, Infrastructure</td>
<td>2008</td>
<td>High</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>SLO5</td>
<td>Increasing the energy efficiency of road motor vehicles</td>
<td>Ongoing</td>
<td>Financial, Fiscal, Information/Education/Training, Legislative/Informative</td>
<td>2008</td>
<td>High</td>
<td>Yes</td>
<td>No</td>
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<tr>
<td>SLO6</td>
<td>Building cycle paths and support structures and promoting cycling</td>
<td>Ongoing</td>
<td>Financial, Information/Education/Training</td>
<td>2008</td>
<td>Low</td>
<td>Yes</td>
<td>No</td>
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<tr>
<td>SLO8</td>
<td>Subsidy for purchase of environment friendly trucks</td>
<td>Unknown</td>
<td>Financial</td>
<td>2009</td>
<td>Low</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>SLO9</td>
<td>Motor Vehicles Tax</td>
<td>Ongoing</td>
<td>Fiscal</td>
<td>2010</td>
<td>Unknown</td>
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### General cross-cutting

<table>
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<th>Code</th>
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<th>Status</th>
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<th>NEEAP Measure</th>
<th>EU-related Measure</th>
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<tbody>
<tr>
<td>SLO8</td>
<td>Energy Act</td>
<td>Ongoing</td>
<td>Financial Measures, Fiscal Measures/Tariffs, General Energy Efficiency / Climate Change / Renewable Programmes, Legislative/Normative Measures</td>
<td>1999</td>
<td>High</td>
<td>No</td>
<td>No</td>
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<tr>
<td>SLO6</td>
<td>Support scheme for electricity generated from RES and CHP</td>
<td>Ongoing</td>
<td>Fiscal Measures/Tariffs</td>
<td>2002</td>
<td>High</td>
<td>Yes</td>
<td>No</td>
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<tr>
<td>SLO1</td>
<td>The Resolution on the National Energy Programme (ReNEP)</td>
<td>Ongoing</td>
<td>General Energy Efficiency / Climate Change / Renewable Programmes</td>
<td>2004</td>
<td>High</td>
<td>No</td>
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<tr>
<td>SLO9</td>
<td>Environment Protection Act</td>
<td>Ongoing</td>
<td>General Energy Efficiency / Climate Change / Renewable Programmes</td>
<td>2004</td>
<td>High</td>
<td>No</td>
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<tr>
<td>SLO2</td>
<td>Ecological Fund of the Republic of Slovenia - ECO-Fund</td>
<td>Ongoing</td>
<td>Financial Measures, General Energy Efficiency / Climate Change / Renewable Programmes</td>
<td>2005</td>
<td>High</td>
<td>No</td>
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<tr>
<td>SLO10</td>
<td>Informational and awareness-raising activities</td>
<td>Ongoing</td>
<td>Non-classified Measure Types</td>
<td>2008</td>
<td>Unknown</td>
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<td>SLO12</td>
<td>Excise duties on fuels and electricity</td>
<td>Ongoing</td>
<td>Financial Measures</td>
<td>2008</td>
<td>Low</td>
<td>No</td>
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<tr>
<td>SLO3</td>
<td>National Energy Efficiency Action Plan of Slovenia</td>
<td>Ongoing</td>
<td>General Energy Efficiency / Climate Change / Renewable Programmes</td>
<td>2008</td>
<td>High</td>
<td>No</td>
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<td>SLO16</td>
<td>Environmental tax for polluting the air with CO2</td>
<td>Unknown</td>
<td>Financial Measures</td>
<td>2008</td>
<td>Unknown</td>
<td>Yes</td>
<td>No</td>
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<tr>
<td>SLO17</td>
<td>Education and training</td>
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<td>Non-classified Measure Types</td>
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<td>SLO15</td>
<td>Regulation on energy savings ensured to final customers</td>
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<td>Financial Measures</td>
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<td>Unknown</td>
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<td>Code</td>
<td>Title</td>
<td>Status</td>
<td>Type</td>
<td>Starting Year</td>
<td>Semi-quantitative Impact</td>
<td>NEEAP Measure</td>
<td>EU-related Measure</td>
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<td>SLO5</td>
<td>Energy contracting</td>
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<td>Market-based Instruments</td>
<td>2013</td>
<td>Unknown</td>
<td>Yes</td>
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</tr>
</tbody>
</table>
Annex 2

Country Profile
**Trendi energetske učinkovitosti**

*Slopošen pregled*


**Industrija**


**Gospodinjstvo**

Energetska učinkovitost v gospodinjstvih se je izboljšala za 25% v celotnem opazovanem obdobju kot posledica implementacije ukrepov energetske učinkovitosti in novega pravilnika o toplotni zaščiti in učinkoviti računi energije v stavbah. Aktivnosti na področju energetske učinkovitosti v gospodinjstvih so bile zelo intenzivne v zvezi z izboljšanjem energetskih karakteristik zgradb: toplotna zaščita ovoja zgradb in izboljšanje učinkovitosti ogrevalnega sistema. Glavni razlog za manjše izboljšanje v energetski učinkovitosti je rezultat dviga življenjskega standarda in sprememba v slogu življenja (več električnih aparatov in večja stanovanjska površina). Izboljšanje metodologije za razporeditev porabe energije za različne namene je imelo tudi vpliv na opazovano izboljšanje energetske učinkovitosti.

**Promet**


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*Vsi indikatorji so merjeni kot triletnega drsečega povprečja.
Vir: ODYSSEE Za več informacije: http://www.odyssee-indicators.org/
Politike in ukrepi energetske učinkovitosti

Institucije in programi


Industrija


Gospodinjstvo in storitve

Implementacija programov URE v gospodinjstvih in sektorjih storitev je usmerjena na izboljšanje porabe energije v stavbah (subvencije, informiranje, izobraževanje, svetovanje, energetski pregledi) in izdelavo energetskeh konceptov občin. Pravilnik o topolnem zaščititvem in učinkoviti rabi energije v stavbah je bil v letu 2010 zamenjan z novim pravilnikom (Pravilnik o energetski učinkovitosti električnih gospodinjskih hladilnikov in zamrzovalnikov).

Promet

Hitro povečanje porabe energije v prometu predstavlja velik izziv za Slovenijo. Večina implementiranih ukrepov je v povezavi z zmanjševanjem emisij toplogrednih plinov (TGP): pregled emisij izpušnih plinov vozil in nastavljanje motorja (2003), Pravilnik o obveščanju potrošnikov o varčni rabi goriv in emisijah CO₂ novih osebnih vozil (2003), subvencije za nakup okolju prijaznih vozil, promocija ter oprostitev plačevanja trošarin in drugih dajatev (CO₂ taksa) za biogoriva. Vlada skuša zmanjšati porabo energije tudi skozi sistem trošarin za motorno gorivo.

Cene energije in davki


Izbrani ukrepi energetske učinkovitosti

<table>
<thead>
<tr>
<th>Sektor</th>
<th>Vrsta ukrepov</th>
<th>Od</th>
</tr>
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<tbody>
<tr>
<td>Industrija in storitve</td>
<td>Finančne spodbude za učinkovito rabo električne energije</td>
<td>2008</td>
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<td>Industrija in storitve</td>
<td>Subvencije za energetske pregledne v industriji in sektorju storitve</td>
<td>2003</td>
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<td>Gospodinjstvo</td>
<td>Energetske svetovanje za občane-ENSVET</td>
<td>1993</td>
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<td>Gospodinjstvo</td>
<td>Finančne spodbude za energetsko učinkovite ogrevalne sisteme</td>
<td>2008</td>
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<td>Gospodinjstvo</td>
<td>Finančne spodbude za energetsko učinkovito obnovo in trajnostno gradnjo stanovanjskih stavb</td>
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<td>Promocija trajnostnega tovornega prometa</td>
<td>2008</td>
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<td>Transport</td>
<td>Povečanje energetske učinkovitosti cestnih motornih vozil</td>
<td>2008</td>
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<td>Vsi sektorji</td>
<td>Eko-sklad: subvencije in ugodni krediti za investicije v energetsko učinkovitost in izkoriščanje obnovljivih virov energije</td>
<td>2000</td>
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<tr>
<td>Vsi sektorji</td>
<td>Resolucija o Nacionalnem energetskem programu (ReNEP)</td>
<td>2004</td>
</tr>
</tbody>
</table>

Vire MURE
Za več informacij: http://www.isisrome.com/mure
Overview
Over the period 2000-2010 the energy efficiency index for the whole economy (ODEX) decreased, indicating an energy efficiency improvement of 18%. The improvement of energy efficiency was reached in all sectors.

Industry
The improvement of energy efficiency in industry was about 21% in 2010 compared to 2000 (high efficiency improvement is also a result of change of the methodology for calculation of industrial production indices and production structure in some sub-sectors). The energy efficiency in chemicals and paper increased in the first period 2000-2004 and then rapidly decreased. The worse energy efficiency was in non metallic industry.

Households
The energy efficiency improved for 25% over the observed period as a result of the implementation of energy efficiency measures and new regulations on buildings insulation. The activity on the energy efficiency in households was very intense in order to improve the energy performance of buildings: improvement of insulation (wall, roof and windows) and more efficient heating systems. But the reason behind smaller improvement in energy efficiency overall lay mainly in the high standard of living and change in lifestyle (more household appliances and larger dwellings). Improvement in methodology for the allocation of energy consumption to different uses has also had an effect on the observed energy efficiency improvement.

Transport
The improvement of energy efficiency in the transport sector was about 12% in 2010 in comparison to 2000. The energy consumption in transport is still increasing since 1991, but the high consumption in the periods 1994-1998 and 2005-2009 is a result of sale of fuels to consumers from neighbouring countries, due to low prices of fuels in Slovenia. The improvements in consumption of specific cars related to the penetration of new, more efficient cars, was offset by the diffusion of larger cars and the decrease in the number of passengers using public transportation.

* All indicators measured as a three-year moving average.
Source ODYSSEE For more information : http://www.odyssee-indicators.org/
Energy Efficiency Policy measures

Institutions and programmes
The Department of Efficient Energy Use and Use of Renewable Energy Sources (EE-RES) within the Ministry responsible for energy (the Ministry of Infrastructure and Spatial Planning) is responsible for the implementation of national programmes for energy efficiency in industry, buildings and transport. The Ecological fund (Eco-fund) is a public financial institution intended for the promotion of environmental investments in Slovenia. Its primary activity is subsidies and providing favourable loans for investments in energy efficiency measures (EEM), renewable energy sources (RES) and other ecological projects.

Targets of the Slovenian National Energy Programme (adopted in 2004) are to improve the energy efficiency by 2010 in comparison to 2004; in industry and service sectors for 10%, in buildings for 10%, in public sector for 15% and in transport for 10%, and to double the share of electricity production in CHP. The target of the adopted “National Energy Efficiency Action Plan for the Period 2008-2016” is to achieve cumulative savings of at least 9% or at least 4,261 GWh.

Industry
The implementation of different energy efficiency action programmes since 1991 was one of the priorities of the Ministry responsible for energy: energy audits; feasibility studies; energy consulting for larger companies; providing information; and demonstration projects. The Department of Efficient Energy Use and Use of Renewable Energy Sources (EE-RES) organises for major energy consumers in industry various promotional programmes, provides information, energy consultations and yearly award for the best energy efficiency projects. EE-RES/Eco-fund also subsidizes energy audits and feasibility studies for investments in energy efficiency measures and RES. The Eco-fund supports the EEM through loans with favourable interest rates. The reduction of energy consumption also became one of the priorities of management in industry in order to reduce the payment of CO2 tax.

Households, Services
The implemented energy efficiency measures in households and service sectors are focused on the improvement of building performance by subsidies, information, education, consulting, feasibility studies and elaboration of municipal energy plans. The regulation on the heat protection and energy efficiency use in buildings from 2002 was replaced by Rules on efficient use of energy in buildings in 2010. The energy labelling of household appliances is in force since 2001. There are also two decrees, first on the required energy efficiency of hot water boilers on liquid and gas fuels, and second on the requirements for energy efficiency of household refrigerators and freezers.

Transport
The rapid increase of the energy consumption in transport presents a big challenge for Slovenia. Most measures implemented are related to the reduction of gas emissions: control of exhaust gas composition and engine adjustment in motor vehicles (2003), the rules on informing consumers of fuel consumption and CO2 emissions of motor vehicles (2003), subsidy for purchase of environment friendly trucks, promotion of biofuel and discharging biofuel of excise and other taxes. The government is also working on reducing the energy consumption through excise duties on motor fuels.

Energy prices and taxes
The Excise Law defines the excise duty for fuels, especially motor fuels and discharges the bio-fuels of excise. The motor fuel price in Slovenia was lower than in other EU countries. The CO2 tax is in force from 1999. A new excise duty on fossil fuels for heating and electricity is in force since 2008.

Selected Energy Efficiency Measures

<table>
<thead>
<tr>
<th>Sectors</th>
<th>Title of measures</th>
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<td>Energy audits and feasibility studies subsidies</td>
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<td>Households</td>
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<td>Households</td>
<td>Financial incentives for the energy efficient heating systems</td>
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<tr>
<td>Households</td>
<td>Financial stimulation for energy efficiency renovation and sustainable building of new buildings</td>
<td>2008</td>
</tr>
<tr>
<td>Transport</td>
<td>Promotion of sustainable freight transport</td>
<td>2008</td>
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<td>Transport</td>
<td>Increasing the energy efficiency of road motor vehicles</td>
<td>2008</td>
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<tr>
<td>All</td>
<td>Eco-fund: subsidies and soft loans for energy efficiency investments and utilization of renewable energy sources</td>
<td>2000</td>
</tr>
<tr>
<td>All</td>
<td>The Resolution on the National Energy Programme (ReNEP)</td>
<td>2004</td>
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</table>

Source MURE
For more information: http://www.isisrome.com/mure