

## Renewable energy sources

**Contrary to the trend in the EU, in recent years Slovenia has not been continually increasing its share of use of renewable energy sources (RES); there was a larger increase in 2009, when, due to the crisis, the consumption of all types of energy except hydro-energy fell.** Although the share of RES in total energy consumption in Slovenia is still higher than in the EU, the difference is decreasing. In the EU, the share is growing, while in Slovenia it is fluctuating due to slow construction of new power plants and changes in the quantity of water in rivers. According to Eurostat data, in 2008, the share of RES in Slovenia was 11.0% and in the EU 8.4%. According to SORS data, in 2009 the above-average water quantity in rivers increased the production and thus also the consumption of hydro-energy by 17.4% and despite 3.7% lower use of biomass the use of RES increased by 4.7%. With total energy consumption having declined by 9.8% due to the crisis, the share of RES increased to 12.9%. We estimate that with the slow economic growth in 2010, energy consumption in Slovenia slightly increased, and because the use of hydro-energy remained very high, the share of RES declined, but was still higher than the target value of 12%.<sup>1</sup>

**The greatest contribution (over 80%) to the growth in RES use in Slovenia has come from traditional sources, wood and hydro-energy, while in the EU it has come from biofuels.** The use of individual RES varies across the EU depending on natural conditions in individual Member States. Slovenia's 40.6% share of hydro-energy was in 2008<sup>2</sup> the highest among EU Member States. Wood (and wood waste) is the most important RES in twenty Member States (including Slovenia), while the highest shares are recorded in the Baltic States (in Estonia 97.7%). High shares of "non-traditional" RES are mostly recorded in countries where the proportion of RES in total energy consumption is low.<sup>3</sup> In 2008, use of RES in Slovenia increased by 15.6%. This growth was mostly the result of hydro-energy (55.7%), followed by wood and

wood waste (34.8%), biofuels (7.8%) and biogas (1.7%).<sup>4</sup> In the EU as a whole, use of RES increased by 5.6% in 2008, with the largest contribution (29.7%) coming from the increase in the use of biofuels.<sup>5</sup>

**Due to favourable hydrological conditions and lower consumption, the share of RES significantly increased in 2009 also in use of electricity, while for 2010 we estimate that the share was very close to the target value of 33.6%.** In 2008, electricity from RES accounted for 16.7% of electricity consumption in the EU and 29.1% of electricity consumption in Slovenia. In 2009, the share in Slovenia increased to 36.8% (electricity consumption -11.8%, hydro-energy 17.4%). According to ELES data, in 2010 production in hydroelectric power plants decreased by 0.7%, while electricity consumption increased by 8.1%. The share of RES thus decreased by a few percentage points and did not deviate greatly from the target value of 33.6% (Resolution on the National Energy Programme, 2004).

**Within the EU targets Slovenia must achieve at least a 25% share of RES in gross final energy consumption by 2020 (EU-27: 20%).<sup>6</sup>** In July 2010, the Government thus adopted the National Action Plan for Renewable Energy Sources 2010–2020, which specifies sectoral targets and measures to achieve them. Given that the share of RES in Slovenia in 2008 was 15.1% and that the calculation takes into account normalised hydrology (the share is not higher when water level rises above average), it will be difficult to achieve this target without a large increase in incentives for efficient use of energy and RES. The scheme promoting electricity generation from RES adopted in 2010 should contribute to greater use, since the contribution for implementation of this scheme in the electricity price almost doubled.

<sup>1</sup> The 1997 White Paper on Renewable Energy Sources (COM(1997) 599 "Energy for the future: renewable sources of energy" determined the mentioned target for 2010 for EU Member States; Slovenia adopted the target during the accession process and is stated in the 2004 Resolution on the National Energy Programme.

<sup>2</sup> The latest internationally comparable data are available for 2008.

<sup>3</sup> The Benelux countries and Denmark (the exception with the high share of total RES) use a large amount of solid municipal waste for energy purposes (the Netherlands uses the most), Luxembourg has a high share of biofuels and the United Kingdom has a high share of biogas. As regards wind energy, the highest shares are recorded in Ireland and Spain, geothermal energy is an important energy source only in Italy, while Cyprus and Greece have the highest shares of solar energy.

<sup>4</sup> SORS does not cover other RES; according to estimates by the Ministry of the Environment and Spatial Planning, the share of geothermal energy is 2.4% and of solar thermal energy 0.9% of total RES.

<sup>5</sup> Wood and wood waste 20.4%, hydro-energy 18.6%, wind energy 15.0% and solar energy 5.8%; the remaining tenth includes solid municipal waste, biogas and geothermal energy. Within solar energy, the use of photovoltaics increased most (by 96.9%), and within biofuels, the use of bioethanol (by 53.5%); however, the shares of these two energy sources in RES are still very low.

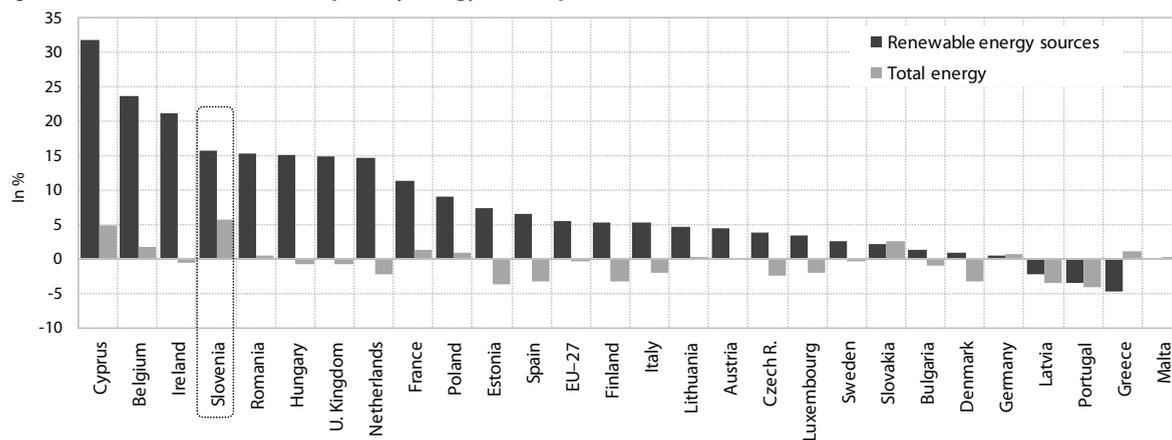
<sup>6</sup> Directive/28/ES. Contrary to the criteria for appropriate allocation and consideration of different positions and potentials of Member States, the Directive stipulates a mandatory 10% share of RES in transport in every Member State.

Table: Share of renewable energy sources in total primary energy consumption, in %

	1995		2000	2005	2006	2007
<b>EU</b>	<b>5.1</b>		<b>5.7</b>	<b>6.6</b>	<b>7.1</b>	<b>8.4</b>
Austria	21.8		22.8	21.1	22.2	25.3
Belgium	1.3		1.3	2.4	2.9	3.7
Bulgaria	1.6		4.2	5.6	5.5	4.9
Cyprus	2.1		1.8	1.9	1.9	3.0
Czech Rep.	1.4		1.5	4.1	4.3	5.0
Denmark	7.6		10.9	16.4	15.6	18.1
Estonia	8.7		10.2	10.6	9.8	11.0
Finland	21.1		23.8	23.4	23.0	25.2
France	7.5		6.5	5.9	6.2	7.4
Greece	5.3		5.0	5.2	5.7	5.0
Ireland	1.4		1.6	2.4	2.7	3.6
Italy	4.8		5.2	6.4	7.0	7.8
Latvia	27.2		31.8	33.0	31.0	30.1
Lithuania	5.7		9.2	8.8	9.3	9.3
Luxembourg	1.4		1.6	1.6	1.7	2.7
Hungary	2.4		2.1	4.4	4.8	6.1
Germany	1.9		2.8	5.1	6.0	8.6
Netherland	1.5		2.4	3.4	3.6	4.2
Poland	3.9		4.2	4.8	5.1	5.7
Portugal	16.2		15.3	13.2	17.1	17.8
Romania	5.9		10.9	12.6	11.7	13.5
Slovakia	2.8		2.8	4.3	4.6	5.5
<b>Slovenia</b>	<b>9.4</b>		<b>12.3</b>	<b>10.6</b>	<b>10.5</b>	<b>11.0</b>
Spain	5.4		5.7	6.0	6.5	7.7
Sweden	26.0		31.6	29.5	29.5	32.1
U.K.	0.9		1.1	1.8	1.9	2.6

Source: Eurostat Portal Page – Environment and Energy, 2011.  
Note: N/A – not available. No data for Malta.

Figure: Growth of RES use and total primary energy consumption in EU Member States in 2008



Source: Eurostat Portal Page – Environment and Energy, 2011; calculations by IMAD.