



REPUBLIC OF SLOVENIA  
MINISTRY OF INFRASTRUCTURE

# **NATIONAL ENERGY EFFICIENCY ACTION PLAN 2014–2020**

## **(AN URE 2020)**

May 2015

# CONTENTS

<b>SUMMARY .....</b>	<b>9</b>
<b>1. INTRODUCTION.....</b>	<b>10</b>
1.1. ACHIEVEMENT OF PREVIOUS ENERGY EFFICIENCY TARGETS.....	10
1.2. NATIONAL CIRCUMSTANCES.....	10
1.3. WIDER STRATEGY FRAMEWORK FOR THE PLANNING OF ENERGY EFFICIENCY MEASURES .....	13
<b>2. OVERVIEW OF NATIONAL ENERGY TARGETS AND THE SAVINGS ACHIEVED .....</b>	<b>15</b>
2.1. OVERVIEW OF NATIONAL 2020 ENERGY EFFICIENCY TARGETS .....	15
2.2. OTHER TARGETS FOR INCREASING ENERGY EFFICIENCY .....	16
2.3. ENERGY SAVINGS ACHIEVED AND THE TARGET ENERGY SAVINGS.....	16
2.4. OVERVIEW OF END-ENERGY SAVINGS .....	18
<b>3. POLICY MEASURES FOR IMPLEMENTING THE ENERGY EFFICIENCY DIRECTIVE .....</b>	<b>20</b>
3.1. HORIZONTAL MEASURES .....	20
3.2. ENERGY EFFICIENCY MEASURES IN BUILDINGS .....	40
3.3. MEASURES TO RAISE THE ENERGY EFFICIENCY OF PUBLIC BODIES (ARTICLES 5 AND 6) .....	41
3.4. ENERGY EFFICIENCY MEASURES IN INDUSTRY .....	53
3.5. ENERGY EFFICIENCY MEASURES IN TRANSPORT.....	56
3.6. PROMOTION OF EFFICIENCY IN HEATING AND COOLING (ARTICLE 14).....	62
3.7. ENERGY TRANSFORMATION, TRANSMISSION, DISTRIBUTION, AND DEMAND RESPONSE (ARTICLE 15) .....	66
3.8. FINANCING OF MEASURES.....	68
<b>ANNEX A ENERGY EFFICIENCY DIRECTIVE ANNUAL REPORT .....</b>	<b>72</b>
A.1 NATIONAL ENERGY EFFICIENCY TARGET FOR 2020.....	72
A.2 KEY STATISTICAL DATA .....	72
A.3 ANALYSIS OF ENERGY CONSUMPTION TRENDS.....	72
A.4 UPDATING OF MAIN MEASURES IMPLEMENTED IN THE PREVIOUS YEAR .....	73
A.5 CENTRAL GOVERNMENT BUILDINGS .....	77
A.6 ENERGY EFFICIENCY OBLIGATIONS .....	77
<b>ANNEX B BUILDING RENOVATION ROADMAPS .....</b>	<b>78</b>
B.1 POLICIES AND MEASURES FOR THE EXTENSIVE RENOVATION OF BUILDINGS AND FOR NEW ENERGY-EFFICIENT BUILDINGS .....	78
B.2 OVERVIEW AND ANALYSIS OF THE NATIONAL BUILDING STOCK.....	88
<b>ANNEX C .....</b>	<b>98</b>
<b>ASSESSMENT OF THE IMPLEMENTATION OF AN URE 1 AND ACHIEVEMENT OF THE OBLIGATIONS UNDER DIRECTIVE 2006/32/EC UP TO 2012.....</b>	<b>98</b>
SUMMARY .....	104
<b>1. END-USE ENERGY SAVINGS UP TO 2012.....</b>	<b>106</b>
1.1. TARGETS FOR RAISING ENERGY EFFICIENCY BY 2016 .....	106
1.2. END-USE ENERGY SAVINGS ACHIEVED UP TO AND INCLUDING 2012 .....	106
<b>2. ENERGY SAVINGS IN HOUSEHOLDS.....</b>	<b>109</b>
2.1. FINANCIAL INCENTIVES FOR THE ENERGY-EFFICIENT RENOVATION AND CONSTRUCTION OF BUILDINGS (MEASURE G.1) AND FINANCIAL INCENTIVES FOR ENERGY-EFFICIENT HEATING SYSTEMS (MEASURE G.2). .....	109
2.2. ENERGY EFFICIENCY SCHEME FOR LOW-INCOME HOUSEHOLDS (MEASURE G.3).....	112
2.3. DIVISION AND CALCULATION OF HEATING COSTS IN MULTI-APARTMENT AND OTHER BUILDINGS ACCORDING TO ACTUAL CONSUMPTION (MEASURE G.4) .....	113
2.4. CITIZENS' ENERGY ADVICE NETWORK (MEASURE G.5).....	113
<b>3. ENERGY SAVINGS IN THE SERVICE SECTOR.....</b>	<b>114</b>
3.1. FINANCIAL INCENTIVES FOR EFFICIENT ELECTRICITY CONSUMPTION (MEASURE I.1) .....	115
3.2. FINANCIAL INCENTIVES TO RAISE ENERGY EFFICIENCY IN (INDUSTRY AND) THE SERVICE SECTOR AND SIGNIFICANTLY INCREASE THE SCOPE OF ENVIRONMENTALLY FRIENDLY ELECTRICITY GENERATION FROM RES AND CHP SYSTEMS (MEASURE I.2) .....	116
<b>4. ENERGY SAVINGS IN INDUSTRY.....</b>	<b>120</b>
4.1. ENERGY SAVINGS IN INDUSTRY DETERMINED USING THE BU METHOD.....	120

4.2.	ENERGY SAVINGS IN INDUSTRY DETERMINED USING THE TD METHOD .....	121
<b>5.</b>	<b>ENERGY SAVINGS IN TRANSPORT .....</b>	<b>123</b>
5.1.	ENERGY SAVINGS IN TRANSPORT DETERMINED USING THE TD METHOD.....	123
<b>6.</b>	<b>ENERGY SAVINGS IN THE PUBLIC SECTOR .....</b>	<b>126</b>
6.1.	GREEN PUBLIC PROCUREMENT (MEASURE J.1) .....	126
6.2.	FINANCIAL INCENTIVES FOR ENERGY-EFFICIENT RENOVATION AND CONSTRUCTION OF BUILDINGS IN THE PUBLIC SECTOR (MEASURE J.2).....	127
6.3.	INTRODUCING AN ENERGY MANAGEMENT SYSTEM IN THE PUBLIC SECTOR (MEASURE J.3) .....	128
6.4.	FINANCIAL INCENTIVES FOR EFFICIENT ELECTRICITY CONSUMPTION IN THE PUBLIC SECTOR (MEASURE J.4) .....	128
<b>7.</b>	<b>ENERGY SAVINGS WITH MULTI-SECTORAL MEASURES.....</b>	<b>129</b>
7.1.	REGULATIONS ON THE ENERGY PERFORMANCE OF BUILDINGS (MEASURE V.1) .....	129
7.2.	ENERGY LABELLING OF HOUSEHOLD APPLIANCES AND OTHER DEVICES, AND THE MINIMUM REQUIREMENTS (MEASURE V.2) .....	129
7.3.	SUPPORT SCHEME FOR ELECTRICITY GENERATED FROM RES AND IN CHP (MEASURE V.3) .....	130
<b>8.</b>	<b>ENERGY SAVINGS USING HORIZONTAL MEASURES .....</b>	<b>132</b>
8.1.	ENERGY PERFORMANCE CONTRACTING (MEASURE H.1) .....	132
8.2.	INFORMATION AND AWARENESS-RAISING ACTIVITIES (MEASURE H.3).....	132
8.3.	EDUCATION AND TRAINING (MEASURE H.4) .....	132

## LIST OF TABLES

Table 1:	Slovenia's strategic documents of importance for the field of energy efficiency .....	14
Table 2:	Estimates of the key numbers for national energy production and consumption in 2020 .....	16
Table 3:	National targets for nearly zero-energy buildings .....	16
Table 4:	End-use energy savings achieved .....	17
Table 5:	Target primary and end-use energy savings (forecast) with reference to 2012 .....	17
Table 6:	Sectoral distribution of end-use energy savings in 2020 .....	18
Table 7:	Baseline for calculating the level of end-use energy savings that must be achieved .....	20
Table 8:	End-use energy savings by energy suppliers 2014–2020 .....	21
Table 9:	Measures in the areas of energy audits and energy management systems .....	26
Table 10:	Proportion of users connected to intelligent metering systems .....	28
Table 11:	E-services for electricity customers .....	29
Table 12:	E-services for natural gas customers .....	29
Table 13:	Electricity suppliers' services in Slovenia .....	30
Table 14:	Information and consumer training measures .....	32
Table 15:	New measure of surveillance of energy-related products .....	32
Table 16:	Existing measure for the training and licensing of specialists in the field of EE .....	34
Table 17:	Existing measure of energy performance contracting .....	37
Table 18:	New energy performance contracting measures .....	37
Table 19:	Existing other measures of a horizontal nature .....	39
Table 20:	New other measures of a horizontal nature .....	40
Table 21:	New EE measures in the public sector .....	44
Table 22:	Incentive grants from the 'Sustainable energy' development priority (OP ROPI) .....	45
Table 23:	List of municipalities and their energy efficiency activities .....	48
Table 24:	Existing EE measures in industry .....	54
Table 25:	New EE measures in industry .....	54
Table 26:	Existing EE measures in transport .....	61
Table 27:	Measures for promoting efficient heating and cooling .....	65
Table 28:	Measures for promoting the development of efficient distribution systems .....	67
Table 29:	OP EKP measures aimed at achieving the targets of raising energy efficiency by 2020 .....	70
Table 30:	Sources of public funds for the financing of AN URE 2020 measures by area .....	71
Table 31:	Assessment of the key statistical data on energy consumption in 2012 .....	72
Table 32:	Existing measures .....	81
Table 33:	New measures .....	85
Table 34:	Timetable for the implementation of building-related measures .....	87
Table 35:	Energy efficiency classes for single-family houses .....	89
Table 36:	Energy efficiency classes for multi-apartment buildings .....	91
Table 37:	End-use energy savings up to and including 2012, by measure and sector .....	107
Table 38:	End-use energy savings in households up to and including 2012 .....	109
Table 39:	End-use energy savings resulting from financial incentives from the Eco Fund 2011–2012 .....	112
Table 40:	End-use energy savings resulting from the ENSVET programme 2011–2012 .....	114
Table 41:	End-use energy savings in the service sector up to and including 2012 .....	115
Table 42:	End-use energy savings in industry up to and including 2012 .....	120
Table 43:	End-use energy savings in transport up to and including 2012 .....	123
Table 44:	Energy savings in transport up to 2012 relative to 2007, in GWh .....	124
Table 45:	End-use energy savings in the public sector up to and including 2012 .....	126

Table 46:	End-use energy savings resulting from financial incentives for energy-efficient renovation and the construction of buildings in the public sector in 2012 .....	128
Table 47:	End-use energy savings with multi-sectoral measures up to and including 2012 .....	129
Table 48:	Number of household appliances bought in 2011–2012, and the effects of replacing old with new appliances .....	130

## LIST OF FIGURES

Figure 1:	Ratio between the growth in economic activity and total primary energy consumption in Slovenia, and a comparison between energy intensity improvements in Slovenia and the EU ...	11
Figure 2:	GDP, real growth rate in % .....	11
Figure 3:	End-use energy consumption by sector 1992–2012 and the sectoral share in end-use energy consumption in 1992, 2000, 2005 and 2012 (source: IJS-CEU, SURS).....	12
Figure 4:	Energy supply by energy product 1992–2012 and the respective shares of energy products in energy supply in 1992, 2000, 2005 and 2012 (source: IJS-CEU, SURS).....	12
Figure 5:	Volume and share of electricity generated in CHP .....	62
Figure 6:	Estimate of the technical and market potential of CHP up to 2030 .....	63
Figure 7:	Development of new CHP generating plants 2003–2013.....	63
Figure 8:	Floor area of single-family and multi-apartment buildings by 2030 .....	88
Figure 9:	Movement of residential floor area between energy classes for single-family houses (left) and multi-apartment buildings (right) in the reference strategy .....	92
Figure 10:	Reduction in the total energy number (left) and the energy required for heating (right) for the reference and intensive <i>strategy</i> .....	93
Figure 11:	Share of different technologies in newly purchased boilers for the central heating of residential buildings .....	94
Figure 12:	Structure of devices for preparation of the required heat in a central heating system (for single-family houses and multi-apartment buildings) .....	94
Figure 14:	Energy consumption for heating by energy product (left) and share of different energy products in total energy consumption for heating (right).....	96
Figure 15:	Energy consumption in households by energy product (left) and share of different energy products in total energy consumption in households (right) .....	96
Figure 16:	Energy consumption in households by purpose (left) and share of energy consumption by purpose in total energy consumption (right) .....	97
Figure 17:	Distribution of Eco Fund incentives allocated to individuals for investments in residential buildings (left) and the energy savings achieved (right), by individual measure 2011–2012 .....	111
Figure 18:	Distribution of grants within the large liable entities' programme (left) and the envisaged energy savings (right) by individual measure for projects supported by incentives in 2012 .....	118

## LIST OF ABBREVIATIONS AND SOURCES

Agency	Energy Agency
AN OVE	National Renewable Energy Action Plan
AN URE 1	National Energy Efficiency Action Plan 2008–2016
AN ZeJN	Green Public Procurement Action Plan
ARSO	Slovenian Environment Agency
GDP	Gross domestic product
BAT	Best Available Technology
BU	'Bottom-up' methods for calculating energy savings
DC	District cooling
Directive 2006/32/EC	Directive 2006/32/EC of the European Parliament and of the Council of 5 April 2006 on energy end-use efficiency and energy services and repealing Council Directive 93/76/EEC
Directive 2012/27/EU	Directive 2012/27/EU of the European Parliament and of the Council of 25 October 2012 on energy efficiency, amending Directives 2009/125/EC and 2010/30/EU and repealing Directives 2004/8/EC and 2006/32/EC
Directive 2010/31/EU	Directive 2010/31/EU of the European Parliament and of the Council of 19 May 2010 on the energy performance of buildings (recast)
DH	District heating
DHWB	District heating using wood biomass
EED	Directive 2012/27/EU
ELENA	Technical assistance from the European Investment Bank in the area of energy efficiency (European Local Energy Assistance)
Eco Fund	Slovenian Environmental Fund ('Eko sklad')
ENSVET	Energy advice to citizens
EA	Energy audit
EPBD	Directive 2010/31/EU
ESD	Directive 2006/32/EC
ETS	Emissions Trading Scheme
EU	European Union
EUROSTAT	European Statistical Office
EZ-1	Energy Act
GURS	Surveying and Mapping Authority of the Republic of Slovenia
ICT	Information and communication technologies
IT	Information technology
IEE	Intelligent Energy Europe
PT	Public transport
LEA	Local energy agency
LEK	Local Energy Concept
LS2	Public tender for the co-financing of operations for the energy rehabilitation of primary schools, nursery schools, health centres and libraries owned by local communities
MF	Ministry of Finance
MGRT	Ministry of Economic Development and Technology
SME	Small and medium-sized enterprise
MzI	Ministry of Infrastructure
NEP	Draft National Energy Programme of the Republic of Slovenia to 2030: 'Active Energy Management'
NRP	National Reform Programme 2011–2012
OdSPRS	Ordinance on the Spatial Planning Strategy of Slovenia
OECD	Organisation for Economic Cooperation and Development
OP EKP	Operational Programme for the Implementation of European Cohesion Policy 2014–2020
OP PM <sub>10</sub>	Operational Programme for the Protection of Ambient Air Against Pollution Caused by PM <sub>10</sub>
OP ROPI	Operational Programme for Environmental and Transport Infrastructure Development 2007–2013
OP TGP-1	Operational Programme for Reducing Greenhouse Gas Emissions by 2012
OP TGP2020	Operational Programme for Reducing Greenhouse Gas Emissions by 2020 with the Outlook to 2030
RES	Renewable energy sources

PURES	Rules on the Efficient Use of Energy in Buildings
REN	Real estate register
ReNEP	Resolution on the National Energy Programme
RePPRS	Resolution on the Transport Policy of the Republic of Slovenia
SODO	Electricity Distribution Network System Operator
SOPO	Transmission Network System Operator
CHP	High-efficiency cogeneration of heat and power
SURS	Statistical Office of the Republic of Slovenia
TD	'Top-down' methods for calculating energy savings
GG	Greenhouse gas
UJR1	Public tender for the co-financing of operations for the energy renovation of street lighting for the 2011–2013 period
EE	Energy efficiency
Decree on GrPP	Decree on Green Public Procurement
UREE1	Public tender for the co-financing of projects to raise the efficiency of electricity consumption in the commercial sector for the 2011-2013 period



## SUMMARY

In this National Energy Efficiency Action Plan 2014–2020 (AN URE 2020), Slovenia sets its national target to improve energy efficiency by 20 % by 2020, in line with the requirements set out in Directive 2012/27/EU (Energy Efficiency Directive). This target states that primary energy consumption will not exceed 7.125 million toe in 2020, meaning that it may not exceed the 2012 figure by more than 2 %.

The existing building stock represents the sector with the greatest potential for achieving energy savings. If the target is to be achieved, a quarter of that stock, or around 22 million m<sup>2</sup>, will need to be renovated in order to improve its energy performance. This will reduce energy consumption in buildings by almost 10 %. These measures will also promote economic growth, since they will generate EUR 500 million in investments per year. In addition to the considerable savings in energy costs and, consequently, the lower energy input, the effects of these investments are felt at the workplace (10 000 employees).

The necessary funds must be secured for existing and new measures to be implemented: funds collected from the energy efficiency contribution, resources from cohesion funds and the Rural Development Programme, and resources from the Climate Fund.

The measures contained in the plan are divided by sector: households, the public sector, commerce and transport. Most of the measures are already in place and being implemented, with the intermediate targets having so far been met. Some of the measures are new, chiefly those in the public sector, where there is a requirement to meet an obligation to renovate 3 % of the total floor area of central government buildings every year. There are also additional measures in the commercial sector: efficient energy consumption is becoming an ever more important factor in improving economic competitiveness.

The key measures include those aimed at encouraging the implementation of energy performance contracting projects, since private capital is thereby included in the financing of energy efficiency measures to a greater extent, thus multiplying the public fund investments and achieving greater energy savings per unit of investment incentive. It is essential that new financial schemes and mechanisms are put in place to promote an upsurge in such projects; special attention must be paid to this in the future.

Another key mechanism for achieving the objectives by 2020 is the obligation incumbent on energy suppliers to achieve energy savings. While this obligation has been in place in Slovenia since 2010, it has been modified somewhat as from 2015: in future suppliers will no longer have to achieve savings from funds from the energy efficiency contribution but from their own pockets. However, their obligation will be somewhat reduced, to rise again gradually up to 2020. Since Directive 2012/27/EU requires energy savings of 1.5 % every year, the second part of the obligation will be met by promoting efficient energy consumption measures via the Eco Fund, particularly in households, for which the necessary funds must be acquired through the energy efficiency contribution. The total amount of funds collected from the contribution, which has been calculated per unit of energy consumed since 2010, will not change. The amount of the contribution will change slightly for each individual energy product, since every unit of energy will now be subject to the same burden.

In addition to energy savings themselves, other benefits will be achieved by means of the measures to achieve the energy efficiency target; these include the mitigation of climate change, improvements to air quality, an increase in the share of renewable energy sources, and improvements in the competitiveness and security of the energy supply, as well as wider developmental benefits, such as greater employment, economic benefits and, not least, social benefits, primarily through a reduction in fuel poverty.

## **1. INTRODUCTION**

Article 24 of the Directive 2012/27/EU on energy efficiency<sup>1</sup> (hereinafter: the Directive or the EED) states that by 30 April 2014, and every three years thereafter, every Member State shall submit a national energy efficiency action plan. These plans should lay down measures to significantly improve energy efficiency and achieve energy savings in order to achieve the energy efficiency targets referred to in Article 3 of the Directive. Under Article 24(2) of the Directive, the European Commission has adopted a template for national energy efficiency action plans<sup>2</sup> containing a list of the contents that must appear in those plans. The present document has been drafted in full compliance with that template and meets all the requirements stemming from the Directive.

In this Action Plan, Slovenia sets its indicative national energy efficiency target for the period up to 2020. This is the framework target, which provides a basis for energy efficiency activities in Slovenia, while the National Energy Efficiency Action Plan 2014–2020 is the basic programming document of Slovenia in this field. As programmes promoting economic growth, energy efficiency measures are also included in other documents which are in the process of being compiled.

### **1.1. Achievement of previous energy efficiency targets**

Slovenia successfully met the previous energy efficiency targets for the 2008–2016 period. The target contained in the National Energy Efficiency Action Plan 2008–2016 (AN URE 1) was to achieve end-use energy savings of nine percentage points (or 4 261 GWh) in 2016. In the first target period (2008–2010), Slovenia achieved end-use energy savings of 2.8 %, exceeding the intermediate target for 2010 by 141 Gwh. End-use energy savings of 2 727 GWh were achieved in 2012. This is 15 % more than the intermediate target for 2012. This took into account the early activities carried out between 1995 and 2007.

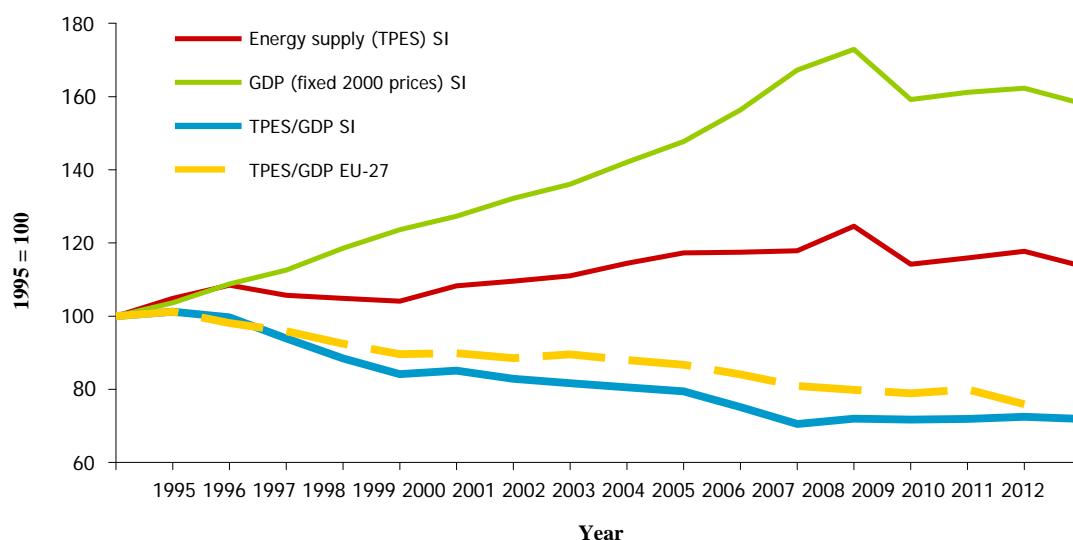
### **1.2. National circumstances**

Moreover, a clear divergence was achieved in Slovenia between the growth of economic activity and the growth of total primary energy consumption. While total primary energy consumption increased by 14 % between 1995 and 2012, GDP increased by 58 % in the same period (Figure 1). Energy intensity improved in Slovenia up to 2007, and did so at a faster rate than in the EU as a whole. It did worsen slightly in 2008 and 2011, chiefly as a result of the economic and financial crisis. The intensity of energy supply in Slovenia improved by 25 % between 1992 and 2012, and was 49 % higher than the figure for the EU-27 in 2011.

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<sup>1</sup> Directive 2012/27/EU of the European Parliament and of the Council of 25 October 2012 on energy efficiency, amending Directives 2009/125/EC and 2010/30/EU and repealing Directives 2004/8/EC and 2006/32/EC, OJ L 315, 14.11.2012.

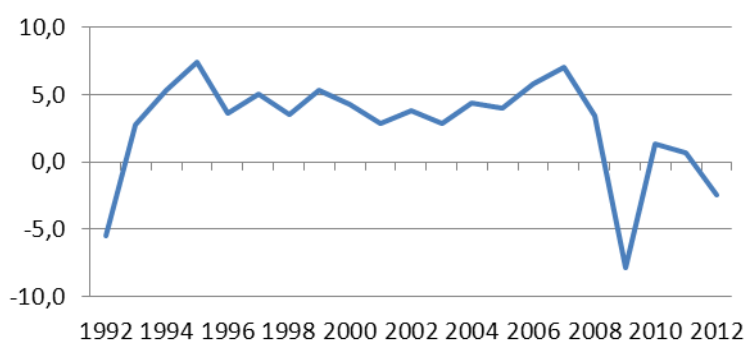
<sup>2</sup> Commission Implementing Decision of 22 May 2013.



**Figure 1: Ratio between the growth in economic activity and total primary energy consumption in Slovenia, and a comparison between energy intensity improvements in Slovenia and the EU**

### 1.2.1. Economic development

Slovenia managed to achieve a relatively high level of economic growth in the period prior to the economic crisis (Figure 2). The average GDP growth rate was 4.3% between 1993 and 2003 and 4.9% between 2004 and 2008. GDP growth slowed with the onset of the economic crisis in 2008 and fell steeply in 2009 (-7.9%). The rapid deterioration of conditions internationally was best reflected in the reduction in the exports and investments, which had been the key factor in economic growth in previous years. After modest GDP growth in 2010 and stagnation in 2011, Slovenia once again saw a period of negative growth in 2012. This continued the following year and was the result of weak domestic demand, particularly a reduction in investments.



**Figure 2: GDP, real growth rate in %<sup>3</sup>**

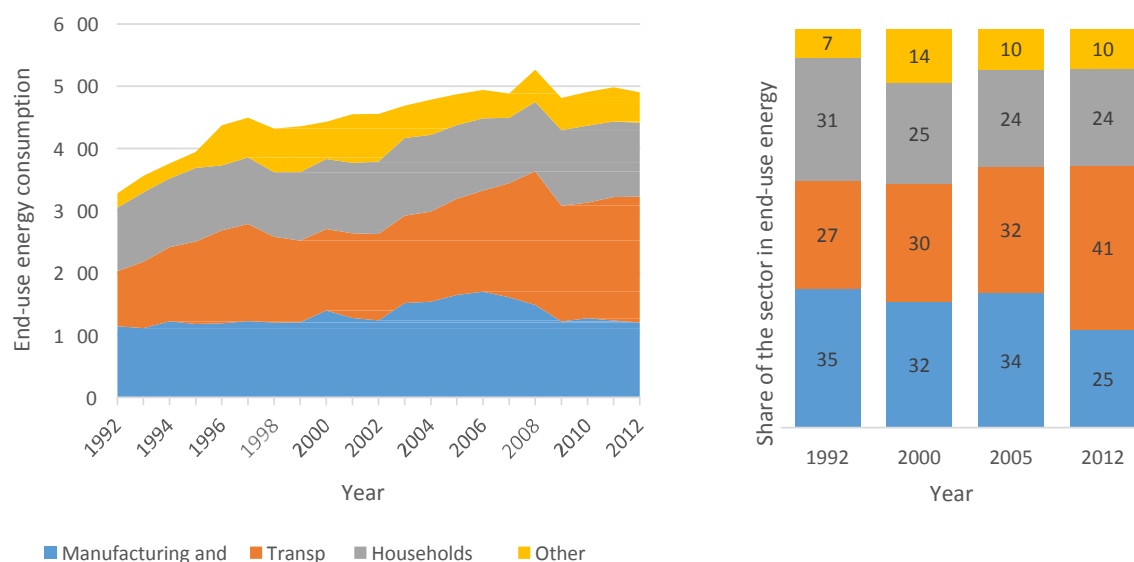
With its high economic growth rates, in the period prior to the crisis, Slovenia was gradually approaching the average EU level of development, measured by GDP per capita based on purchasing power parity (PPP) and, in 2008, was only nine percentage points behind the European average. Since the onset of the economic crisis in 2008, Slovenia has been one of the group of EU Member States whose GDP per capita (PPP) has fallen the most. In 2012, Slovenia lagged 18 percentage points behind the EU average – similar to the figure in 2002.

Among the components of added value, the share of services is increasing from year to year, on account of a decline in the share of industry and also agriculture, although the latter has seen a slight increase since 2009. The share of industry, which between 1995 and 2008 accounted for between 34 and 35 % of added value, fell by around three percentage points prior to 2012, chiefly because of a significant decline in construction activities.

<sup>3</sup> Source: Eurostat, Statistical Office of the Republic of Slovenia, November 2013.

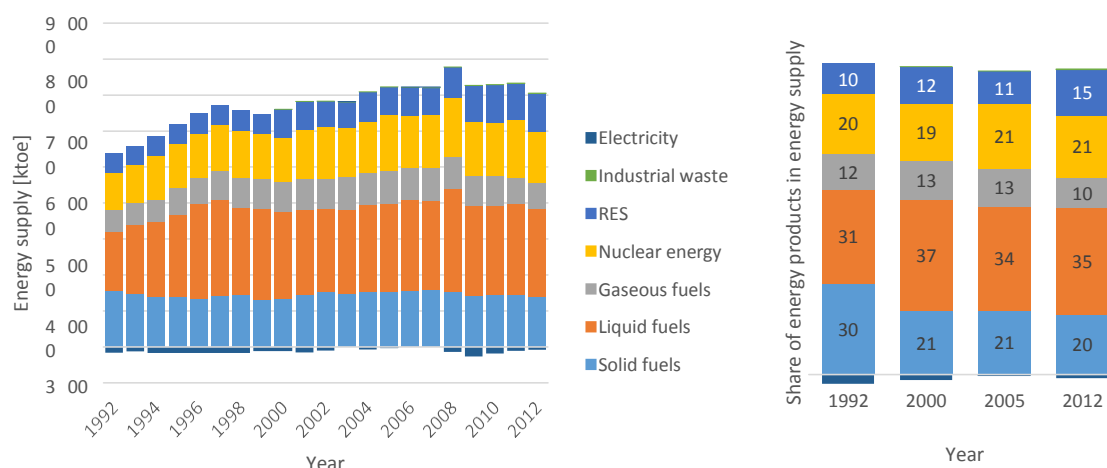
### 1.2.2. End-use and primary energy consumption

Between 1992 and 2012, end-use energy consumption increased by 47 % in Slovenia. The greatest contributing factor was the growth in end-use energy consumption in transport, which more than doubled (an increase of 118 %) in the same period. In 2012, the share of transport in end-use energy consumption stood at 41 %. In 1992, the biggest consumer of end-use energy was the industrial sector (manufacturing and construction) with 35 %, while in 2012 it was in second place with a 24.6 % share, almost matching end-use energy consumption by households (24.1 %). End-use energy consumption in the industrial sector has been declining since 2006 and was only 1.5 % higher in 2012 than in 1992. In households, end-use energy consumption is 15 % higher than 20 years ago, and only 2 % higher than ten years ago.



**Figure 3: End-use energy consumption by sector 1992–2012 and the sectoral share in end-use energy consumption in 1992, 2000, 2005 and 2012 (source: IJS-CEU, SURS)**

Energy supply totalled 6 988 ktoe in 2012 (Figure 4). This represented a fall of 3.4 % in comparison with 2011 and an increase of 34 % on the 1992 figure. The highest total was achieved in 2008: 7 650 ktoe. In the energy supply structure in 2012, liquid fuels accounted for the highest share, with 35 %, followed by nuclear energy (21 %), solid fuels (20 %), renewable energy sources (15 %) and natural gas (10 %). Net electricity imports accounted for -1.1 % of total consumption (more electricity was exported than imported). The only fossil fuels that Slovenia produces are solid fuels.



**Figure 4: Energy supply by energy product 1992–2012 and the respective shares of energy products in energy supply in 1992, 2000, 2005 and 2012 (source: IJS-CEU, SURS)**

### 1.3. Wider strategy framework for the planning of energy efficiency measures

The long-term targets of energy and climate policy up to 2030 and 2050 are also important factors in determining measures to improve energy efficiency by 2020. The measures contained in the National Energy Efficiency Action Plan (AN URE 2020) are therefore designed so that Slovenia is also able to secure the lowest possible costs for the greatest possible effect in achieving the climate and energy targets in the long term. The EU has already adopted policies regarding climate targets up to 2050. A legal framework for achieving the targets at EU level and within Member States up to 2020 is also being formulated.

Owing to the exceptional importance of energy efficiency in ensuring all energy policy targets, as well as wider development objectives, particularly given the potential for improving the competitiveness of society, green growth and employment potential, this area has been designated as one of the EU's primary development objectives within the Europe 2020 strategy and as one of the development objectives of Slovenia.

The current period is an important one for Slovenia: the umbrella national development document has expired and a new Slovenian Development Strategy is currently being drafted. The previous strategy was based on the principles of sustainable development and the integration of development policies. The Operational Programme for the Implementation of European Cohesion Policy up to 2020 also defines sustainable development as a horizontal principle. Development consent is also being shaped in the Smart Specialisation Strategy, which is in the final stages of preparation.<sup>4</sup>

Slovenia has incorporated the energy efficiency targets into the National Reform Programme (NRP), while energy efficiency measures are also at the same time measures to promote high-quality economic growth with important development benefits.

Energy efficiency measures contribute to improving the competitiveness of society, have a positive impact on economic growth and employment, and reduce environmental impact. The benefits of the measures are not only macroeconomic and social; they primarily bring direct financial and other benefits to investors and end-users of energy.

The foundations of Slovenia's energy policy are set out in the Energy Act. The new Energy Act<sup>5</sup> contains a requirement to draw up a 'Slovenian Energy Concept up to 2050' as a new umbrella energy development document. This will be compiled by the end of 2015 and then sent for adoption to the National Assembly. The priority given to efficient consumption and renewable energy sources was already being enforced as one of the basic strategic energy-development policies in Slovenia in the Resolution on the Strategic Consumption and Supply of Energy in Slovenia<sup>6</sup> and in the Energy Act of 1999. The strategy emphasised the strategic importance of renewable energy sources as a domestic source of energy and a vision of providing the high-quality energy services required for quality of life and economic competitiveness, with a reduced environmental impact.

EE measures also have their funding basis in the Operational Programme for the Implementation of EU Cohesion Policies 2014–2020 (OP EKP), which defines the EE funding activities from the resources of EU funds in Slovenia over that period. Some EE and RES activities will also be financed from the European Agricultural Fund for Rural Development as part of the Rural Development Programme of the Republic of Slovenia 2014–2020. Most of the measures are being implemented in such a way that they pursue several objectives at once. This considerably reduces the costs associated with implementation and increases the benefits deriving from synergy and multiplier effects. Energy efficiency is one of the most cost-effective measures for achieving the other two targets of the climate and energy package up to 2020: reducing greenhouse gas (GHG) emissions and achieving the 25 % target share of renewable energy sources in the consumption balance of gross end-use energy by 2020. The National Energy Efficiency Action Plan 2014–2020 (AN URE 2020) has therefore been aligned with and complements the following action plans: the National Renewable Energy Action Plan 2010–2020 (AN OVE); the Operational Programme to Reduce Greenhouse Gas Emissions by 2020 with the Outlook to

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<sup>4</sup> Smart Specialisation Strategy of the Republic of Slovenia, draft, Government Office of the Republic of Slovenia for Development and European Cohesion Policy, 1 July 2014.

<sup>5</sup> UL RS, 17/2014.

<sup>6</sup> UL RS, 9/1996.

2030 (OP TGP 2020); the Operational Programme for the Protection of Ambient Air against Pollution caused by PM<sub>10</sub> (OP PM<sub>10</sub>); and the National Action Plan for Nearly Zero-Energy Buildings up to 2020 (AN sNES).

AN URE 2020 relies to a large extent on instruments that have already been established, upgrading them in line with the requirements of the new Energy Act and the Directive. The Slovenian Government is entrusting implementation of the measures to the ministries responsible for individual areas on the basis of an action plan. The new AN URE 2020 programme expands the timeframe from the previous Energy Efficiency Action Plan to take in the period leading up to 2020 and more clearly defines the tasks and duties associated with implementation of the activities by individual ministries.

**Table 1: Slovenia's strategic documents of importance for the field of energy efficiency**

Document title	Status
Operational Programme for Reducing Greenhouse Gas Emissions by 2020 with the Outlook to 2030 (OP TGP 2020)	adopted by the Government in December 2014
Slovenia's Development Strategy 2014–2020	being compiled
Smart Specialisation Strategy of the Republic of Slovenia	being compiled
Operational Programme for the Implementation of European Cohesion Policy 2014–2020 (OP EKP)	approved by the Commission in December 2014
Rural Development Programme of the Republic of Slovenia 2014–2020 (PRP 2014–2020)	approved by the Commission in February 2015
Second National Energy Efficiency Action Plan 2011–2016	sent to the Commission in 2011, MG
National Renewable Energy Action Plan 2010–2020 (AN OVE)	adopted by the Slovenian Government in 2009
National Energy Efficiency Action Plan 2008–2020 (AN URE)	adopted by the Slovenian Government in 2008
Resolution on the National Energy Programme (ReNEP)	adopted by the Slovenian National Assembly in 2004
Slovenian Energy Concept	being compiled
National Plan for Increasing the Number of Nearly Zero-Energy Buildings	in the process of adoption by the Slovenian Government
Long-Term Strategy for the Promotion of Investments in the Renovation of Buildings	being compiled
National Housing Programme up to 2022	being compiled
Transport Development Strategy of the Republic of Slovenia up to 2030	being compiled
Resolution on the Transport Policy of the Republic of Slovenia (RePPRS)	adopted by the Slovenian National Assembly in 2006
Ordinance on the Spatial Planning Strategy of Slovenia (OdSPRS)	adopted by the Slovenian National Assembly in 2004
Operational Programme for the Protection of Ambient Air Against Pollution Caused by s PM <sub>10</sub> (OP PM <sub>10</sub> )	adopted by the Slovenian Government in 2009
Slovenian Industrial Policy (SIP)	adopted by the Slovenian Government in 2013
Slovenian Industrial Policy (SIP)	adopted by the Slovenian Government in 2013
Public Administration Development Strategy 2014–2020	being compiled

## 2. OVERVIEW OF NATIONAL ENERGY TARGETS AND THE SAVINGS ACHIEVED

### 2.1. Overview of national 2020 energy efficiency targets

Pursuant to Article 3 of Directive 2012/27/EU, Slovenia has set a target for improving energy efficiency by 2020 such that primary energy consumption will not exceed 7 125 million toe (82.86 TWh) in 2020.

The target is set at the level of primary energy, since transformations also contribute to increasing energy efficiency, with efficiency improvements envisaged as coming from technological upgrades and an increase in RES. The joint EU-level target has been set in the same way. Up to now, national energy efficiency action plans introduced pursuant to the Energy Services Directive have provided a national framework for developing energy efficiency policies in end-use sectors. In light of the new EU energy efficiency plan and the new directive, which cover all sectors from production to end-use, the scope of the national framework must be expanded and targets set at the primary energy savings level.

The national 2020 target is derived from the long-term energy consumption projections up to 2030, which were produced in 2014. This target does not include the non-energy consumption of fuels and has been based on national energy consumption statistics compiled using the EUROSTAT methodology. The energy consumption target and projection have been produced with due regard to the following:

- the development challenges faced by the Slovenian energy sector, including an analysis of external factors: international energy markets (prices and security of supply of petroleum derivatives, natural gas, solid fuels and electricity), emissions trading, economic activity in Slovenia, global technological development (particularly in transport, active networks), and Slovenia's and the EU's transport policies;
- the integration of the energy sector into the wider development policy of the country, other objectives and obligations of Slovenia ensuing from international agreements, EU energy policy (taking into account those policies and measures adopted and those that are still being drafted);
- the state of the energy sector, projects undergoing implementation and alternative projects being compiled, and analyses of the possibilities (technical, economic, environmentally acceptable and achievable) and of the possibility of promoting these areas using energy policy instruments;
- an analysis of the response of entities within the energy sector to external factors and energy policy measures under different scenarios;
- quantitative assessments of the effects of these factors on the targets set.

Calculation of the targets is documented in detail in the 'Long-Term Energy Balance up to 2030' (2014) study. The key categories are presented in the table below.

**Table 2: Estimates of the key numbers for national energy production and consumption in 2020**

Energy consumption in 2020	[GWh]
Total primary energy consumption in 2020	82 864
Transformation – input (thermal power plants)	15 775
Electricity generation (thermal power plants)	7 251
Transformation – input – CHP	4 820
Transformation – output – CHP (heat)	1 463
Transformation – output – CHP (electricity)	1 568
Distribution losses (all fuels)	949 <sup>7</sup>
Total end-use energy consumption	59 525
End-use energy consumption – industry	15 206
End-use energy consumption – transport	25 593
End-use energy consumption – households	12 103
End-use energy consumption – services sector	6 624

## 2.2. Other targets for increasing energy efficiency

The state's aim is to ensure that all new buildings owned and used by public authorities, starting in 2018, are nearly zero-energy (and in other sectors starting in 2020) (see Table 3).

In line with Articles 9(1) and 9(3b) of the recast Directive 2010/31/EU on the energy performance of buildings<sup>8</sup> (EPBD), Slovenia will define its intermediate national targets for 2015 regarding nearly zero-energy buildings for new buildings within the Action Plan for Nearly Zero-Energy Buildings up to 2020, which was adopted by the Slovenian Government in April 2015.

**Table 3: National targets for nearly zero-energy buildings**

New buildings – target as a percentage of total newly constructed buildings	
<b>2016</b>	<b>16 %</b>
<b>2021</b>	<b>100 %</b>

## 2.3. Energy savings achieved and the target energy savings

Up to 2012, end-energy savings as estimated using the methodology set out in Directive 2006/32/EC on energy end-use efficiency and energy services<sup>9</sup> (ESD), which is described in more detail in the next chapter, amounted to 2 727 GWh. The estimated primary and end-energy savings in 2016 and 2020 are in line with the EED targets, calculated as the difference between the projection of energy consumption with a reference level of implementation of EE measures, and a projection that excludes such measures. The estimated savings in household electricity consumption, where the savings were estimated using the methodology for large household appliances (which had been used for the previous estimate of savings under the ESD)<sup>10</sup>, are an exception. That

<sup>7</sup> Losses in the distribution and transmission of electricity.

<sup>8</sup> Directive 2010/31/EU of the European Parliament and of the Council of 19 May 2010 on the energy performance of buildings (recast).

<sup>9</sup> Directive 2006/32/EC of the European Parliament and of the Council of 5 April 2006 on energy end-use efficiency and energy services and repealing Council Directive 93/67/EEC.

<sup>10</sup> The basic assumption for the calculation was that appliances are replaced on average every ten years; the savings are therefore calculated as the difference between the annual energy consumption of an average new appliance and the annual energy consumption of an average new appliance ten years previously, multiplied by the number of new appliances that



is, for households the energy savings are calculated as the difference between the reference level and the projection that excludes the measures only for energy consumption for heating and the preparation of hot water, while the projection that excludes measures was not calculated for electricity consumption, since compiling such a calculation would, given the huge number of appliances, be an extremely time-consuming task. The target energy savings for 2016 and 2020 (Table 5) are calculated with reference to 2012.

**Table 4: End-use energy savings achieved**

End-use energy savings [GWh]	
2012	2 727

**Table 5: Target primary and end-use energy savings (forecast) with reference to 2012**

	Primary energy savings [GWh]	End-use energy savings [GWh]
<b>2016</b>	2 740 <sup>11</sup>	2 303
<b>2020</b>	5 432	4 564

Preparing a projection of energy consumption that excludes EE measures constitutes a major challenge, since a determination has to be made of the expected development of the parameters that determine energy consumption in the event that the energy and other policy measures that affect energy consumption are not implemented. The parameters were determined on the basis of an historical analysis of the movement of the parameters and an expert assessment. A projection that excludes measures does not mean a 'freezing' of the parameters in the baseline year, but presupposes a certain autonomous trend in improvements that would occur regardless of whether the measures were implemented or not. The advantage of this way of calculating savings is that the effects of EE measures cannot be counted twice (a possibility, since some measures overlap).

End-use energy savings resulting from the implementation of measures are calculated for end-use energy sectors: transport, households, other consumption (services) and industry. Electricity savings are calculated using a factor of 2.5. In addition, the factor of 2.5 is also taken into account for electricity consumption by electric vehicles, while a factor of 1 is used for the environmental energy, the electricity, required for the operation of heat pumps.

Savings resulting from the generation of electricity using non-combustible RES are also factored into primary energy saving, in addition to end-use energy savings (Table 5). Energy savings resulting from the generation of electricity using non-combustible RES, where there is a statistical presumption of 100 % efficiency, are calculated so that energy consumption for the generation of electricity is compared with the energy consumed had the same quantity of electricity been produced in a gas steam unit with 55 % efficiency.

Energy consumption projections have been calculated for 2015, 2020, 2025 and 2030. The savings for 2016 were calculated using a linear interpolation of savings between 2015 and 2020.

The greatest saving in 2020 with reference to 2012 will, according to the projections, be achieved in transport (1 674 GWh, 37 % of total savings), followed by households (1 357 GWh, 30 %), industry (1 056 GWh, 23 %) and, with the smallest share, services (478 GWh, 10 %) (Table 6). The effects of horizontal and multi-sectoral measures are divided by sector.

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replace the existing appliances. Figures on the energy consumption of appliances are calculated on the basis of market data on appliance sales.

Source: Annex 1: Report on the Implementation of the First National Energy Efficiency Action Plan 2008–2010, September 2010; National Energy Efficiency Action Plan 2010–2016 (draft), October 2011.

<http://www.energetika-portal.si/dokumenti/strateski-razvojni-dokumenti/akcijski-nactr-za-energetska-ucinkovitost/>

<sup>11</sup> Savings with reference to 2012, which means that savings in 2012 were zero.

Energy savings for 2016 and 2020 factor in the effect of all the measures, i.e. not only those measures set out in this plan. This is also correct from the point of view of achieving the target, which has been set at the energy supply level.<sup>12</sup>

**Table 6: Sectoral distribution of end-use energy savings in 2020**

	End-use energy savings [GWh]
<b>Industry</b>	1 056
<b>Transport</b>	1 674
<b>Households</b>	1 357
<b>Services</b>	478
<b>Electricity generation from non-combustible RES</b>	868

#### 2.4. Overview of end-energy savings

The target of the National Energy Efficiency Action Plan 2008–2016 complies with Article 4 of the ESD in seeking a 9 % saving in end-use energy in 2016 (4 261 GWh) through implementation of the planned instruments, which cover measures for efficient energy consumption, energy services and the development of energy-efficient technologies and products. The average annual end-use energy saving in the nine-year period therefore amounts to 473 GWh, and the intermediate target end-use energy saving<sup>13</sup> to 2 367 GWh in the 2008–2012 period.

End-use energy savings of 2 489 GWh were achieved up to and including 2012. This is 5 % more than the target savings to 2012. In the industrial and transport sectors, the value of the savings was estimated using the ‘top-down’ (TD) method. The other savings calculated resulted directly from the implementation of active policies and measures and were calculated using the ‘bottom-up’ (BU) method. The savings occasioned by some of the measures for which incentives were not tendered until towards the end of 2012 or whose implementation required more time<sup>14</sup> were recorded, but only partly ascribed to the 2011–2012 period. The remainder will be factored in 2013 and 2014. In order to avoid counting savings twice, measures implemented in the industrial and transport sectors were omitted. In other cases of possible double counting, the appropriate correction factors were taken into account.

When calculating savings using the BU method, the appropriate methodologies set out in the Rules on the Methods for Determining End-Use Energy Savings<sup>15</sup> and the Methods for Calculating Energy Savings in Implementing Measures to Increase Energy Efficiency and Promote the Greater use of Renewable Energy Sources<sup>16</sup> were used. The latter were also used to calculate savings using the TD method. A factor of 2.5 was used in calculations of electricity savings.

The AN URE 1 target is not Slovenia’s only target in the areas of efficient energy consumption, reductions in greenhouse gas emissions and the exploitation of renewable energy sources. In 2011 the end-use energy savings required to meet these targets were therefore recalculated after these other, more ambitious targets of

<sup>12</sup> The AN URE 1, which was primarily compiled in order to achieve the target energy savings, was obliged, under the methodology, to assess the effect only of those measures outlined in the plan. This could be done where the ‘bottom-up’ method was employed; where the ‘top-down’ method was employed (transport, industry), this could not be done. In addition, the ESD’s methodology for calculating savings laid down that only that part of industry not included in the ETS could be factored in. The EED no longer contains such restrictions.

<sup>13</sup> The intermediate target savings in end-use energy for 2012 were calculated using linear interpolation.

<sup>14</sup> The ‘Sustainable energy’ development priority as part of the implementation of EU cohesion policy (energy supplier programmes).

<sup>15</sup> UL RS, 4/2010, 62/13, 17/2014 – EZ-1.

<sup>16</sup> Annex 2: the Methods for Calculating Energy Savings in Implementing Measures to Increase Energy Efficiency and Promote the Greater use of Renewable Energy Sources, September 2011; Draft National Energy Efficiency Action Plan 2010–2016 – draft, October 2011 <http://www.energetika-portal.si/dokumenti/strateski-razvojni-dokumenti/akcijski-nactr-za-energetske-ucinkovitost/>

Slovenia in this area were factored in. The estimated savings therefore amount to 6 872 GWh by 2016, 10 281 GWh by 2020, and 3 044 GWh by 2012.<sup>17</sup> Despite this, the end-use energy savings achieved by 2012 exceeded the AN URE 1 target. At the moment they are 554 GWh, or 18.2 %, behind the 2020 targets for EE, use of RES and reduction in greenhouse gas emissions. This gap has arisen mostly in transport and industry, as well as in the public and services sectors and in households. We should also be aware that the 2020 energy efficiency target is linked to energy supply (primary energy consumption), which means that energy supply should also be monitored alongside energy savings. It could otherwise happen that an intensive growth in activity (economic growth, residential floor area, kilometres driven) could lead to a requirement to make greater savings in end-use and primary energy consumption than those assumed in the energy consumption projections if the target energy supply level is to be achieved.

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<sup>17</sup> The target energy savings up to 2012 are calculated using a linear interpolation between the expected savings up to 2016 and the corrected achieved savings up to 2010, without factoring in the earlier activities (both from the National Energy Efficiency Action Plan 2011–2016, draft, October 2011).

### 3. POLICY MEASURES FOR IMPLEMENTING THE ENERGY EFFICIENCY DIRECTIVE

#### 3.1. Horizontal measures

##### 3.1.1. Energy efficiency obligation scheme and alternative policy measures (Article 7)

The new scheme of compulsory end-use energy savings by companies that sell energy (they must make energy savings of 1.5 % every year in relation to the average sales achieved between 2010 and 2012) is established in the EZ-1. Energy suppliers will have to make savings at the energy-consumer level, encouraging them to undertake different energy-saving measures, e.g. by replacing old household electrical appliances, using energy-saving lightbulbs and insulating buildings. The new scheme differs from the previous one in that the method by which the measures are financed is not specified. This means that the costs of implementing the scheme are passed to the energy-selling companies themselves; on the other hand, these companies have greater flexibility in the method of implementation itself and in the financing of measures to increase energy efficiency.

The EZ-1 also retains and upgrades other successful schemes for achieving the national energy efficiency target, such as the contribution to increase energy efficiency. This will be earmarked entirely for promoting an increase in energy efficiency in households and multi-apartment buildings by the Eco Fund.

The EZ-1 provides that the Eco Fund shall compile and implement a national-level programme to improve energy efficiency on the basis of which it allocates financial incentives for investments in EE measures. The programme also determines the funds necessary to implementation of the programme itself; these are provided by the energy consumption contribution for increasing energy efficiency.

The EZ-1 imposes fines on those entities that fail to achieve savings or fail to remit funds to the Eco Fund for implementation of the programme to increase energy efficiency. The act also specifies fines for those that fail to report to the Agency in accordance with the provisions of the act. The fines are specified in a range that means that they can be imposed in proportion to the gravity of the infringement. First reporting on implementation of the scheme will take place in 2016; this means that figures on infringements will not be known until then.

#### Objective of compulsory energy savings for final customers

The baseline for calculating the level of end-use energy savings that must be achieved by energy suppliers at the national level is the annual average end-use energy consumption, from which non-energy consumption and energy consumption from traffic is excluded, in the 2010–2012 period. The baseline for calculating the obligation under Article 7 of the Directive is therefore 34 874 GWh (Table 7).

**Table 7: Baseline for calculating the level of end-use energy savings that must be achieved**

[GWh]	2010	2011	2012
<b>end-use</b>	58 127	58 210	57 207
<b>non-energy consumption</b>	1 213	510	510
<b>consumption in transport</b>	21 091	22 669	22 929
<b>end-use excluding non-energy consumption and consumption in transport</b>	35 823	35 031	33 768
<b>2010–2012 average</b>		<b>34 874</b>	

Source: Statistical Office of the Republic of Slovenia<sup>18</sup>

<sup>18</sup> <http://pxweb.stat.si/pxweb/Database/Okolje/Okolje.asp>

The obligation to achieve end-use energy savings totalling 1.5 % of new annual savings over the level achieved in the 2010–2012 period means that Slovenia needs to find 523 GWh in new savings every year between 1 January 2014 and 31 December 2020. All the measures that will help to achieve these savings must last until at least 2020 such that the cumulative savings in the 2014–2020 period will amount to 14 647 GWh.

Taking the exceptions outlined in Article 7(2) of the Directive and the restrictions referred to in Article 7(3) into account, this target will be reduced by 25 % in Slovenia.

#### **Reduction in the target of 25 %**

Slovenia will reduce<sup>19</sup> the target savings by using lower values in the first four years and by implementing measures in the conversion, distribution and transmission of energy, including infrastructure for efficient district heating and cooling.

The target obligation of energy suppliers to ensure the end-use energy savings achieved in individual years will therefore rise gradually from 1 % in 2014 to 1.5 % in 2020: 1 % in 2014 and 2015, 1.25 % in 2016 and 2017, and 1.5 % in 2018 to 2020.

Taking these exceptions into account, the end-use energy savings that must be achieved in individual years are as follows (Table 8):

**Table 8 End-use energy savings by energy suppliers 2014–2020**

[GWh]	2014	2015	2016	2017	2018	2019	2020	Total
	349	349	349	349	349	349	349	
		349	349	349	349	349	349	
			436	436	436	436	436	
				436	436	436	436	
					523	523	523	
						523	523	
							523	
<b>Total</b>	<b>349</b>	<b>697</b>	<b>1 133</b>	<b>1 569</b>	<b>2 092</b>	<b>2 616</b>	<b>3 139</b>	<b>11 596</b>

The total end-use energy savings in 2020 will be 3 139 GWh and the cumulative savings in the 2014–2020 period will be 11 596 GWh.

#### **Energy suppliers' obligations**

Those liable to achieve energy savings and obliged to ensure that savings are made by final customers are all entities supplying electricity, heat, gas and liquid and solid fuels to final customers.

Instead of achieving energy savings via final customers, they may meet their obligations by remitting funds to the Eco Fund in an amount equal to the total savings that should have been achieved by final customers and the Eco Fund's specific cost of achieving the energy savings.

The EZ-1 provides the legal basis that allows the Slovenian Government to determine, by decree:

- the period and the level of end-use energy savings that those liable to make the savings must achieve in that period;
- the method of calculating the level of savings;

<sup>19</sup> By applying the provisions of the first and third indents of Article 7(2) of Directive 2012/27/EU.

- the distribution of savings across the individual years of the specified period;
- the method of meeting the obligations by those liable to do so, and the deadlines by which they must be met.

Since suppliers' market shares change and new entities appear on the market, the savings that have to be achieved by individual entities will be expressed as a percentage of the energy they sold in the previous year.

The savings that must be made by individual entities therefore amount to:

- 0.25 % in 2015;
- 0.5 % in 2016 and 2017;
- 0.75 % in 2018, 2019 and 2020;
- and in the sale of petrol and diesel for vehicles, 0.25 % every year.

For measures to be implemented by the liable entities, no specific method of implementation or financing has been determined (incentive, loan, financing from third parties, etc.). Measures to be implemented by the liable entities may be implemented in all sectors, including transport and industry, that are included in the emission allowances trading scheme (ETS sector).

The Decree will also introduce an exception: that primary energy savings achieved in the energy conversion, distribution and transmission sectors, including infrastructure for efficient DH and DC, is factored into the end-use energy savings. Improvements to district heating systems to be made by liable entities will therefore also be included as eligible measures.

The types of energy service and energy efficiency measure for achieving energy savings by liable entities are:

- efficient and greater consumption of renewable energy sources in the production of heat in the public and services sector and in industry and households;
- efficient energy consumption in buildings;
- efficient energy consumption in transport;
- measures to increase the efficiency of district heating systems;
- energy audit programmes.

### **Specification of alternative measures**

As an alternative measure for achieving the obligations referred to in Article 7 of the Directive, Slovenia will choose the collection of funds for promoting EE measures; these will be collected in the national energy efficiency fund at the Eco Fund. The Eco Fund will co-finance measures to increase energy efficiency, primarily in households, from the funds collected.

Funds for implementing the Eco Fund programme are provided from the energy consumption contribution for raising energy efficiency, which applies to district heating, electricity, and solid, liquid and gaseous fuels. The energy efficiency contribution is paid to the operator by every final customer of electricity and natural gas from the network, while every final customer of heat from the network and of solid, liquid and other gaseous fuels pays that contribution to the energy supplier. Operators and suppliers of heat from the network and of solid, liquid and other gaseous fuels remit the funds collected to the Eco Fund.

The overall target of 1.5 % annually (or 1 % in 2014 and 2015, and 1.25 % in 2016–2018) will be divided between energy suppliers and the Eco Fund on the basis of an act to be adopted by the Slovenian Government. The obligation will be divided so that half of the 1.5 % of the target will be allocated to the Eco Fund, with the target value of the savings that the Eco Fund has to make will not be reduced in the initial years. This means that the Eco Fund's target in individual years within the 2014–2020 period will amount to 0.75 % annually, which is 262 GWh annually if average consumption between 2010 and 2012 is taken as the reference point. Therefore, the savings made by the Eco Fund with the help of the measures implemented across the entire

2014–2020 period will amount to 1 834 GWh in 2020, giving cumulative savings of 7 336 GWh across the entire period.

According to the provisions of the EZ-1, the Slovenian Government will set the level of the energy efficiency contribution so that all energy, regardless of type, will bear the same burden.

Under the act, the Eco Fund will publish on its website an annual report on the scheme implemented, the energy savings achieved, the level of funds used for implementation of the scheme and the specific costs of achieving the savings.

The types of measure to be implemented by the Eco Fund will be determined by the scheme for improving energy efficiency, which is part of the Eco Fund's business and financial plan. These measures are:

- efficient energy consumption in buildings;
- the establishment of installations for producing energy from renewable sources in or on buildings;
- efficient energy consumption in the public and services sector and in industry;
- the purchase of electric vehicles;
- other efficient energy consumption in transport measures;
- the implementation of energy audits;
- an energy consulting scheme;
- information, awareness-raising and training schemes.

Only those measures that exceed the lower efficiency threshold laid down in the implementing regulations based on Directive 2009/125/EC may be regarded as permitted measures.<sup>20</sup>

Measures which, alongside lower energy consumption reduce energy consumption at the primary level to a relatively greater degree, will have more weight. These measures are, in particular, reducing electricity consumption, producing electricity from RES for own use, and the cogeneration of heat and power. The energy savings achieved under these measures will be calculated in accordance with Annex IV to the Directive. The Decree will determine that individual measures implemented may be ascribed to one liable entity only. When implementing a measure that is to be financed from two parties obliged to achieve energy savings, the methods for dividing the savings shall be determined between these two parties.

Special emphasis will be given in the Decree and in individual mechanisms for promoting measures for increasing energy efficiency to the quality of implementation of the measures, with national or international quality standards being made to apply to installed equipment and to the installers of this equipment.

For measures to be implemented by liable entities, no specific method of implementation or financing will be determined (subsidy, loan, financing from third parties, etc.).

Measures to be implemented by liable entities may be implemented in all sectors, including transport and the ETS sector.

The Eco Fund will implement the measures by allocating subsidies alongside investments, as returnable and non-returnable funds.

We are not envisaging the use of alternative measures as set out in Article 7(9) of the Directive.

### **Lifecycle of measures**

The measures that liable entities and the Eco Fund may implement in order to meet the obligation must be implemented up to and including 2020. The lifecycle of individual measures will be determined in the Rules on the Methods for Determining Energy Savings at Final Customers.

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<sup>20</sup> Directive 2009/125/EC of the European Parliament and of the Council of 21 October 2009 on establishing a framework for the setting of ecodesign requirements for energy-related products (recast).

## Calculation of savings

The Rules on the Methods for Determining Energy Savings at Final Customers lays down the methods for determining the energy savings made by individual measures to improve energy efficiency (hereinafter: measures) used in the drafting, implementation and evaluation of energy efficiency improvement schemes. For individual measures the Rules also lay down the method of calculating the consumption of renewable energy sources and the reduction in carbon dioxide emissions. The lifecycle or duration of the effects of individual measures are also determined.

There are no plans to take temperature differences between regions into account when calculating the savings derived from measures to improve the energy performance of buildings, with Slovenia being regarded as a single region for the purposes of calculating the savings under these measures.

## Monitoring and reporting on the savings achieved

The Energy Act provides that the Energy Agency (hereinafter: the Agency) is responsible for reporting on and monitoring the achievement of energy savings.

Liable entities shall send a report to the Agency by 31 March every year on achievement of the targets from the previous year. The minister shall issue rules determining the form and content of the report. On the basis of these reports, the Agency will make public all the savings achieved by each liable entity by 30 April for the previous year.

The Agency will verify every statistically important percentage and examine a representative sample of measures for improving energy efficiency implemented by liable entities. To this end, the liable entities shall submit to the Agency, at its request and at least once a year, aggregated statistical data on its final customers (and set out any significant changes that have occurred in relation to the previous sets of data) and current data on consumption by final customers.

### *3.1.2. Energy audits and energy management systems (Article 8)*

Article 324 of the EZ-1 defines in detail the introduction of energy management systems, while Article 354 addresses the implementation of energy audits (EA). Under the act, energy management systems must be established by public sector entities, with the liable entities and the minimum components of an energy management system being determined by the Slovenian Government by decree. The Ministry of Infrastructure will compile the decree. The tasks connected with the setting-up and implementation of an energy management system may, in accordance with Article 325 of the EZ-1, be conducted by local energy organisations.

With regard to energy audits, the EZ-1 does not prescribe how the ministry responsible for energy should encourage the production and implementation of energy audits, although it does determine that the minister responsible for energy should prescribe a detailed methodology for the production of energy audits and the elements that an EA must contain. Large companies must conduct an EA every four years, with implementation of this obligation being monitored by the Energy Agency.

The implementation of an EA and the purchase of energy management equipment in industry and the services sector are currently being encouraged by means of grants made available within final customer energy saving schemes implemented by companies that supply electricity, heat, gas, and liquid and solid fuels (liable entities). Under the EZ-1, the cost of implementing these schemes is passed on to the liable entities themselves. An expanded energy audit,<sup>21</sup> which may not be more than five years old, was also one of the conditions for receiving funds under the 'Sustainable energy' development priority within the Operational Programme for

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<sup>21</sup> In accordance with the Methodology of Implementation of an Energy audit, Ministry of the Environment and Spatial Planning, April 2007, <http://www.aure.gov.si/ekniiznica/MethodologijaEP.pdf>.



Environmental and Transport Infrastructure Development 2007–2013 for the energy renovation of public buildings. A system for certifying EA providers has not been established.

Under Article 55 of the Companies Act (ZGD-1),<sup>22</sup> large companies are those that employ more than 250 workers in a financial year, that have net sales revenues of over EUR 35 million and that have assets totalling over EUR 17.5 million. There are 512 such companies in Slovenia.<sup>23</sup> They also include enterprises that implement energy or environmental management systems in accordance with recognised standards under which they may, under certain conditions, also meet the requirements for the regular implementation of energy audits every four years under the EZ-1. Seven large enterprises have the ISO 50001:2011 Certificate for Energy Management Systems and 185 large enterprises have the ISO 14001:2004 Certificate for Environmental Management. Voluntary agreements have not yet been implemented in Slovenia. There is no information on the EAs carried out at large enterprises, not any reliable information on the total number of EAs carried out. It is estimated that at least 108 EAs were carried out in 2011–2012,<sup>24</sup> 77 of which were supported by grants as part of final customer energy saving schemes,<sup>25</sup> 19 were EAs of administrative units (34 600 m<sup>2</sup>) and 12 were EAs of district and local courts (51 000 m<sup>2</sup>). A total of 373 contracts<sup>26</sup> were signed for the renovation of more than 1.5 million m<sup>2</sup> of building floor area for energy-efficiency improvements to public buildings using OP ROPI funds. For all these buildings, the applicants were obliged to conduct an expanded EA beforehand. Twenty-eight contracts were signed for grants as part of final customer energy saving schemes for the purchase of operational monitoring and energy management equipment at final customers.

Alongside the fact that the AN URE 2020 envisages the continuation of the implementation of existing Measures 1.3 for industry and J.3 for the public sector in the area of EAs and energy management systems, the EZ-1 has also introduced a new measure, i.e. the compulsory implementation of energy audits at large enterprises every four years. Monitoring of the implementation of EAs at large enterprises will in the future be taken over by the Agency, and a system established that ensures the independence and, where required, the qualifications of energy audit providers in accordance with the requirements of the Directive.

An overhaul of the methodology used for the performance of energy audits in buildings is envisaged as part of Measure J.3 in 2015 to support the drafting of calls for applications for the contractual reduction of energy costs (energy performance contracting), i.e. for the contractual provision of energy supply and the contractual provision of energy savings<sup>27</sup> (Measure H.1, existing measure).

In the 2014–2020 financial perspective, funds will be earmarked for the energy renovation of public sector buildings, with the basis for implementation of the measures being the performance of an EA. In order to make better use of the funds available, it would make sense for this measure to be upgraded by means of the parallel optimisation of operation of energy systems, i.e. the implementation of non-investment EE measures and EE measures with a short period of return on investment<sup>28</sup> identified by the EA or as a result of the introduction of a system of energy consumption monitoring. Optimisation of the operation of energy systems should, in principle, already be a component part of projects for the contractual provision of energy savings, while for those public buildings that are to receive funds for energy renovation (Measure J.3, existing measure) that will not take place as part of energy performance contracting the measure of the optimisation of the operation of energy systems should be mandatory.

Funds will also be available in the 2014–2020 financial perspective for SMEs that introduce new models of business operation and processes to improve materials and energy efficiency. The introduction of energy management systems is also one of the processes for raising energy efficiency.

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<sup>22</sup> UL RS, 65/2009 – UPB, 33/2011, 91/2011, 32/2012, 57/2012, 44/2013 – Constitutional Court Ruling, 82/2013).

<sup>23</sup> The figure will be updated in 2014.

<sup>24</sup> On the assumption that the EAs of administrative units and courts were not incentivised using suppliers' funds.

<sup>25</sup> Number of contracts signed for the performance of energy audits as part of final customer energy saving schemes (2012). Distribution by sector is not known.

<sup>26</sup> A contract can include more than one building; therefore, the number of contracts is not the same as the number of buildings.

<sup>27</sup> Energy Performance Contracting (EPC).

<sup>28</sup> Re-commissioning.

**Table 9: Measures in the areas of energy audits and energy management systems**

No	Measure	Programme/Upgrading	Type of measure/Responsible entity	Target group	Deadline
I.3	<b>Incentives for introducing energy management systems in the commercial sector</b>	<b>Existing measures</b> Grants will be earmarked for the implementation of energy audits, the introduction of energy management systems and consulting.	Financial incentives / Ministry responsible for the economy Eco Fund	Economy, SMEs	2014–2020
J.3	<b>Introducing an energy management system in the public sector</b>	<b>Existing measures</b> Determination of the liable entities and minimum content of an energy management system, the promotion and implementation of energy accounting, energy audits, the introduction of an energy management system and optimisation of the operation of energy systems. The methodology for implementing energy audits in buildings will be overhauled so that it will support the preparation of tenders for energy efficiency contracting.	Regulations / Ministry responsible for energy	Public sector	2014–2020
V.4	<b>Implementation of energy audits at large companies</b>	<b>Existing measures</b> The implementation of energy audits at large enterprises every four years and the monitoring of implementation of this obligation.	Obligation / Ministry responsible for energy Energy Agency	Economy, large enterprises	2014–2020

### 3.1.3. Metering and billing (Articles 9–11)

#### Introduction of advanced metering

In 2011 the Energy Agency drew up the Guidelines for Introducing an Intelligent Metering System in Slovenia,<sup>29</sup> which provided the starting points for the drafting of the Energy Act with regard to the operator's role in metering. In addition to this, the guidelines for introducing intelligent metering in Slovenia define the possible roles and responsibilities regarding the introduction of intelligent metering and the functions that intelligent metering services are meant to provide. An Economic Analysis of the Costs and Benefits of the Introduction of Intelligent Metering in Slovenia<sup>30</sup> was drawn up under the EZ-1 and Directives 2009/72/EC<sup>31</sup> and 2009/73/EC.<sup>32</sup> The analysis uses different introduction scenarios to assess the impact of the introduction of intelligent metering for electricity and natural gas in Slovenia on the various directly and indirectly involved entities on the market. The analysis also contains a qualitative and quantitative assessment of the desired scope and framework of introduction of intelligent metering. Qualitative assessments of the models of the roles and responsibilities within the intelligent metering system, the functionalities and services of the intelligent metering system and the additional costs and benefits that could be assessed only outside the framework of an economic assessment of the long-term costs and benefits were also conducted.

#### Services and functions of system meters

In the guidelines the Energy Agency has determined a series of (basic) essential functions for system electricity and natural gas meters that must be taken into account when introducing intelligent metering, as well as a set of additional functions and the intelligent metering services associated with them that could bring substantial additional benefits. The standard types of system meter currently available on the market provide the majority of additional functions to a greater or lesser extent and are therefore in line with efforts towards

<sup>29</sup> [http://www.agen-rs.si/dokumenti/29/2/2011/POS\\_20110729\\_Posvetovanje\\_AMI\\_Pub\\_1601.pdf](http://www.agen-rs.si/dokumenti/29/2/2011/POS_20110729_Posvetovanje_AMI_Pub_1601.pdf)

<sup>30</sup> [http://www.agen-rs.si/dokumenti/29/2/2014/CBA\\_SLO\\_Koncno\\_20140321\\_1986.pdf](http://www.agen-rs.si/dokumenti/29/2/2014/CBA_SLO_Koncno_20140321_1986.pdf)

<sup>31</sup> Directive 2009/72/EC of the European Parliament and of the Council of 13 July 2009 concerning common rules for the internal market in electricity and repealing Directive 2003/54/EC.

<sup>32</sup> Directive 2009/73/EC of the European Parliament and of the Council of 13 July 2009 concerning common rules for the internal market in natural gas and repealing Directive 2003/55/EC.

standardisation at the European level. The introduction of meters with expressly non-standard functions would give rise to disproportionately increased costs, since meters with a simplified set of functions are currently available on the market and equipment manufacturers would have to undertake product planning and adapt their production process to order.

#### *Introduction of smart metering systems*

In 2012 the electricity distribution network system operator in Slovenia (SODO) presented the Programme for the Development of Smart Grids in Slovenia,<sup>33</sup> which defines the strategic guidelines for the introduction of smart grids under which Slovenia will acquire a working system by 2020. The programme defines the precise structure of the required tasks, the research, the initial activities, the costs of introduction and the method of financing under which Slovenia will acquire an effective, working smart grid concept by 2020.

The Operational Programme for the Implementation of European Cohesion Policy 2014–2020<sup>34</sup> also includes promotion of the development and use of smart low- and medium-voltage distribution systems with the specific aim of increasing the efficiency of the electricity system. There are plans for the upgrading of the existing electricity infrastructure with information and communications technology and a number of new elements that facilitate cost-effective solutions, including:

- the introduction of remote metering by actual consumption with two-way digital communication between supplier and consumer;
- the introduction of dynamic innovative tariffs;
- the incorporation and management of new elements such as diffuse sources of electricity, electric vehicles, energy storage systems and compensation devices;
- the development and provision of new energy services, such as demand response, the coordination of generation from diffuse sources, consumption management, own consumption, etc.

One of the aims of the operational programme is to meet the requirements laid down by the legislative framework. Under Directive 2009/72/EC, Member States must, where this is economically feasible, replace 80 % of all electricity meters with smart metering systems by 2020. EUR 24 million have been earmarked from cohesion funds to co-finance investments in the network and the mass introduction of smart metering systems. The target share of users connected to intelligent metering systems by 2023 is 85 % (Table 10). Investment is envisaged in projects that resolve a systemic problem in a comprehensive manner or are of strategic importance:

- the co-financing of activities that contribute to the integration of systems and solutions for the introduction and establishment of modern ICT infrastructure and the provision of intelligent metering systems to consumers, thereby enabling the construction of smart grids and guaranteeing integration between intelligent devices and the systems being integrated within the framework of the smart grid concept;
- promotion of the installation of ICT devices for the active inclusion of production and consumption, which will contribute to reducing peak load on the electricity network in areas where this load is too great;
- support for innovative investment in low-voltage distribution systems and, through this, the opening-up of business opportunities for new/local entities in the area of ICT as well as the energy sector;
- the development of new energy services that will contribute to greater transparency and competitiveness on the market;
- within the context of the introduction of integrated transport strategies, support will also be directed towards establishing public smart charging infrastructure for electric vehicles for public and private use as flexible consumers within the electricity system. By incorporating

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<sup>33</sup> [http://www.sodo.si/\\_files/434/pametna\\_omrezja\\_2012\\_pop7.pdf](http://www.sodo.si/_files/434/pametna_omrezja_2012_pop7.pdf)

<sup>34</sup> <http://www.eu-skladi.si/2014-2020/operativni-program-za-obdobje-2014-2020>, draft

smart charging stations within smart grid systems, the charging of electric vehicles will make an important contribution to improving the efficiency of the electricity system because of the volume of consumption and the demand response capacity;

- activities in the area of information, education and awareness-raising for end-users in relation to the active inclusion of production and consumption and the advantages of equipping consumers with intelligent metering systems (new business models).

**Table 10: Proportion of users connected to intelligent metering systems**

	Baseline value in 2013	Target value in 2023
<b>Share of users connected to intelligent metering systems</b>	29 %	85 % (500 000 customers)

### Legal bases

Energy metering and billing are defined in the EZ-1 in accordance with Directives 2009/72/EC and 2009/73/EC and the EED. Articles 355 to 358 of the Energy Act regulate the areas laid down by the EED for energy metering (Article 9), billing information (Article 10) and the cost of access to metering and billing information (Article 11):

- Obligatory energy metering and billing:
  - definition of the role of the operator or distributor of energy from the grid obliged to meter the energy supplied to every customer;
  - definition of the billing of actual consumption (such billing must be in a clear and understandable format and sufficiently frequent to allow customers to regulate their energy consumption, or at least once a year);
  - the option of billing for energy supplied by actual consumption at any moment at the customer's request;
  - the option of electronic billing information and bills;
  - access to information on and estimates for energy costs in a format that enables consumers to compare deals on a like-for-like basis;
  - the sending of bills and billing information for energy consumption free of charge, and free-of-charge access for final customers to their consumption data;
- Obligatory metering of heat for individual buildings;
- Obligatory metering of heat for individual parts of buildings;
- Provision of information to final customers on their energy consumption:
  - definition of the obligations of a supplier of energy or fuel from the networks regarding the frequency and form of billing information provision to final customers;
  - definition of the obligatory content of billing information, which must include the actual price in force, actual energy consumption and actual energy costs in the billing period, a comparison of customers' energy consumption with energy consumption in the same period of the preceding year and with the average standardised or reference energy consumer from the same consumer category;
- Access to additional information on consumption, where intelligent metering systems have been installed;
- Access to information by the energy services provider.

## Provision of services in the area of metering and billing for final customers

### *E-services for electricity customers*

The Agency has produced an application that allows electricity customers to compare deals on its website;<sup>35</sup> the application is the common starting point for e-services for electricity customers. The application allows a customer to compare deals and receive the other information defined in Annex VII (1.2) of the Directive (Minimum requirements for billing and billing information based on actual consumption). The services provided by the application are outlined in Table 11 below.

**Table 11: E-services for electricity customers**

E-service	Description
<b>Comparison of electricity supply deals</b>	This service enables all active electricity supply deals to be calculated and compared, and allows a final customer to find out about electricity suppliers and their deals. It provides an informative calculation of the annual amount paid for the electricity consumption envisaged and a comparison of all deals that meet the final customer's criteria.
<b>Monthly calculation check</b>	This service enables a final customer to check whether the monthly calculation of the selected supplier's electricity deal is correct.
<b>Monitoring of electricity supply deals</b>	This service provides automatically updated information on changes to electricity supply deals.
<b>Calculation of the use-of-system charge</b>	This service enables the use-of-system charge to be calculated and a comparison to be made between different tariff items.

### *E-services for natural gas customers*

The Agency has produced an application that allows natural gas customers to compare deals on its website;<sup>36</sup> the application is the common starting point for e-services for natural gas customers. The application allows a customer to compare deals and receive the other information defined in Annex VII (1.2) of the Directive (Minimum requirements for billing and billing information based on actual consumption). The services provided by the application are outlined in Table 12 below.

**Table 12: E-services for natural gas customers**

E-service	Description
<b>Comparison of natural gas supply deals</b>	This service enables all active natural gas supply deals to be calculated and compared, and allows a final customer to find out about natural gas suppliers and their deals. It provides an informative calculation of the annual amount paid for the natural gas consumption envisaged and a comparison of all deals that meet the final customer's criteria.
<b>Monthly calculation check</b>	This service enables a final customer to check whether the monthly calculation of the selected supplier's natural gas deal is correct.
<b>Monitoring of natural gas supply deals</b>	This service provides automatically updated information on changes to natural gas supply deals.

<sup>35</sup> [http://www.agen-rs.si/sl/informacija.asp?id\\_meta\\_type=29&id\\_informacija=1140](http://www.agen-rs.si/sl/informacija.asp?id_meta_type=29&id_informacija=1140)

<sup>36</sup> [http://www.agen-rs.si/sl/informacija.asp?id\\_meta\\_type=30&id\\_informacija=1235](http://www.agen-rs.si/sl/informacija.asp?id_meta_type=30&id_informacija=1235)

Table 13 outlines the billing and metering services provided to final household customers by electricity suppliers in Slovenia.

**Table 13: Electricity suppliers' services in Slovenia**

Service	Description
<b>Charging for electricity consumption</b>	Every final customer of electricity in Slovenia is provided with an annual calculation of their electricity consumption. This means that the Electricity Distribution Network System Operator (SODO) reads the meters once per calendar year and, on the basis of this reading, the electricity supplier calculates the electricity consumption for the previous accounting period. Advance payments are made for electricity in the course of the accounting period; the level of these advance payments is calculated on the basis of the average daily consumption in the previous accounting period.
<b>Charging of electricity by actual consumption</b>	Electricity suppliers in Slovenia provide for the charging of electricity by actual consumption rather than by advance payments. In this case, the final customer reports the meter reading on a monthly basis (via the online application or by telephone), thereby paying for electricity according to their actual consumption. The service is free of charge via electricity suppliers' online applications. Electricity is also charged for by actual consumption in cases where devices that enable remote reading have been installed on consumption points (intelligent metering systems).
<b>Option of checking the current calculation</b>	End-users may, in the course of an accounting period, check whether the amount of the instalment billed is correct by sending the meter reading, before the instalment is due, to the supplier and requesting a control calculation.
<b>Additional e-services</b>	Electricity suppliers in Slovenia provide their customers with additional online services, offering them detailed information on consumption (efficiency indicators).

### Metering of heat

Article 357 of EZ-1 (Mandatory metering of heat in individual parts of buildings) outlines the area of the metering and billing of heat in individual parts of buildings supplied from the district heating network or from a central source.

- In multi-apartment and other buildings with at least four separate sections where heat is supplied from a common heating system, the heating and hot water costs are calculated predominantly on the basis of actual consumption of heat. To this end, the owners of individual parts of a building may install metering equipment that provides an indication of the actual heat consumed by an individual part of a building.

The method used to measure heat and the method of dividing and calculating heating costs in multi-apartment and other buildings with at least four separate sections are laid down in the Rules on the Method of Dividing and Calculating the Costs of Heating in Residential and Other Buildings with Several Individual Parts.<sup>37</sup> These Rules are applied to:

- Buildings with central heating and/or the central preparation of hot water and supplied with heating from the district heating system or a common heating or other installation for the central generation of heating.

<sup>37</sup> UL RS, 7/2010, Rules on the Method of Dividing and Calculating the Costs of Heating in Residential and Other Buildings with Several Individual Parts.

- The division and billing of heating costs from the district heating system or the costs of fuel for a common heating installation, i.e. the costs of heating and/or hot water preparation, compiled on invoices or by means of a specification of the costs of heating or fuel supplied to a building.

#### 3.1.4. *Consumer information and training (Articles 12 and 17)*

The main objectives of the consumer information and training programmes remain:

- to inform and improve the awareness of the essential target groups regarding the benefits of EE and of the use of RES;
- to provide the specific activities essential for a target group;
- to provide attractive models;
- to show good models from public sector measures.

The implementation of existing information and training measures is continuing (H.3, H.4, G.3, G.5), Table 14.

Articles 351–353 of EZ-1 refer to information and training programmes. Information, training and awareness-raising programmes for different target groups are carried out by the Support Centre.<sup>38</sup> Funding is earmarked from the Eco Fund resources for implementation of the raising energy efficiency scheme. Information to consumers on EE measures and the use of RES will continue to be sent to other actors on the energy services market as well. These activities are also currently being implemented within final customer energy saving schemes, with 80 contracts being signed for the provision of information programmes in 2012.

Energy consulting for RES for broad consumption is continuing to be implemented via the network of energy advice offices (ENSVET), the operation of which is to be funded in the same way as the information programmes provided by the Support Centre, i.e. from Eco Fund resources. An average of 6 000 advisory sessions are held within ENSVET per year. The objective is to increase this figure to 10 000 per year. The number of advisory sessions should increase in the future with the operation of mobile ENSVET units. It is envisaged that ENSVET will take over consulting measures from the EE scheme for low-income households, in addition to the tasks it had performed up to now (existing measure: G.3). Within this framework, the provision of advice is planned on possible measures to reduce energy consumption among socially deprived groups, as is the allocation of EE installations. Visits will be made by regional social work centres, with 300 such visits being planned for 2014. Individual assistance could provide households with savings of up to EUR 150 on their energy bills per year.

Other organisations are active in the area of EE promotion and the use of RES; these include energy companies (e.g. the Energy Solutions Centre, the 'Positive Energy' EE and RES website, including the REUS Research Study into Energy Efficiency in Slovenia), non-governmental organisations (Focus, Umanotera, E-forum), the Eco Fund, local energy agencies, etc.

EE issues are also addressed in education programmes (e.g. the 'Energy' course at the Faculty of Energy at the University of Maribor, the 'Eco School' programme for nursery, primary and secondary schools, optional subjects in environmental protection, which include energy efficiency, in grammar schools and primary schools, etc.). The 2011 White Paper on Education in the Republic of Slovenia<sup>39</sup> also mentions sustainable development, part of which includes energy efficiency, as one of the strategic challenges and policies of the national education system.

Funds for information and consumer training are available within the 2014–2020 financial perspective as part of the priority investment in supporting energy efficiency and the use of RES in public infrastructure, including public buildings and the housing sector. Emphasis is placed on special measures linked to improvements to energy efficiency in households faced with fuel poverty, as well as support for raising awareness of and providing education in energy efficiency measures.

<sup>38</sup> The operational provider of the support scheme for electricity generated from RES and CHP.

<sup>39</sup> [http://www.belaknjiga2011.si/pdf/bela\\_knjiga\\_2011.pdf](http://www.belaknjiga2011.si/pdf/bela_knjiga_2011.pdf).

**Table 14: Information and consumer training measures**

No	Measure	Programme/Upgrading	Type of measure/Responsible entity	Target group	Deadline
H.3	<b>Information, awareness-raising and training schemes for target publics</b>	<b>Existing measures</b> The preparation and implementation of information and awareness-raising programmes on EE measures and the use of RES in households, SMEs and the public sector.	Information and training / Ministry responsible for energy, Eco Fund, Borzen	Households, public sector, commerce (SMEs)	2014–2020
H.4	<b>Education and training</b>	<b>Existing measures</b> Incorporation of EE subjects into education programmes at all levels of education.	Education / Ministry responsible for education, ministry responsible for energy	Educational institutions	2014–2020
G.3	<b>Energy efficiency scheme for low-income households</b>	<b>Existing measures</b> The implementation of information and consulting activities within the energy efficiency scheme for low-income households.	Information and consulting / Ministry responsible for energy, ministry responsible for social affairs, Eco Fund	Households with income in the first quintile	2014–2020
G.5	<b>Energy advice network for citizens – ENSVET</b>	<b>Existing measures</b> Provision of information, advice and assistance to citizens regarding investments in EE measures and RES use and the preparation of applications for tenders for the acquisition of financial incentives for investments. The measure also includes the setting-up of mobile ENSVET units.	Information and consulting / Ministry responsible for energy, Eco Fund	Households	2014–2020

Energy labelling and the ecodesign of energy-related products are also part of the provision of information to consumers. Surveillance of this measure is conducted by the Market Inspectorate of the Republic of Slovenia and the Infrastructure Inspectorate of the Republic of Slovenia (new Measure V.2, Table 15), with the funds for implementation of the task being provided by the ministry responsible for energy. Regular annual surveillance is currently being exercised of products on the market. Alongside administrative surveillance, product samples are monitored to verify that they meet the energy efficiency requirements. Where non-compliances are identified (product does not meet the energy efficiency requirements), the necessary measures are taken (e.g. temporary withdrawal of a product from circulation until the non-compliance is rectified). Reports on the performance of surveillance tasks are also sent annually to the European Commission.

**Table 15: New measure of surveillance of energy-related products**

No	Measure	Programme/Upgrading	Type of measure/Responsible entity	Target group	Deadline
V.2	<b>Surveillance of energy labelling and ecodesign of products</b>	<b>AN URE 2020</b> Administrative surveillance and conformity assessment of products in relation to energy efficiency requirements by means of testing	monitoring / Ministry responsible for energy, Market Inspectorate of the Republic of Slovenia and the Infrastructure Inspectorate of the Republic of Slovenia	Final customers	2014–2020

### 3.1.5. Availability of qualification, accreditation and certification schemes (Article 16)

EZ-1 lays down the mandatory acquisition of a licence for independent specialists who produce energy performance certificates or perform audits of air-conditioning or heating systems (Article 341). Training programmes for independent specialists are laid down by the minister responsible for energy, with the ministry responsible for energy maintaining a register of licences of independent specialists and conducting expert monitoring of energy performance certificates and audit reports.



Slovenia is currently carrying out training for those drawing up energy performance certificates for buildings. This training includes four days of lectures and the individual production and presentation of two certificates (calculated and metered). After successfully completing the training and passing a written and oral examination, a candidate may make an application to the competent ministry for an independent specialist's licence to produce energy performance certificates. There are currently 248<sup>40</sup> organisations in the register of those authorised to compile energy performance certificates. Training programmes for independent specialists conducting audits of air-conditioning or heating systems are being prepared.

The state has not yet put in place plans for certification and accreditation schemes for providers of energy performance contracting (Measure H.1), energy auditors, energy managers or installers of energy-related building elements. Despite this, some training has been carried out, or is being carried out, in these areas as well:

- 'European Energy Manager – EUREM' training is being carried out under the certified programme in 27 European countries,<sup>41</sup> and in Slovenia at the Institute Jožef Stefan (<http://si.eurem.net/display/euremsi/EUREM>);
- as part of the IEE<sup>42</sup> BUILD UP SKILLS Slovenia project,
- training has been held for green professions in the construction sector at the ZRMK Institute of Construction<sup>43</sup> (<http://buildupskills.si>);
- The ZRMK Institute of Construction has also conducted supplementary professional training within the IEE ENFORCE project for energy auditors (<http://www.enforce-ee.eu/eng/>);
- training was conducted for contracting authorities and providers of energy-efficient public procurement as part of the SEE<sup>44</sup> EFFECT project (<http://www.effectproject.eu/>); the Ministry of Public Administration and Institut Jožef Stefan both took part in the project;
- the regular training of engineers and architects in sustainable construction, energy efficiency and green public procurement takes place at the Chamber of Engineers of Slovenia and the Chamber of Architecture and Environmental Planning ([www.izs.si](http://www.izs.si); [www.zaps.si](http://www.zaps.si));
- training in sustainable construction and green public procurement is conducted by the Slovenian Association for Sustainable Construction – GBC Slovenija (<http://www.gbc-slovenia.si/>);
- training also takes place as part of commercial fair events such as the International Craft Fair, Sejem DOM (Home Fair), Sejem MEGRA (Spring Construction Fair) and others and is conducted by a variety of organisations, with the target groups being private and public investors, project designers and industry;
- the industry conducts training in the area of green technologies for EE and RES in buildings (e.g. the Commercial Interest Group of Facade System and Thermal Insulation Manufacturers, GIZPFSTI).

As the above list shows, a large amount of training is provided as part of projects under various European programmes. Grants for implementation may also be acquired under final customer energy saving schemes.

Continuation of the implementation of the existing Measure H.4 (Table 16) for support for training for the implementation of energy efficiency projects includes, in addition to informal and formal training of providers of energy efficiency improvements to buildings and energy managers and the training of SMEs and providers in the construction sector engaged in energy efficiency improvement projects and new construction, the training of public sector staff to implement green public procurement and energy performance contracting. Some funds will also be available for this purpose within the 2014–2020 financial perspective. Under the EZ-1, AN URE 2020

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<sup>40</sup> Situation as at 21 October 2014. The register is available at: <http://www.energetika-portal.si/podrocja/energetika/energetske-izkaznice-stavb/izdajatelj-energetskih-izkaznic/#c513>.

<sup>41</sup> Seven EUREM training schemes were carried out in Slovenia between 2008 and 2014, with 160 participants passing the course and becoming European energy managers.

<sup>42</sup> Intelligent Energy Europe Programme.

<sup>43</sup> Training has been aimed at nearly zero-energy building contractors (builders, craftsmen, installers, engineers). Between 5 000 and 6 000 workers of various profiles will have to be trained if the planned renovation of buildings is to be carried out.

<sup>44</sup> South East Europe Programme.

also contains the measure of training and licensing of independent specialists. The training, licensing and maintenance of registers of licensed independent specialists who produce energy performance certificates or perform audits of air-conditioning or heating systems will also be continued and upgraded (Table 16).

**Table 16: Existing measure for the training and licensing of specialists in the field of EE**

No	Measure	Programme/Upgrading	Type of measure/Responsible entity	Target group	Deadline
H.4	Education and training	<p><b>Existing measures</b></p> <p>Support for targeted training for the design and implementation of projects in the area of energy efficiency, renewable energy sources and green energy technologies.</p>	<p>Training /</p> <p>Ministry responsible for energy</p> <p>Training providers</p>	Contractors, energy managers, project designers, decision-makers, public administration	2014–2020
H.5	Training and licensing of independent specialists	<p><b>Existing measures</b></p> <p>Training, licensing and maintenance of registers of licensed independent specialists who produce energy performance certificates or perform audits of air-conditioning or heating systems.</p>	<p>Training /</p> <p>Ministry responsible for energy</p> <p>Training providers</p>	Specialists in the area of EE	2014–2020

### 3.1.6. Energy services (Article 18)

A number of energy performance contracting projects have been carried out in the past in Slovenia – the first was in 2002 – in various sectors (particularly in the public sector at the municipal level) for different EE and RES measures and different investment volumes, etc. Non-returnable financial incentives for energy services to raise energy efficiency (energy performance contracting, etc.) were put up for tender in EE tenders for energy suppliers in 2012. A stimulating support environment for the development of energy performance contracting has been planned in previous documents; however, the tasks planned as part of Measure H.1 have not yet been fully implemented. The energy performance contracting market therefore continues to be poorly developed, with only a number of providers present.<sup>45</sup>

It should be emphasised that the use of energy performance contracting is one of the possible measures for improving the leverage<sup>46</sup> of use of public funds for the complete energy renovation of public buildings, achievement of the annual dynamics of renovation of public buildings as required under the Directive (i.e. 3 % of the total floor area of buildings owned and occupied by the central or core government), as well as providing impetus to the economy, since greater demand for energy performance contracting in turn provides impetus to energy services that raise energy efficiency and increase the volume of investments. All this also helps to strengthen the competitiveness of society, foster high-quality economic growth and create new jobs. The programme, oriented towards EE and the use of RES with the help of energy performance contracting, with priority given to the public sector (which according to the Directive should provide a model in this area), and occasionally in multi-apartment buildings and commerce, should be oriented primarily towards establishing an adequate support environment for the implementation of energy performance contracting, which also includes assistance to public contracting authorities in designing, implementing and monitoring such projects.

Energy performance contracting is also one measure that could lead to a quick exit from the current financial crisis. Performance of the following activities is crucial if the energy performance contracting measures planned

<sup>45</sup> There is no official list of available providers and their qualifications, although an overview of the situation on the energy performance contracting market has been compiled as part of the Intelligent Energy – Europe projects. The latest information is available on the IEE TRANSPARENSE project website (<http://www.transparense.eu/si/si-domov/dobrodosli-na-spletni-strani-projekta-transparense>).

<sup>46</sup> Ratios between the value of the subsidy and the promoted investment. In the 2007–2013 period, Slovenia achieved very low leverage in the utilisation of grants for projects to improve the energy efficiency of buildings: in the public sector, the level of the subsidy from the Cohesion Fund generally covered 100% of the eligible costs of a project, which attracted a very small share of additional investment funds: EUR 1.38 of investment funds per EUR 1 of subsidy.

so far in the 2014–2020 period are to be introduced and implemented effectively, thereby increasing the effects of grants for the complete energy renovation of buildings:

1. active support to the Slovenian Government and line ministries in bringing this instrument into effect;
2. the provision of clear legislation and unambiguous interpretation of issues such as: the accounting of investments in energy performance contracting in line with the accounting standards; borrowing by municipalities, when the repayment of investments from savings made in energy costs; interpretations of the Public Procurement Act and the Public-Private Partnership Act in relation to energy performance contract projects, etc. To this end, the ministry responsible for energy has drafted the Guidelines for the Implementation of Measures to Raise the Energy Efficiency of Public Sector Buildings under the Principle of Energy Performance Contracting;<sup>47</sup>
3. within Priority Axis 2.4 ('Sustainable consumption and generation of electricity and smart grids', OP EKP), the emphasis will be on promoting energy performance contracting in order to achieve the greatest possible effects and the highest possible leverage. Financial incentives for the implementation of these projects will therefore be provided. The system will be developed chiefly in the public sector and later on in the housing sector, initially through demonstration/pilot projects;
4. as part of the technical assistance provided under the above programme, support will be given to the establishment and operation of a 'technical office' as a coordinating body for the design and implementation of energy performance contracting projects or measures to improve the energy efficiency of direct budget users' buildings or individual building elements. The office will ensure the systematic design of a raft of projects in line with the long-term strategy of promoting investments in building renovation in which direct budget users' buildings, i.e. central government buildings, will be dealt with separately. It will provide an expert team charged with designing tenders, conducting public-private partnership procedures, evaluating tenders, supervising the implementation of measures, supervising the implementation of the contract on ensuring savings in part of central government or the core public sector, establishing and maintaining a register of central government buildings for the purpose of energy renovation, and systematically monitoring projects and transferring knowledge and good practice to the entire public sector. The technical office will operate for direct budget users' buildings and will also assist in the preparation of tenders and projects for the rest of the public sector. The operation of the technical office will ensure that projects supported within the OP EKP 2014–2020 are implemented properly and in a high-quality manner, and that the benefit of the public sector will be adequately protected within these projects. Funding of the office is planned under technical assistance;
5. in addition to the legal and institutional aspects, the development and establishment of appropriate incentives for the financing of these types of public-private partnership projects by commercial banks and SID banka (subsidies and guarantee schemes) is a very important element for the development of this system. SID banka will establish a loan fund based on financial engineering with a combination of state and SID banka funds (modelled on the financial engineering of the enabling development platform of SID banka's established loan funds, or via subsidies and guarantee schemes). SID banka will provide these financial products directly or indirectly via commercial banks to enterprises (ESCO); these will invest in energy efficiency improvements to buildings, with the loans being repaid through the energy cost savings made. This will develop the energy services market, since enterprises that provide energy services currently do not have sufficient potential to invest in projects. The model, the volume of funds and the method of implementing financial instruments will be determined in accordance with the previous estimate for the implementation of financial instruments 2014–2020;
6. in addition to the legal and institutional aspects, the development and establishment of an appropriate financial guarantee scheme that encourages the involvement of commercial banks in the financing of these types of public-private partnership projects is a very important element for the development of this

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<sup>47</sup> The MZI has already compiled the draft guidelines for the implementation of energy performance contracting projects, which are in the final coordination phase and will be published on the MZI website.

system. A guarantee scheme or special credit line for enterprises (ESCO) will have to be established for this; these enterprises will invest in energy efficiency improvements to buildings, with the loans being repaid through the energy cost savings made. This will develop the energy services market, since enterprises that provide energy services currently do not have sufficient potential to invest in projects;

7. the conditions or criteria for acquiring grants for the renovation of a building envelope will be determined in the Long-Term Strategy for Promoting Investments in Building Renovation;
8. the options will be examined for acquiring additional funds from international sources by using instruments such as JESSICA, or other funds for project implementation. The appropriate training or cooperation with potential providers of financing (e.g. Eco Fund, SID banka) will be carried out alongside this;
9. a portion of the activities will be directed towards work with the relevant actors (public sector, including central government or the core public sector, local energy agencies, energy performance contracting providers, potential energy renovation providers, financiers, etc.): timely provision of information, prior consultation with the relevant actors, training of actors at all levels;
10. a similar support environment to that outlined in point 5 will be established subsequently for energy performance contracting in the housing sector; the share of subsidies (grants) in the financing of individual projects in this area may not exceed the target positive externalities that the projects bring. From this point of view, further special emphasis should be placed on financing by means of grants via financial engineering, optionally in combination with subsidies. SID banka would provide these financial products directly or indirectly via commercial banks to enterprises (ESCO); these will invest in energy efficiency improvements to buildings, with the loans being repaid through the energy cost savings made;
11. coordination between the ministries responsible for energy, the state's material assets, internal affairs, justice, defence and finance in the provision of support to contracting authorities and providers of these services in removing obstacles.

The implementation of energy performance contracting will also be supported with funds from the 2014–2020 financial perspective – specifically, funds will also be earmarked, as part of the priority investment in support for energy efficiency and the use of RES in public buildings and the housing sector, for the horizontal development of the energy performance contracting system, among other things with the implementation of pilot/demonstration projects for energy efficiency improvements to multi-apartment buildings in the private and public sectors as part of energy performance contracting and the training of public sector staff in the implementation of energy performance contracting. Special EU-level programmes/funds for the financing of energy performance contracting were available during the 2007–2013 financial perspective.<sup>48</sup> These funds were available for the implementation of these types of projects primarily at the local level, while larger incentives are envisaged in the next financial perspective (2014–2020) for part of central or core government.

Cooperation in the preparation and implementation of measures to raise the profile of energy performance contracting is required first and foremost with the MZI, MF and the ministries responsible for the state's material assets, internal affairs (for police force property), the judicial authorities' property and defence (for the property under its management), as well as other ministries responsible for property owned by the state and used by indirect budget users, self-governing local communities and local energy organisations; these entities will, within the framework of their competencies and responsibilities, act to accelerate the introduction of energy performance contracting projects.

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<sup>48</sup> EEEF (European Energy Efficiency Fund), JESSICA (Joint European Support for Sustainable Investment in City Areas) instrument or grants for the preparation of projects, ELENA-EIB, ELENA-KVVB, ELENA-CEB (Council of Europe Development Bank), IEE-MLEI (mobilisation of local investments in energy), etc. Some Member States have already made use of these energy performance contracting funds and mechanisms for investments in the energy renovation of buildings, e.g. Czech Republic, Latvia and the UK.

**Table 17: Existing measure of energy performance contracting**

No	Measure	Programme/Upgrading	Type of measure/Responsible entity	Target group	Deadline
H.1	Energy performance contracting	<p><b>Existing measures</b></p> <p>Establishment of a support environment for the introduction of energy performance contracting measures and promotion of the implementation of energy performance contracting projects, particularly as part of the energy renovation of public sector buildings and, within this, those of central government or the core public sector.</p>	<p>Training /</p> <p>Ministries responsible for: energy, finance, material assets of the state, justice, internal affairs and defence, local energy organisations</p>	Public sector, multi-apartment buildings	2014–2020

**Table 18: New energy performance contracting measures**

No	Measure	Programme/Upgrading	Type of measure/Responsible entity	Target group	Deadline
H.1	Energy performance contracting	<p><b>AN URE 2020</b></p> <p>Implementation of pilot projects and training</p>	<p>Legislative measure /</p> <p>Ministry responsible for energy and the ministries responsible for state administration's material assets, judicial authorities, the police and the Ministry of Defence</p>	Public sector – central government	2014–2020

### 3.1.7. Other horizontal measures to promote energy efficiency (Articles 19 and 20)

Continuation of the implementation of existing other horizontal measures is shown in Table 17, and new measures in Table 18.

#### Support for decision-making in multi-apartment buildings

Decision-making on the implementation of larger investments in multi-apartment buildings is regulated by the Property Code,<sup>49</sup> the Housing Act<sup>50</sup> and the Rules on the Management of Multi-Apartment Buildings.<sup>51</sup>

Article 29 of the Housing Act and Article 13 of the Rules on the Management of Multi-Apartment Buildings lay down that owners must decide with a three-quarters majority (75 %) on the implementation of improvements that are not regarded as maintenance and for which a construction permit is not required. Activities that do not constitute maintenance but involve the installation of new devices, equipment or installations, or their replacement before the end of their envisaged lifecycle, are not considered to be improvements. The implementation of energy efficiency measures are also regarded as improvements: early renovation (renewal) of boilers, heating units or sub-units upon transition to a new energy product, the installation of air-conditioning devices for common elements (facade, roof), electricity generators, solar collectors or solar cells, and the installation of insulation or of materials installed to improve energy efficiency. Since the large majority of multi-apartment buildings in Slovenia are relatively old, under the provisions of the Construction Act and the Decree on the Classification of Buildings with Regard to Complexity of Construction<sup>52</sup> almost all work on a building that improves its energy balance is regarded as maintenance and therefore requires the consent of only 50 % of the owners to go ahead.

<sup>49</sup> UL RS, 87/2002, 91/2013.

<sup>50</sup> UL RS, 69/2003, 18/2004 – ZVKSES, 47/2006 – ZEN, 45/2008 – ZVEtL, 57/2008, 62/2010 – ZUPJS, 56/2011 – Constitutional Court Ruling, 87/2011, 40/2012 – ZUJF.

<sup>51</sup> UL RS, 60/2009, 87/2011, 85/2013.

<sup>52</sup> UL RS, 18/2013, 24/2013, 26/2013.

The consent of all the owners of a building is required for all work that requires a construction permit. It is difficult to obtain such a level of consent and, indeed, it frequently cannot be obtained.<sup>53</sup>

Experiences in recent years show that achieving the required consent to undertake improvements to the energy efficiency of multi-apartment buildings is not problematic. Problems do arise in adopting decisions regarding the financing of investment chiefly when the owners of the apartments are low-income households, since they are unable to provide additional funds for the reserve fund required for payment of the investment. Another reason for a failure to obtain consent is the lack of interest on the part of tenants in implementing energy efficiency measures because of the unattractive division of the benefits of improvements to the energy efficiency of buildings between owners and their tenants. According to SURS figures, multi-apartment buildings in Slovenia are split between 75 % owners and 25 % tenants.

There are two solutions that would remove these obstacles and thereby speed up investments in improvements to energy efficiency in multi-apartment buildings: the first involves consent to taking out a loan that debits the reserve fund: this would require amendments to the Property Code and, consequently, to housing legislation (the Housing Act and the Rules on the Management of Buildings) to allow for a lower level of consent (e.g. 75 %) in decision-making on division of the financial burden between all owners of apartments in the event that some owners do not wish to pay an appropriate share of funds into the reserve fund, thereby making use of the funds of the loan impossible. The amendments to the legislation should allow for the funds to be returned without thereby occasioning disproportionate encroachments on the rights of ownership of those who do not pay, e.g. loss of ownership of the apartment.

The second solution involves the establishment of a state guarantee scheme that would enable apartment owners who do not have sufficient funds in the reserve fund to finance investments to take out a loan at a commercial bank that would be secured with a state guarantee. Such a scheme would increase the financial capacity of low-income owners or households and make it easier for the other owners to finance the work. The scheme has to allow a building to set up an account and to regulate the legal status of reserve fund assets; these are currently regarded as joint assets, meaning that the remaining floor owners bear joint and several liability in the event that some owners do not pay. The question of calculating the loan costs and managing the loan in cases where the loan is taken out by individual floor owners also needs to be resolved.

Establishing the possibility of dividing the benefits of energy efficiency measures between owner and tenant is of key importance if an environment is to be created that increases owners' interest in EE measures. Owners of apartments who rent those apartments to tenants are not party to the financial benefits from the measures implemented, as the entire benefit derived from lower operating costs passes to the tenant. Owners of apartments (funds, municipalities, state, etc.) must therefore be allowed, when the rents for non-profit and public apartments are being calculated, to pass on the costs of renovation in part onto tenants via higher rents. The rules must therefore be changed so that a new points system is introduced in cases of energy renovation for assessing the value of an apartment, without the current requirement for the tenant's consent.

#### **Purchase of movable property and investments in improving the energy efficiency of public authorities**

The Decree on Green Public Procurement<sup>54</sup> (Decree on GrPP) was adopted in 2011 and contains the requirements and criteria for selecting products. The areas of procurement that involve energy consumption are:

- electricity – purchase of electricity generated from RES and high-efficiency CHP that have appropriate certification (not receiving support under the valid scheme for new plants);
- electronic office equipment – use of the ENERGY STAR mark;

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<sup>53</sup> Under Article 29(4) of the Housing Act, if consent is not acquired, a majority (more than 50% of the floor owners by co-ownership share) may request that a court decide on the transaction in non-litigious proceedings. These proceedings are relatively swift. The court takes into account the type of transaction, the division of the burden and the consequences for the floor owners who have opposed the transaction.

<sup>54</sup> UL RS, 102/2011, UL RS, 18/2012, UL RS, 24/2012; UL RS, 64/2012, UL RS, 2/2013.

- planning of the construction and renovation of buildings and premises – PURES requirements must be taken into account when designing a tender (contract) for the implementation of investments.<sup>55</sup> In investment and regular maintenance, i.e. activities that are not subject to PURES, the Decree on GrPP nevertheless requires adherence to PURES requirements for the following equipment: cooling devices and systems, ventilation and air conditioning devices, interior lighting, thermostatic valves and central regulation of the heating system for central heating, heat-insulated pipes, and devices for the preparation of drinking water;
- electrical appliances (refrigerators, freezers and combinations thereof, washing machines, dishwashers, television sets, air-conditioning equipment) must be in the highest energy-efficiency class;
- road vehicles;
- tyres.

Standards change rapidly in those areas regulated by the Decree on Green Public Procurement; the revision of certain annexes is therefore required in order that the required minimum criteria continue to ensure the highest environmental standards and promote development of the market for more energy-efficient products and services.

The Decree also requires public authorities to take into account the criterion of lowest lifecycle costs when evaluating tenders.

In the 2011–2014 period, projects for the complete renovation of public buildings were generally financed from Cohesion Fund resources. In order to use public funds more efficiently in projects for the complete renovation of public buildings, the systematic use of energy performance contracting (where this is justified) is envisaged as one of the measures for improving leverage in the use of public funds.

**Table 19: Existing other measures of a horizontal nature**

No	Measure	Programme/Upgrading	Type of measure/Responsible entity	Target group	Deadline
J.1	<b>Green public procurement</b>	<p><b>Existing measures</b></p> <p>Upgrading:</p> <ul style="list-style-type: none"> <li>• supplementing of the Decree on GrPP with the requirements and criteria for existing and new groups of products and services and in relation to construction;</li> <li>• drafting of guidelines for energy-efficient public procurement on the basis of an analysis of good practice.</li> </ul>	<p>Regulations /</p> <p>Ministries responsible for energy, the environment, finance and public administration</p>	Public sector	2014–2020

<sup>55</sup> Exceptions – under the provisions of the ZGO, solutions planned or implemented in cultural heritage buildings may deviate from the essential requirements.

**Table 20: New other measures of a horizontal nature**

No	Measure	Programme/Upgrading	Type of measure/Responsible entity	Target group	Deadline
H.7	<b>Instruments for financing renovation in buildings with multiple owners</b>	<b>AN URE 2020</b> Amendments to property law regulations, housing legislation and legislation applying to commercial premises	Legislative measure / Ministries responsible for housing policy and justice	Multi-apartment buildings	2014–2020
H.8	<b>Distribution of incentives among owners and tenants in multi-apartment buildings</b>	<b>AN URE 2020</b> Establishment of the option of dividing the benefits of energy efficiency measures between owners and tenants in multi-apartment buildings.	Legislative measure / Ministries responsible for energy and spatial planning	Multi-apartment buildings	2014–2020
H.9	<b>Establishment of a guarantee scheme</b>	<b>AN URE 2020</b> Establishment of a guarantee scheme. The scheme enables loans taken out within the reserve fund of a multi-apartment building to be secured.	Legislative measure / Ministries responsible for finance, spatial planning and energy	Multi-apartment buildings	2014–2020

### **Slovenian Public Environmental Fund – Eco Fund**

The Eco Fund is the largest financial institution engaged in the promotion of environmental investments in Slovenia. The Eco Fund's activities include:

- the provision of favourable loans, at interest rates lower than market rates, for investments by individuals and legal entities;
- the allocation of non-returnable financial incentives for investments in efficient energy consumption and renewable energy sources in households;
- the issuing of guarantees and other forms of surety for investments in environmental protection;
- financial, economic and technical consulting.

### **Climate Change Fund**

The Climate Change Fund was established in order to expand the greenhouse gas emission allowance trading scheme to aviation activities. Revenues from the sale of emission allowances to airline operators at auction are revenues of the Climate Change Fund. The funds collected are used to implement measures to reduce GHG emissions, develop renewable energy sources and support the achievement of targets in raising energy efficiency, promote the transition to low-emission transport, finance research and development in energy efficiency and clean technologies, and to implement energy efficiency measures. The fund's assets are managed by the MOP. Investments in households, the public sector and legal entities may be financed.

Under the Programme for the Use of Resources from the Climate Change Fund in 2013, 2014 and 2015, which had been adopted by the Slovenian Government, the large majority of the resources of the fund is directed towards measures to promote energy efficiency and improve air quality in areas classed as peak areas of pollution due to excessive PM<sub>10</sub> air pollution. A portion of the funds is also directed towards strengthening public transport with lower emissions in these areas and constructing energy infrastructure for the use of renewable energy sources. The following activities are also funded: awareness-raising, promotion, and education and training in relation to measures to reduce greenhouse gas emissions, including the training of energy advisers from the EnSvet energy advice office network.

## **3.2. Energy efficiency measures in buildings**

### *3.2.1. Approach to requirements of Directive 2010/31/EU (EPBD)*

Calculation of the cost-optimal level of costs of the minimum requirements regarding the energy performance of buildings will be presented in detail as part of reporting under the EPBD.



A list of building-related measures and instruments is given in Chapter B.1 This list will also be presented in detail as part of reporting under the EPBD.

### **3.2.2. *Building renovation strategy (Article 4)***

The Long-Term Strategy for the Promotion of Investments in the Renovation of Buildings is being compiled. The points of departure are set out in two strategic documents: the Operational Programme to Reduce Greenhouse Gas Emissions by 2020 with the Outlook to 2030 and in the Operational Programme for the Implementation of European Cohesion Policy 2014–2020, which are based on and update previous documents (AN URE, OP ROPI, etc.) and the measures in force. Future preparation of the Long-Term Strategy for the Promotion of Investments in the Renovation of Buildings will, in accordance with Article 4 of the Directive, be focused on the economic and development aspects of the Strategy. Adoption is envisaged in July 2015.

### **3.2.3. *The points of departure for the Long-Term Strategy for the Promotion of Investments in the Renovation of Buildings are presented in Annex B ([Additional measures regarding the energy performance of buildings and equipment](#)).***

Slovenia is also carrying out other measures that contribute to the implementation of the most important elements of the Directive. These are:

- efficient electricity consumption measures in households – promoting the purchase of energy-saving household appliances;
- the obligatory division and billing of heating costs in multi-apartment and other buildings;
- the obligation to introduce an energy management system in the public sector;
- efficient electricity consumption measures in the public sector, particularly incentives for energy-efficient street lighting;
- in the future, more attention will be given in measures to improve the energy efficiency of cultural heritage buildings to formulating and selecting measures and to the general architectural/design aspect of such measures so that the protected elements of cultural heritage are not damaged or even destroyed during the implementation of such measures.

As part of the scheme for providing loans for environmental investments to individuals, the Eco Fund encourages the purchase of large household appliances (cookers, refrigerators, freezers, fridge-freezers, washing machines, tumble dryers and dishwashers) in the highest energy-efficiency class relating to a specific group of products by means of loans at a favourable interest rate. The continuation of this activity is planned in the 2014–2020 period.

Energy management in the public sector is presented in Chapter A.4.2. Energy-efficiency as part of spatial planning (see Chapter 3.3.2).

The efficient electricity consumption in the public sector measure is carried out with an emphasis on the energy renovation of street lighting (replacement of inefficient and the installation of new efficient electrical equipment, regulators and control systems). A methodology or set of guidelines for improving the energy efficiency of cultural heritage buildings will be drawn up; it will formulate the positive discrimination criteria to be applied in tenders for promoting improvements to the energy efficiency of buildings ('heritage factor').

## **3.3. Measures to raise the energy efficiency of public bodies (Articles 5 and 6)**

### **3.3.1. *Central government buildings (Article 5)***

The ministry responsible for energy has compiled a register of central government buildings drawn from the National Property Register (REN) maintained by the Surveying and Mapping Authority of the Republic of Slovenia. Information from the 2007 property inventory has been entered in the register, along with information from the land cadastre, the buildings cadastre, the land register and several other public records,

and the information provided by property owners on a daily basis. The current register of central government buildings is built on the status of the Property Register as at 18 April 2014. In the future this register will be replaced by a register of buildings of direct budget users, updated with information from GURS, and then by a register of central government buildings, which, it is planned, will be designed as an upgrade of several property-related registers (land register, GURS, MJU as part of the Centralisation of Management of State Property, etc.) as part of the relevant paying authority investments of the OP EKP 2014–2020.

The register of central government buildings, which has been compiled by the ministry responsible for energy, includes property from this register (REN) – buildings or parts of buildings:

- owned by the Republic of Slovenia or by a legal entity (where the ministry regards ownership as being held by the Republic of Slovenia) and in relation to which the manager of the state property is entered in accordance with the Decree on the Method of Entry of Property managers in the Land Cadastre and the Buildings Cadastre;<sup>56</sup>
- intended for commercial use;
- and with a useful floor area of over 500 m<sup>2</sup>, in accordance with the provisions of the Directive.

The register of central government buildings is published on the website of the ministry responsible for energy.<sup>57</sup> The following details are stated for every building:

- the floor area of the building in m<sup>2</sup> and
- the estimated consumption of primary energy in kWh/m<sup>2</sup>/year.

In the coming years the ministry responsible for energy shall, in cooperation with the ministry responsible for the state's material assets, the Ministry of Justice, the Ministry of the Interior and the Ministry of Defence, take information on buildings owned by the Republic of Slovenia from all building-related records (GURS, Land Register, MJU and other related registers), as part of the relevant priority investments of the OP EKP 2014–2020, and add new functionalities to that information. As a matter of priority, a register will be compiled in the first half of 2015 to serve the requirements relating to the energy renovation of central or core government buildings (direct budget users). In the first phase the information will be gathered for all buildings of direct budget users owned by the Republic of Slovenia regardless of the useful floor area so that it is possible, on this basis, to compile a statement of buildings with a useful floor area of over 250 m<sup>2</sup> and, from this, to determine those buildings that require renovation (the threshold will be defined in the building stock renovation strategy). This will create entire functional entities and facilitate energy renovation. The list of buildings of direct budget users with poor energy performance will suffice to meet the requirements of the Directive and will also be able to replace the existing list of central government buildings in which a framework total floor area of 708 296 m<sup>2</sup> has already been defined (with reference to the Property Register as at 18 April 2014). The obligation for the state to renovate 3 % of the total floor area every year means that 21,249 m<sup>2</sup> of floor area has to be renovated every year, assuming that all buildings require renovation. The target is a framework target based on the existing register, since it is derived from the register of individual parts of buildings, while it is individual buildings themselves that will actually be renovated. Here one must proceed from the ownership of the individual building or from the possibility of renovating common heating systems from the information on co-ownership. The state has decided to set exceptions to the fulfilment of obligations, as permitted under Article 5(2) of the Directive – specifically, that buildings used for the purposes of national defence and buildings used as places of worship are not to be included in the target, and that measures in buildings protected under regulations on the protection of cultural heritage shall be adapted to the elements protected primarily using correction factors. This will be determined in the Long-Term Strategy for the Promotion of Investments in the Renovation of Buildings. Buildings will be treated as whole units that include the building envelope, fittings, operation and maintenance.

When implementing measures to improve energy performance, priority will be given to the renovation of central government buildings in accordance with the criteria laid down by the Long-Term Strategy for the

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<sup>56</sup> UL RS, 121/2006, 104/2013.

<sup>57</sup> <http://www.energetika-portal.si/podrocja/energetika/prenova-javnih-stavb/>

Promotion of Investments in the Renovation of Buildings. The priority list of investments in renovation will be drawn up on the basis of this strategy. In drawing up this list, information from the energy performance certificates issued, the degree to which projects have been designed and the options for funding by means of energy performance contracting (contractual provision of energy savings and contractual provision of energy supply) will all be taken into consideration. It is envisaged that the feasibility of projects in terms of their timeframe and the possibility of including related buildings with a common manager will be among the criteria applied to the drawing-up of the priority list for the selection of buildings for the first renovation.

The priority list of buildings and the criteria for designing tenders for the implementation of public-private partnerships under the energy performance contracting principle for improving the energy performance of buildings and funding improvements to energy performance will also be an integral part of the Long-Term Strategy for the Promotion of Investments in the Renovation of Buildings. The priority list of buildings will be periodically updated with the introduction of energy accounting and the acquisition of higher-quality data on energy consumption in central government buildings from other data sources (energy performance certificates, energy audits, energy management systems).

It is expected that the first tenders for energy renovation through energy performance contracting could be published in 2015. The first procedures for approving building renovation operations (public tenders or direct approval based on the prior selection of projects) will be after the establishment of a system for the utilisation of cohesion funds in the 2014–2020 period.

The Long-Term Strategy for the Promotion of Investments in the Renovation of Buildings will also address energy renovation in relation to possible co-financing from cohesion funds. It is envisaged that pilot/demonstration projects and central government (i.e. direct budget users) projects will be conducted under the direct allocation system; the remaining public sector projects will be implemented via tenders.

Technical support via a technical office will have to be set up to select and realise the projects. The office will compile the expert bases and points of departure for the design of the projects and the points of departure for public tenders in terms of public contracts, public-private partnerships and the disposal of material assets (public auction, public collection of tenders). In the second phase, it will have to draw up the points of departure for the monitoring and analysis of projects and monitor the savings and effects of the projects implemented; this is particularly important in energy performance contracting projects as new forms of implementation and funding of improvements to the energy performance of buildings, as they involve long-term and fairly complex contracts.

The tasks of staff in this area will therefore primarily be the preparation of expert bases for the preparation and selection of projects, cooperation with those compiling the applications or tenders and with enterprises engaged in the provision of energy services (coordination between the state as the contracting authority and the project providers). This office will, within the scope of its remit, also provide legal, expert and technical assistance for the implementation of energy performance contracting projects at the national and local levels, train public providers (workshops, seminars, consulting – for the transfer of good practice) and cooperate with line ministries as an intermediary in order to overcome the initial deficiencies in the legislation. To this end, a public-private partnership model or more detailed energy performance contracting will be developed in the first phase for the energy renovation of central or core government buildings. This will be tested within a group of pilot/demonstration projects that will form the basis for the transfer of the knowledge acquired to similar projects throughout the entire public sector.

**Table 21: New EE measures in the public sector**

No	Measure	Programme/Upgrading	Type of measure/Responsible entity	Target group	Deadline
J.5	Technical office	<b>AN URE 2020</b> Implementation of projects to improve the energy performance of central government buildings, i.e. buildings of direct budget users, as part of energy performance contracting where eligible.	Ministry responsible for energy	Central government buildings	2014–2020
J.6	Support scheme for the renovation of built cultural heritage and other special building groups	<b>AN URE 2020</b> Preparation and implementation of a new instrument for the renovation of built cultural heritage: development of renovation criteria, demonstration projects, development and introduction of technologies, financial support scheme, provision of funds for the 2014–2020 period.	Group of instruments / Ministries responsible for energy, culture and construction	Cultural heritage buildings and other special building groups	2014–2020
J.7	Production of sustainable criteria for buildings	<b>AN URE 2020</b> Preparation of sustainable criteria as instruments for making decisions on the whether the renovation of public buildings is appropriate from the economic, environmental and social points of view	Ministry responsible for construction and ministry responsible for energy	Public sector buildings	2015–2020

In the 2007–2013 period the Republic of Slovenia promoted improvements to the energy performance of buildings in the wider public sector (healthcare, education, social security, buildings owned by local communities). Central government (direct budget users) buildings had not yet been included in this cycle of investments, which will continue in 2014 and 2015. The Republic of Slovenia has financed measures to meet its obligations regarding improvements to the energy performance of central government buildings from the Cohesion Fund, in accordance with the Partner Agreement and the European Cohesion Policy Operational Programme 2014–2020, which was approved by the Commission in December 2014. Obligations relating to renovation for 2014 will be counted in the excess of renovation from the previous three years, as permitted under Article 5(3), i.e. 100 % obligation for 2014 will be met by the end of 2016.

The Republic of Slovenia will not count the contribution made by changes to building stock towards its fulfilment of renovation obligations (Article 5(4) of the Directive).<sup>58</sup>

### 3.3.2. *Other public bodies' buildings (Article 5)*

#### 3.3.2.1. **Adopted and planned measures**

The state is encouraging the measures of other public bodies that are not part of central government in the area of the energy performance of buildings. The key areas in which measures are to be taken are described in detail in the following sub-chapters:

- i. financial incentive grants for the energy renovation of buildings in the public sector;
- ii. EE measures as part of wider plans;
- iii. the introduction of energy management systems;
- iv. the promotion of energy services and the contractual provision of energy savings.

<sup>58</sup> The EZ-1 had provided the legal bases that allow these changes to count towards fulfilment of the obligations. However, Slovenia has decided that it will not make use of Article 5(4) to reduce its obligation in the event that changes have been made to the building stock.

### 3.3.2.2. Financial incentive grants

Grants were allocated in the 2007–2013 period for the implementation of EE projects and the use of RES in the public sector as part of the programme for the implementation of cohesion policy in Slovenia (OP ROPI 2007–2013). By the end of 2012, six tenders had been held for improvements to the energy performance of buildings in healthcare, education, social security and buildings owned by local communities<sup>59</sup> and for street lighting<sup>60</sup> (Table 22). Under these tenders, 398 contracts were signed for EUR 232 million in envisaged investments, with 72 % of this (EUR 184.2 million) being provided from cohesion funds (OP ROPI). Eighty-five per cent of the grants were therefore from EU funds. After all these contracts have been implemented, 1 253 883 m<sup>2</sup> of floor area in buildings in the wider public sector will have been improved in terms of energy performance.

Slovenia will continue to promote energy efficiency measures in the wider public sector using grants within the 'Sustainable energy consumption and production, and smart grids' OP EKP Priority Axis. A total of EUR 194 million has been earmarked for this area. This sum includes Cohesion Fund resources (85 %) and the Slovenian contribution (15 %). Plans have been made, in the new programming period up to 2020, to develop the energy performance contracting system horizontally in order to achieve the greatest possible effects and ensure the best leverage possible.

**Table 22: Incentive grants from the 'Sustainable energy' development priority (OP ROPI)<sup>61</sup>**

Item	Unit	Energy efficiency improvements to buildings	Street lighting	Total
<b>No of contracts signed</b>	–	373	25	398
<b>Energy savings</b>	MWh/year	150 083	14 088	164 171
<b>Production of RES</b>	MWh/year	31 680	–	241 383
<b>Reduction in CO<sub>2</sub> emissions</b>	kt CO <sub>2</sub> /year	40.7	7	47.7
<b>Grants</b>	EUR millions	180	4	184
<b>Investments</b>	EUR millions	218.5	13.5	232
<b>Reduction in CO<sub>2</sub> emissions per euro of subsidy</b>	kg CO <sub>2</sub> /EUR subsidy	6.1	25.9	6.4
<b>Subsidy for reducing CO<sub>2</sub> emissions per tonne</b>	EUR subsidy/t CO <sub>2</sub>	217.9	38.6	242.9
<b>Energy savings per euro of subsidy</b>	kWh/EUR subsidy	22	51.9	23
<b>Production of RES per euro of subsidy</b>	kWh/EUR subsidy	3.8	–	3.4
<b>Leverage</b>	EUR sub./EUR inv.	0.82	0.3	0.79

In the public sector, the energy renovation of other public sector buildings owned and used by other budget users will also be supported, in addition to the energy renovation of central government buildings, as part of this priority investment. The purpose is to promote integrated improvements to the energy performance of buildings, which includes energy performance improvement measures for entire buildings or parts of buildings, the replacement of fittings, the renovation or replacement of heating and cooling systems and of interior

<sup>59</sup> Public tenders for buildings of legal entities of public law founded by the Republic of Slovenia and under the responsibility of the MZ which perform healthcare activities at the secondary and/or tertiary level, for public institutes in the areas of schooling and education founded by the Republic of Slovenia and under the responsibility of the MŠŠ, for retirement homes, for buildings owned by local communities (LS1), for public institutes in the areas of higher education and science and for primary schools, nursery schools, health centres and libraries owned by local communities (LS2). Under the LS2 tender, grants could only be obtained for the implementation of EE measures on building envelopes (thermal insulation of the facade and attic space, replacement or installation of fittings). Under all the other tenders, grants could only be obtained for integrated energy efficiency measures.

<sup>60</sup> Public tender for co-financing operations to raise the energy efficiency of lighting renovation for the 2011–2013 period (UJR1).

<sup>61</sup> The data in the table relates to the contracts signed and not to measures that have actually been implemented.

lighting, etc. Special attention will be paid here to cultural heritage protection and to the general architectural and design aspects of energy-efficient building renovation measures. Priority will be given to projects that achieve the greatest energy savings per unit of co-financing. Programming documents for the utilisation of European structural and investment funds in the 2014–2020 period are in the final phase of preparation.

#### **3.3.2.3. Other public bodies' energy efficiency action plans**

The Energy Act obliges a local community to adopt a local energy concept (LEC) every ten years as a programme for the management of energy within the local community, with prior consent being obtained from the minister responsible for energy, and to publish it on its website. An LEC constitutes one of the bases on which the spatial planning and economic development of a local community, the development of local public energy companies, efficient energy consumption and energy saving, the use of renewable energy sources and improvements to air quality in the area covered by the local community are planned. An LEC is a mandatory expert basis for the design of a local community's spatial plans. There is a prescribed methodology for the production of LECs.

As at 20 May 2014, 209 municipalities had adopted an LEC (covering 99.9 % of the Slovenian population, Table 23).

In addition, 28 Slovenian municipalities, accounting for 36.5 % of the Slovenian population, had undertaken to reduce greenhouse gas emissions as part of the Covenant of Mayors, and 11 of these participating municipalities had already adopted sustainable energy action plans.

All urban municipalities in Slovenia have also adopted environmental protection programmes that include EE measures, with the aim of reducing environmental impact from energy consumption and supply. These measures are particularly oriented towards reducing emissions of substances into the air (in order to improve air quality), greenhouse gas emissions and the carriage of harmful substances over long distances. A portion of the EE measures in these programmes is oriented towards achieving the targets set in relation to light pollution.

EE measures also have an important place within the air quality plans adopted by all municipalities in which excessive air pollution caused by PM 10 has been established.

Practically all the above plans also include measures to improve the energy performance of buildings in the public sector, with an emphasis on the role model that the public sector can present to the wider community.

#### **3.3.2.4. Energy management systems**

The Energy Act obliges public sector entities to establish an energy management system. In cooperation with the ministry responsible for public administration, the ministry responsible for energy shall draw up a decree that will define the liable entities and the minimum components of an energy management system, to include EE and RES targets, the measures to achieve the targets, the responsible persons and the method by which achievement of the targets is to be verified. The compulsory RES shares and the requirements relating to the energy performance of buildings owned or occupied by public sector legal entities will also be defined. Local energy agencies may perform the tasks connected with the setting-up and implementation of an energy management system with one or more local communities. The projects are already under way, with several municipalities introducing an energy management system in the public sector. The register of these systems is incomplete. Over 82 energy management systems have been installed in municipal buildings. In addition, several bodies have introduced energy accounting. Over 196 buildings owned by municipalities and in which an energy management system or energy accounting have been introduced have been entered in the register (Table 23).

An energy accounting system has been set up at Velenje Higher Technical College for the ministry responsible for education. Sixty-six institutions (secondary schools, student dormitories, institutes) were involved in the pilot project. Online energy accounting is currently being implemented within this framework by 27 institutions.

### 3.3.2.5. Incentives for EE energy services and energy accounting

The first demonstration project in this area was carried out in 2000. There are several examples of good practice, and information and promotional activities are under way, predominantly as part of EU projects<sup>62</sup> financed under the Intelligent Energy Europe programme.

Dedicated financial incentive grants for the provision of EE energy services and energy accounting were put out to tender as part of energy suppliers' programmes for achieving final customer energy savings. Investors are also carrying out other projects using the mechanism of contractual provision of energy savings and the contractual supply of energy, where they have made use of grants in the form of investment incentives from the European Cohesion Fund as part of a public tender for the co-financing of energy renovation of street lighting in 2011–2013 (UJR1) and the public tender for the co-financing of operations for improving the energy performance of primary schools, nursery schools, health centres and libraries owned by local communities (LS2).

Local energy agencies, which assist local communities in drawing up these projects, act as promoters of the projects.

The majority of the projects are in the areas of improvements to the energy performance of street lighting and the contractual provision of energy supply. There are also examples of good practice in the area of the contractual provision of energy savings through measures for integrated improvements to the energy performance of buildings (a project was carried out by the City of Kranj in 2002, etc.).

An overview of the situation on the energy services market in relation to financing of the renovation of public buildings has been drawn up within the framework of IEE projects.<sup>63</sup>

#### ***List of public bodies having developed an energy efficiency action plan, freestanding or as part of broader climate or environmental plans***

The table presents the activities of municipalities in introducing energy efficiency (Table 23), along with a list of energy efficiency action plans as part of wider climate or environmental plans. The contents are explained in detail in the previous sub-chapters.

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<sup>62</sup> CHANGE BEST, EESI, TRANSPARENCE, etc.

<sup>63</sup> The latest information is available on the Increasing Transparency of Energy Services Markets (TRANSPARENSE) project website <http://www.transparense.eu/si/si-domov/dobrodosli-na-spletni-strani-projekta-transparense>

**Table 23: List of municipalities and their energy efficiency activities<sup>64</sup>**

No	Name of municipality	Population	Local Energy Concept	Sustainable Energy Action Plan	Decree on the Air Quality Plan	Environmental Protection Programme	Energy management systems in public buildings or energy accounting	Projects under way to improve the energy efficiency of buildings
		No 1Q 2014	Year of adoption	Year of adoption	Year of adoption	Year of adoption	No	No
1	City of Celje	48 868	2011	being compiled	2013 <sup>65</sup>	2009		
2	City of Koper	54 421	2013			2001		2
3	City of Kranj	55 623	2010	being compiled	2013 <sup>19</sup>		31	1
4	City of Ljubljana	285 857	2011		2014 <sup>66</sup>	2007		2
5	City of Maribor	112 088	2009	2012	2013 <sup>19</sup>	2008		1
6	City of Murska Sobota	19 016	2007		2013 <sup>67</sup>	2007		
7	City of Nova Gorica	31 773	2008				23	1
8	City of Novo Mesto	36 333	2008		2013 <sup>19</sup>			3
9	City of Ptuj	23 229	2012	being compiled			12	
10	City of Slovenj Gradec	16 839	2007	being compiled				1
11	City of Velenje	32 973	2012	2011		2010		1
12	Municipality of Ajdovščina	18 848	2012					
13	Municipality of Apače	3 623	2010					1
14	Municipality of Beltinci	8 334	2014	2012				
15	Municipality of Benedikt	2 464	2002					
16	Municipality of Bistrica ob Sotli	1 390	2012					1
17	Municipality of Bled	8 192	2011				6	2
18	Municipality of Bloke	1 569	NO					
19	Municipality of Bohinj	5 176	2011				7	
20	Municipality of Borovnica	4 153	2012					
21	Municipality of Bovec	3 147	2011					
22	Municipality of Braslovče	5 442	2012					
23	Municipality of Brda	5 707	2009	2014			4	1
24	Municipality of Brezovica	11 761	2012					1
25	Municipality of Brežice	24 252	2012					2
26	Municipality of Cankova	1 850	YES					
27	Municipality of Cerklje na Gorenjskem	7 347	2008					1
28	Municipality of Cerknica	11 293	2011					1
29	Municipality of Cerklje ob Dravi	4 730	2011					
30	Municipality of Cerkljenj	2 015	2013					
31	Municipality of Cirkulane	2 343	YES				1	1
32	Municipality of Črenšovci	4 021	2009					2
33	Municipality of Črna na Koroškem	3 406	2012					1
34	Municipality of Črnomelj	14 586	2012					
35	Municipality of Destnik	2 609	2003					
36	Municipality of Divača	3 934	2011	2014			9	2
37	Municipality of Dobje	968	2012					1
38	Municipality of Dobropolje	3 954	2008					
39	Municipality of Dobrna	2 215	2012					
40	Municipality of Dobrova-Polhov Gradec	7 485	2012					
41	Municipality of Dobrovnik	1 279	YES					
42	Municipality of Dol pri Ljubljani	5 777	2013					
43	Municipality of Dolenjske Toplice	3 385	2011					1
44	Municipality of Domžale	34 753	2011					
45	Municipality of Dornava	2 892	2011					
46	Municipality of Dravograd	8 910	2012					1
47	Municipality of Duplek	6 765	2012					
48	Municipality of Gorenja Vas-Poljane	7 330	2011				4	2
49	Municipality of Gorišnica	4 002	YES					
50	Municipality of Gorje	2 846	2012					

<sup>64</sup> Sources: Population: SURS; Local Energy Concepts, MZI and online information; Sustainable Energy Action Plans, [http://www.covenantofmayors.eu/about/signatories\\_en.html](http://www.covenantofmayors.eu/about/signatories_en.html); Decree on the Air Quality Plan, UL RS, 108/2013, UL RS, 24/2014, UL RS, 888/2013; Energy Management Systems or Energy Accounting in Public Buildings, LEA and online information; Energy Efficiency Improvement Projects Under Way, MZI.

<sup>65</sup> 65 UL RS, 108/2013.

<sup>66</sup> 66 UL RS, 24/2014.

<sup>67</sup> 67 UL RS, 888/2013.



No	Name of municipality	Population	Local Energy Concept	Sustainable Energy Action Plan	Decree on the Air Quality Plan	Environmental Protection Programme	Energy management systems in public buildings or energy accounting No	Projects under way to improve the energy efficiency of buildings No
		No 1Q 2014	Year of adoption	Year of adoption	Year of adoption	Year of adoption		
51	Municipality of Gornja Radgona	8 517	2005					
52	Municipality of Gornji Grad	2 628	2011					
53	Municipality of Gornji Petrovci	2 100	2011					
54	Municipality of Grad	2 207	YES					1
55	Municipality of Grosuplje	19 842	2012					3
56	Municipality of Hajdina	3 732	YES				1	
57	Municipality of Hoče-Slivnica	11 224	2011					
58	Municipality of Hodoš	362	YES					
59	Municipality of Horjul	2 937	2011					1
60	Municipality of Hrastnik	9 580	YES		201319			
61	Municipality of Hrpelje Kozina	4 260	2010				3	
62	Municipality of Idrija	11 943	2011	2014			16	
63	Municipality of Ig	7 046	2012					
64	Municipality of Ilirska Bistrica	13 806	YES					1
65	Municipality of Ivančna Gorica	15 963	2011					
66	Municipality of Izola	15 833	2013			2001		
67	Municipality of Jesenice	21 257	2012				11	
68	Municipality of Jezersko	652	2012				1	
69	Municipality of Juršinci	2 391	YES					1
70	Municipality of Kamnik	29 385	2011					
71	Municipality of Kanal	5 557	2010					
72	Municipality of Kidričevo	6 595	2011					
73	Municipality of Kobarid	4 162	2011				1	
74	Municipality of Kobilje	586	YES					
75	Municipality of Kočevje	16 184	YES	being compiled				4
76	Municipality of Komen	3 556	2010				2	
77	Municipality of Komenda	5 868	YES					
78	Municipality of Kostanjevica na Krki	2 399	2012					
79	Municipality of Kostel	650	2009					1
80	Municipality of Kozje	3 114	2011					2
81	Municipality of Kranjska Gora	5 347	2012					
82	Municipality of Križevci	3 702	YES					1
83	Municipality of Krško	25 893	2012	2013				3
84	Municipality of Kungota	4 794	2012					1
85	Municipality of Kuzma	1 584	YES	being compiled				
86	Municipality of Laško	13 327	YES					2
87	Municipality of Lenart	8 224	2011					1
88	Municipality of Lendava	10 609	2012	2012				
89	Municipality of Litija	15 054	YES					2
90	Municipality of Ljubno	2 621	2011	being compiled				
91	Municipality of Ljutomer	11 573	2012	2012				
92	Municipality of Logatec	13 703	2011					
93	Municipality of Log-Dragomer	3 620	2012					
94	Municipality of Loška dolina	3 869	2011					
95	Municipality of Loški Potok	1 900	2012					
96	Municipality of Lovrenc na Pohorju	3 119	YES					
97	Municipality of Luče	1 492	2013					
98	Municipality of Lukovica	5 631	YES					
99	Municipality of Majšperk	3 932	2010				6	
100	Municipality of Makole	2 023	2011				1	1
101	Municipality of Markovci	3 987	2011					1
102	Municipality of Medvode	15 868	2012					
103	Municipality of Mengeš	7 579	2008					
104	Municipality of Metlika	8 406	2011					1
105	Municipality of Mežica	3 619	2012					1
106	Municipality of Miklavž na Dravskem polju	6 437	2009					
107	Municipality of Miren-Kostanjevica	4 828	YES	2014			5	
108	Municipality of Mirna	2 554	2013					
109	Municipality of Mirna Peč	2 882	2008					
110	Municipality of Mislinja	4 622	2013					
111	Municipality of Mokronog-Trebelno	3 032	YES					2
112	Municipality of Moravče	5 173	2012					
113	Municipality of Moravske toplice	5 862	YES	being compiled				

No	Name of municipality	Population	Local Energy Concept	Sustainable Energy Action Plan	Decree on the Air Quality Plan	Environmental Protection Programme	Energy management systems in public buildings or energy accounting No	Projects under way to improve the energy efficiency of buildings
		No 1Q 2014	Year of adoption	Year of adoption	Year of adoption	Year of adoption	No	No
114	Municipality of Mozirje	4 103	2013					1
115	Municipality of Muta	3 423	2012					1
116	Municipality of Naklo	5 288	2011					2
117	Municipality of Nazarje	2 573	2010	being compiled				
118	Municipality of Odranci	1 628	2010	being compiled				
119	Municipality of Oplotnica	4 030	2010					
120	Municipality of Ormož	12 419	2012				8	
121	Municipality of Osilnica	387	2011					
122	Municipality of Pesnica	7 501	2011					
123	Municipality of Piran	17 753	2010			2001	1	1
124	Municipality of Pivka	6 039	2012					
125	Municipality of Podčetrtek	3 318	2012					1
126	Municipality of Podlehnik	1 856	2009					
127	Municipality of Podvelka	2 446	2013					
128	Municipality of Poljčane	4 469	2012					
129	Municipality of Polzela	6 060	YES					
130	Municipality of Postojna	15 873	2012				3	
131	Municipality of Prebold	5 002	2012					1
132	Municipality of Preddvor	3 556	2011				6	
133	Municipality of Prevalje	6 787	2011					1
134	Municipality of Puconci	6 067	YES	being compiled				1
135	Municipality of Rače-Fram	7 028	2011					
136	Municipality of Radeče	4 332	YES					1
137	Municipality of Radenci	5 216	2012					
138	Municipality of Radlje ob Dravi	6 264	2012					1
139	Municipality of Radovljica	18 848	2011					2
140	Municipality of Ravne na Koroškem	11 340	2012					1
141	Municipality of Razkrižje	1 296	YES	being compiled				
142	Municipality of Rečica ob Savinji	2 338	2013					
143	Municipality of Renče-Vogrsko	4 324	2012					
144	Municipality of Ribnica	9 353	YES					1
145	Municipality of Ribnica na Pohorju	1 183	2012					1
146	Municipality of Rogaška Slatina	10 981	2012					2
147	Municipality of Rogašovci	3 167	YES	being compiled				
148	Municipality of Rogatec	3 115	2011					1
149	Municipality of Ruše	7 191	2011					1
150	Municipality of Selnica ob Dravi	4 459	2011					
151	Municipality of Semič	3 806	2010					2
152	Municipality of Sevnica	17 414	2012					1
153	Municipality of Sežana	13 091	2012				7	
154	Municipality of Slovenska Bistrica	25 176	2012					2
155	Municipality of Slovenske Konjice	14 453	2008					
156	Municipality of Sodražica	2 181	2008					
157	Municipality of Solčava	523	NO					
158	Municipality of Središče ob Dravi	2 059	2011					
159	Municipality of Starše	4 089	2011					1
160	Municipality of Straža	3 842	YES					1
161	Municipality of Sveta Ana	2 330	2012					
162	Municipality of Sv. Trojica v Slov. Goricah	2 087	2011					
163	Municipality of Sv. Andraž v Slov. Goricah	1 164	2012					
164	Municipality of Sveti Jurij	2 861	YES					
165	Municipality of Sv. Jurij v Slov. Goricah	2 076	2011					
166	Municipality of Sveti Tomaž	2 071	2012					
167	Municipality of Šalovci	1 493	YES					
168	Municipality of Šempeter-Vrtojba	6 302	2012					
169	Municipality of Šenčur	8 474	2012				4	
170	Municipality of Šentilj	8 440	2012					
171	Municipality of Šentjernej	6 946	2012					
172	Municipality of Šentjur	18 922	2011					
173	Municipality of Šentrupert	2 890	YES					

No	Name of municipality	Population	Local Energy Concept	Sustainable Energy Action Plan	Decree on the Air Quality Plan	Environmental Protection Programme	Energy management systems in public buildings or energy accounting No	Projects under way to improve the energy efficiency of buildings No
		No 1Q 2014	Year of adoption	Year of adoption	Year of adoption	Year of adoption		
174	Municipality of Škocjan	3 221	2011					1
175	Municipality of Škofja Loka	22 934	2012					
176	Municipality of Škofljica	9 988	2012					
177	Municipality of Šmarje pri Jelšah	10 214	2012					1
178	Municipality of Šmarješke Toplice	3 244	2011					
179	Municipality of Šmartno ob Paki	3 223	YES					
180	Municipality of Šmartno pri Litiji	5 476	2012					
181	Municipality of Šoštanj	8 806	YES					
182	Municipality of Štore	4 250	2014-					
183	Municipality of Tabor	1 620	2012					1
184	Municipality of Tišina	4 107	YES					
185	Municipality of Tolmin	11 461	2012	being compiled			8	
186	Municipality of Trbovlje	16 628	2011		201319			
187	Municipality of Trebnje	12 063	2009					1
188	Municipality of Trnovska vas	1 348	2010					
189	Municipality of Trzin	3 851	2009					
190	Municipality of Trzič	15 041	2008				12	
191	Municipality of Turnišče	3 321	YES	being compiled				1
192	Municipality of Velika Polana	1 456	YES					1
193	Municipality of Velike Lašče	4 206	2010					
194	Municipality of Veržej	1 296	YES					
195	Municipality of Videm	5 562	2003				1	1
196	Municipality of Vipava	5 592	2011					
197	Municipality of Vitanje	2 235	YES					1
198	Municipality of Vodice	4 820	2010					1
199	Municipality of Vojnik	8 537	2013					
200	Municipality of Vranksko	2 597	2012					1
201	Municipality of Vrhnika	16 564	YES	being compiled				2
202	Municipality of Vuzenica	2 707	2012					
203	Municipality of Zagorje ob Savi	16 775	2012		2013			2
204	Municipality of Zavrč	1 773	YES					
205	Municipality of Zreče	6 358	2009					2
206	Municipality of Žalec	21 255	2006	being compiled				
207	Municipality of Železniki	6 760	2012					3
208	Municipality of Žetale	1 335	YES					
209	Municipality of Žiri	4 834	2012				1	
210	Municipality of Žirovnica	4 389	2009				1	
211	Municipality of Žužemberk	4 560	2013					

### 3.3.3. Purchase of movable property and real estate, investments by public bodies (Article 61) and the leasing of state real estate

The Decree on Green Public Procurement, adopted in 2011 and amended in 2014, covers the environmental requirements and criteria that contracting authorities must take into account when designing tenders and selecting products and services. The areas of procurement relating to energy consumption are: electricity, electronic office equipment, audio and video equipment, refrigerators, freezers and fridge-freezers, washing machines, dishwashers, drying machines, vacuum cleaners, air-conditioning equipment, electric bulbs and lamps, project design of building construction and renovation, passenger cars and transport vehicles, tyres and bus transport services. The set of products obliged to meet the environmental requirements is increasing, as the European Commission adopts a number of new regulations every year (for specific groups of products). The criteria for all groups of products/services will need to be revised and updated so that they continue to have the proper environmental effects and contribute to the development of the market of products and services, which in turn and among other things help to reduce greenhouse gas emissions.

The Decree specifically provides that public bodies:

- when procuring electricity, require 40 % of the electricity supplied to be obtained from RES and CHP. When evaluating tenders, contracting authorities must pay due regard to the share of electricity from RES or CHP being offered in the tenders, in addition to the price;
- when purchasing personal computers, laptops, monitors, photocopiers and printer, require the latest ENERGY STAR energy-efficiency standards;
- when purchasing audio and video equipment, require at least energy efficiency class A for television sets;
- when purchasing refrigerators, freezers and fridge-freezers, washing machines, dishwashers and drying machines, require at least energy efficiency class A+, for air-conditioning equipment at least energy efficiency class A and for vacuum cleaners at least energy efficiency class C;
- when purchasing electric bulbs, require at least energy efficiency class C, while lamps must enable the use of bulbs of at least energy efficiency class C;
- when procuring the project design of buildings and establishing the qualifications of the project designer, require that the project group has references and knowledge in the areas of EE and RES. The project design concept must include EE and RES solutions and energy-efficient water consumption and waste management. The Decree on GrPP requires the lowest consumption of primary energy as one of the criteria (the weighting for this criterion is at least 10 %) for selecting a tender;
- when procuring passenger cars, light freight vehicles and buses of Category I, the value throughout the whole lifecycle is one of the selection criteria. When making an assessment of the costs throughout the lifecycle of a vehicle, account shall be taken of the purchase price, including VAT, the fuel costs throughout the lifecycle, and the external environmental costs throughout the lifecycle. External environmental costs are considered to be the costs of carbon dioxide emissions, the costs of emissions of nitrogen oxides, the costs of emissions of non-methane hydrocarbons and the costs of emissions of particulates;
- when procuring heavy freight vehicles and buses of Categories II and III, require that the vehicle meets the requirements set out in the EURO VI standard for freight vehicles and the EURO V standard for buses;
- when procuring tyres, they may take additional environmental requirements into account in the area of energy efficiency.

The Decree on GrPP applies to the entire public sector.

Where the purchase or leasing of state material assets is involved, due regard must be paid to the provisions of the Material Assets of the State and of Self-Governing Local Communities Act and the related Decree on the Material Assets of the State and of Self-Governing Local Communities. The ministry responsible for the state's material assets has drafted an updated version of this decree that will transpose the requirement regarding the purchase or leasing of buildings referred to in Annex 3 of the Directive (point f) into Slovenian legislation. This states that, for the requirements of the state, only buildings that comply at least with the minimum energy performance requirements should be purchased or made subject to new rental agreements (except in some cases listed in the Annex). The updated version of the decree will be prepared on the basis of the Decree on Energy Management in the Public Sector, which will, among other things and in accordance with Article 324 of the EZ-1, determine the requirements for the energy performance of buildings of public sector entities or liable entities.

### 3.4. Energy efficiency measures in industry

Industry in Slovenia<sup>68</sup> is one of the key vital sectors of society for the achievement of smart growth and sustainable development, and will have a large impact on compliance with the 2020 energy and environmental targets, since, as can be seen from current indicators,<sup>69</sup> activities in the industrial sector today account for:

- a quarter of end-use energy consumption and 28 % of primary energy consumption;<sup>70</sup>
- almost half of electricity consumption and almost 60 % of the total consumption of natural gas in Slovenia;
- 14 % of all GHG emissions and 5 % of GHG emissions not included in the ETS;
- over 30 % of the labour force in Slovenia;
- 23 % of the entire added value and almost 60 % of the value of exports.

Owing to the high share of industry in energy consumption in Slovenia, the increase in materials and energy efficiency, which is lower than the EU average, is a key priority for achieving the country's climate and energy targets.

#### 3.4.1. *Main energy efficiency policy measures in industry*

In the most recent period, industry has been subject to only limited financial incentives to increase energy efficiency; therefore, most of the five measures envisaged under AN-URE 2 have been implemented to a lesser degree than planned, which means that implementation will have to be continued intensively in the coming years and further measures added to the existing measures. The main objectives of the implementation of the measures are:

1. **A long-term increase in the competitiveness of enterprises by controlling energy costs through**  
a reduction in energy consumption, an increase in the consumption of RES and waste heat, an increase in own generation of electricity from RES and CHP, etc.
2. **Greater orientation of enterprises towards providing sustainable products and services with higher added value and demand on the global market.**

The main instruments for increasing energy efficiency in industry are directed towards:

- providing financial investment and operating incentives in the form of grants;
- providing funds for project implementation: favourable loans, the promotion of funding by third parties (contractual provision of energy savings and energy supply);
- development incentives for investment in research and development;
- incentives for the implementation of demonstration projects: new technologies and energy services;
- the establishment of standards in the area of energy management and voluntary agreements.

In terms of their content, the measures in industry are oriented towards the following key areas:

- **Introduction of energy management systems** (training of staff, intelligent metering, IT support, introduction of the ISO 50001 standard, etc.), currently for all enterprises, particularly large enterprises, as fulfilment of the obligation to carry out energy audits every four years.
- **Increase in efficient electricity consumption:** the installation of energy-efficient electric motor drives, lighting, control/regulation equipment, etc.
- **Reduction in the consumption of heat and the exploitation of RES and waste heat:** optimisation of heat consumption and supply through the introduction of intelligent solutions for the exploitation of RES (solar and geothermal energy, wood biomass, etc.) and waste process heat.

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<sup>68</sup> Under SKD 2008, industry includes manufacturing activities, construction and mining (but not the extraction of energy fuels).

<sup>69</sup> Indicators for 2011.

<sup>70</sup> A conversion factor of 2.5 is used for the conversion from end-use to primary energy for electricity.

- **Increase in the scope of CHP and the generation of electricity from RES:** updating of existing and the installation of new CHP units, chiefly in process-intensive sectors (paper, chemicals, rubber, etc.) using natural gas and RES (wood biomass, biogas from treatment plants, etc.) and an increase in electricity generation in hydroelectric power plants, wind farms and solar power plants.
- **Development and production of new sustainable products and services:** energy- and materials-efficient technological solutions, technologies for exploiting RES, IT support (intelligent metering and smart grids, energy management, etc.), in accordance with Slovenia's industrial policy adopted in 2013 and the draft Smart Specialisation Strategy of the Republic of Slovenia.

Table 24 outlines the continuation of the implementation of existing and redesigned measures in industry (together with current horizontal multi-sectoral measures), while Table 25 outlines the new additional measures in industry.

**Table 24: Existing EE measures in industry**

No	Measure	Programme/Upgrading	Type of measure/Responsible entity	Target group	Deadline
I.1	<b>Financial incentives for efficient energy consumption</b>	<b>Existing measures</b> Investment incentives for EE and RES measures in industry in the form of grants financed by cohesion policy funds (OP EKP), energy suppliers' programmes, loans at a favourable interest rate (Eco Fund) and other sources: <ul style="list-style-type: none"> <li>• introduction of energy management systems (training, intelligent metering, IT support, introduction of ISO 50001, EMAS, introduction of energy audits, etc.);</li> <li>• increase in efficient electricity and heat consumption (energy-efficient technologies and regulation);</li> <li>• consumption of RES and waste heat;</li> <li>• financing of investments in environmental protection.</li> </ul>	Financial incentives / Ministries responsible for the economy, energy and the environment	Economy: industry and the service sector	2014–2020
I.2	<b>Financial incentives to raise energy efficiency in industry and the service sector and increase the scope of environment-friendly electricity generation from RES and CHP</b>				
I.3	<b>Incentives to introduce energy management systems in industry</b>				
V.1	<b>Support scheme for electricity generated from RES and CHP</b>	<b>Existing measures</b> The overhauling of the EZ has led to the scheme being redesigned so that new entries into the scheme are regulated by tenders, thereby ensuring its financial sustainability.	Financial incentives / Ministry responsible for energy	All sectors	2014–2020

**Table 25: New EE measures in industry**

No	Measure	Programme/Upgrading	Type of measure/Responsible entity	Target group	Deadline
I.4	<b>Incentives for EE and RES in SMEs</b>	<b>OP EKP</b> Grants and returnable funds will be provided from OP EKP funds in the 2015–2020 period for promoting investments to raise energy efficiency and the use of EE and RES in SMEs (in terms of content, the same as I-1).  The administrative procedures in the allocation of aid will be simplified and built on the experiences so far of incentives for SMEs in other areas.	Financial incentives / Ministries responsible for the economy and energy	Economy, SMEs	2015–2020

I.5	<b>Financial incentives for demonstration projects</b>	<b>OP EKP</b> Provision of funds and acceleration of the implementation of demonstration projects within the OP EKP in the 2015–2020 period.	Financial incentives / Ministry responsible for the economy	Commerce	2015–2020
I.6	<b>Voluntary agreements with industry</b>	The expert bases for the introduction of voluntary agreements with industry will be compiled; industry will, in return for support in the form of exemption from public finance levies (contribution for the RES and CHP support scheme, CO <sub>2</sub> levies, etc.), commit to achieving energy savings. If the expert bases yield positive results, voluntary agreements with the largest and most energy-intensive enterprises will be formulated within two years.	Taxes and levies / Ministry responsible for the economy together with the ministries responsible for energy and environmental protection	Commerce – large energy consumers in industry (50 enterprises)	2015: 2017–2020
Axis 1	<b>Grant-based sources of financing (in relation to a gap analysis)</b>  <b>Innovative public contracts</b>  <b>Use of returnable sources of financing (financial engineering)</b>	<b>OP EKP, Priority Axis 1: ‘International competitiveness of research, innovation and technological development in accordance with smart specialisation for enhanced competitiveness and the greening of the economy’</b> <b>1. Promoting investments by enterprises in innovation and research and establishing links and synergies between enterprises, research and development centres and higher education:<sup>71</sup></b> 002 Research and innovative processes in large enterprises 062 Technology transfer and cooperation between universities and enterprises, primarily to the benefit of SMEs 063 Support for clusters and business networks, primarily to the benefit of SMEs 064 Research and innovative processes in SMEs (including the voucher system and process design services and social innovations) 065 Research and innovation infrastructure, processes, technology transfer and cooperation in enterprises, with an emphasis on a low-carbon economy. Support within this priority investment will be aimed at promoting eco-innovations, the objective of which is major and visible progress towards sustainable development with a reduction in environmental impact or more efficient and more responsible consumption of energy resources. Support will be given to the development of new materials based on renewable and natural resources, and the development of environmentally friendly products, services, processes and business models, e.g. in the areas of reducing dependence on primary raw materials, the design of processes and products for re-use and recycling, and waste management. The effects of the entire lifecycle, the ‘cradle to cradle’ concept and an increase in materials and energy efficiency will all be taken into account.	Financial incentives / Ministries responsible for the economy and technology	Various entities in the fields of R&D and commerce	

<sup>71</sup> Particularly in the development of products and services, technology transfer, social innovations and public service applications, demand, networking, clusters and open innovations in small and medium-sized enterprises (SMEs) through smart specialisation, supporting technological and applicable research, pilot lines, actions for early validation of products, advanced industrial capacities and initial production in key enabling technologies and dissemination of technologies for general application.

Axis 3	<p><b>Returnable (debt and ownership) sources of financing<sup>72</sup></b></p> <p><b>Grant-based sources of financing</b></p> <p><b>Combination of returnable and grant-based sources of financing</b></p> <p><b>Other modern forms of financing,<sup>73</sup> including public-private partnerships</b></p>	<p><b>OP EKP, Axis 3: 'Dynamic and competitive entrepreneurship for green economic growth'</b></p> <p><b>1. Promoting entrepreneurship</b>, especially by facilitating the commercial application of new ideas and encouraging the establishment of new enterprises, including business incubators:</p> <p>068 Energy efficiency and presentation projects at SMEs and support measures</p> <p>069 Support for environmentally-friendly production processes and efficient consumption of resources by SMEs</p> <p>071 Development and provision of incentives to enterprises specialising in services that contribute to a low-carbon economy and resistance to climate change (including support for such services).</p>	<p>Financial incentives /</p> <p>Ministry responsible for economic growth and technology</p>	<p>Various entities in the field of commercial activities</p>	
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Climate policy measures to reduce fuel consumption have been approved for the 2016–2020 period in the Energy Efficiency Action Plan to 2016 or prepared within the Action Plan for Renewable Energy Sources 2010–2020. All tasks, actors and deadlines for these measures have been set out in great detail in the previous EE and RES action plans. The measures will have to be additionally strengthened. It is envisaged that the following existing measures will continue to be financed on the basis of the Operational Programme for the Implementation of European Cohesion Policy 2014–2020:

- financial incentives for SMEs for EE and RES measures;
- financial incentives for other large industrial enterprises to introduce energy management systems in industry and other EE measures;
- promotion of the generation of heat from RES in order to achieve significant effects in industry as well.

The following measures from previous programmes will be implemented on the basis of the EZ-1:

- support schemes for the generation of heat from renewable energy sources;
- mandatory energy audits in industry;
- continuation of the support scheme for electricity generation from RES and CHP, and the revising of this scheme in order to achieve greater cost-effectiveness.

### 3.5. Energy efficiency measures in transport

In 2012 transport accounted for around 41 % of end-use energy and is a key sector if the 2020 environmental targets are to be met. Activities in this sector are directed towards introducing low-carbon technologies and sustainable transport, and ensuring the same or a better quality of life with fewer kilometres driven. An attempt is being made through these activities to ensure a growth in the share of passenger kilometres using public transport and in the share of ton-kilometres using rail transport.

The national transport policy vision is presented in the Transport Development Strategy of the Republic of Slovenia up to 2030, which includes a development plan and an investment scheme up to 2020, with the vision stretching forward to 2030. The main objectives of the Strategy are:

- to increase mobility and accessibility;
- to improve supply to the commercial sector;
- to improve traffic safety and security;

<sup>72</sup> Financial engineering instruments: risk capital, guarantees for bank loans with interest rate subsidies, micro-loans, micro-guarantees, loans and mezzanine loans.

<sup>73</sup> For example, seed and pre-seed sources of financing, etc.



- the reduce energy consumption;
- to reduce costs for users and operators;
- to reduce environmental pollution.

The Strategy's general emphasis is on more environmentally friendly types of transport and on sustainable mobility, in line with national and EU policies and the legislation in this area. The binding emission targets<sup>74</sup> are 130 gCO<sub>2</sub>/km by 2015 and 95 gCO<sub>2</sub>/km by 2021 for passenger cars and 175 gCO<sub>2</sub>/km by 2017 and 147 gCO<sub>2</sub>/km by 2020 for buses and light freight vehicles.

On the basis of the targets, the Strategy defines the specific basic measures that enable the targets to be achieved. The basic measures aimed at reducing energy consumption in transport are:

- the updating of the existing transport infrastructure;
- new construction of optimal transport infrastructure;
- introduction of modern means of transport;
- implementation of sustainable mobility measures.

The measures are further defined with regard to the individual segments of the transport sector.

#### **Increase in public transport:**

- increase in passenger kilometres;
- introduction of yellow lanes;
- increase in the frequency of public transport (at and outside peak travel times and at weekends);
- ensuring comfortable and straightforward transfer between different modes of public transport;
- a restrictive parking policy in relation to public car parks in cities and larger towns and the introduction of a park-and-ride (P+R) system;
- regulation of comfortable and safe cycle and pedestrian paths;
- traffic restrictions and calming in sensitive built-up areas;
- the rearrangement of public transport so that the railways become the basic carrier and bus routes are reorganised into feeder routes along railway corridors, with buses continuing to operate independent routes elsewhere;
- the harmonisation of timetables and the introduction of a single ticket.

#### **Efficiency of railway transport:**

- electrification of the entire Slovenian rail network;
- deployment of a digital radio system across the entire Slovenian railway network;
- the introduction of the European Rail Traffic Management System across the entire main or trans-European transport network;
- modernisation, upgrading and new construction.

#### **Efficiency of road freight transport**

- introduction of electronic toll collection for freight vehicles;
- introduction of intelligent transport systems to improve road utilisation.

#### **Efficiency of road traffic:**

- incentive to use electric and hybrid plug-in vehicles, including promoting the installation of vehicle-charging infrastructure or charging devices for plug-in vehicles;
- strategic plan for the regulation of national cycle paths.

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<sup>74</sup> Regulation (EC) No 443/2009 of the European Parliament and of the Council of 23 April 2009 setting emission performance standards for new passenger cars as part of the Community's integrated approach to reduce CO<sub>2</sub> emissions from light-duty vehicles.

The introduction of measures in transport will, in the years leading up to 2020, be oriented chiefly towards improving the vehicle efficiency, promoting technologies and fuels that produce low CO<sub>2</sub> emissions, improving the quality and accessibility of public transport in order to increase their use, optimising transport and promoting non-motorised forms of transport. These measures are a continuation of the planned measures contained in the Operational Programme for Environmental and Transport Infrastructure Development 2007–2013, the Renewable Energy Action Plan 2010–2020 and the Energy Efficiency Action Plan 2008–2016. The EE measures are condensed into four substantive fields:

- Promoting sustainable mobility measures (Measure P.1)
- Promoting sustainable freight transport (Measure P.2)
- Increasing the energy efficiency of road vehicles (Measure P.3)
- Building cycle paths and support structures, and promoting cycling (Measure P.4)

For developing railway transport, the OP EKP sets out financial incentives in the form of grants for railway transport infrastructure in the 2014–2020 period (Table 29).

Implementation of the green public procurement measure (the horizontal measure described in Chapter 3.1.7) also has an impact on raising energy efficiency in the transport sector (raising the energy efficiency of road vehicles). This measure ensures that adequately energy-efficient vehicles are procured.

### 3.5.1. Main energy efficiency policy measures in transport

#### **Promoting sustainable mobility measures (Measure P.1)**

Sustainable mobility measures are directed chiefly towards activities that reduce the impact of private transport on air quality and balance the growing need for mobility with improvements in the field of sustainable mobility, which contributes towards greater quality of life and efficient energy consumption in the transport sector. To achieve the targets, funds will be invested in producing integrated transport strategies capable of determining the set of sustainable mobility measures at the municipal or regional level. The set of measures is as follows:

- Establishing safe approaches to public transport stations and stops, installing stands and roof coverings for cycle parking in built-up areas, P+R systems, public transport stops, pavements, cycle paths.
- In addition to adequate infrastructural conditions for sustainable mobility, appropriate measures will be designed and implemented to manage mobility: sustainable parking policy measures, the production of mobility plans, the establishment of environmental zones, the use of modern technologies for effective mobility management and educational/awareness-raising activities regarding sustainable mobility, the closing of city centres to private transport, etc. Measures to promote public transport in towns and cities and the urban areas functionally connected to them will be strengthened by providing more environmentally friendly means of transport that will enable private journeys to be redirected to public transport and make a significant contribution to raising energy efficiency and to reducing greenhouse gas and particle emissions into the atmosphere. Infrastructure for alternative fuels will have to be constructed if the RES targets in transport are to be met and air pollution reduced. The installation of an adequate number of charging stations for low-carbon sources of supply for vehicles enabling integration into remote control and management systems and active consumption management is being planned in accordance with need.

#### **Promoting sustainable freight transport (Measure P.2)**

In sustainable freight transport the emphasis is on co-modality, for which the construction and modernisation of existing transport infrastructure (especially railway) is of vital importance. The measure is given additional support in the Transport Development Strategy of the Republic of Slovenia up to 2030 with the objectives of establishing efficient railway transport (electrification of the entire Slovenian rail network, modernisation, upgrading and new construction) and efficient road freight transport (introduction of electronic toll-collection for freight vehicles, introduction of IT for better utilisation of existing roads).

The measure contains the following financial instruments:

- fiscal instruments for road freight;
- financial incentives for establishing intermodality and increasing freight transport by rail.

#### Key activities of the measure

##### *Competitiveness of rail freight and intermodality:*

- development of logistics centres, transshipment terminals and intermodal hubs;
- use of piggy-back trains;
- inclusion of external costs in road tolls and other fees for freight.

##### *Increased efficiency of road freight transport:*

- development of transport telematics and dynamic control of transport signalling;
- subsidies for acquiring more environment-friendly vehicles within the framework of EU rules;
- educating drivers and goods vehicle fleet operators (efficient driving, logistics).

The measure also has multiplier effects and synergies enabled by the development of transport telematics and dynamic control of transport signalling:

- positive effects on the efficiency of all road users – public transport as well as private transport.

Slovenia's geographical position makes it a transit country, which has an impact on traffic flows as well as on other factors, including the sale of engine fuels. This has a significant effect on meeting the climate and energy targets, since energy consumption is monitored through the sale of engine fuels, where the share of energy sales in transport is among the highest (around 40 % of all end-use energy consumption). An estimate of the volume of this traffic and of the factors that affect it is necessary in order to design measures relating to transit traffic.

#### **Increasing the energy efficiency of road vehicles (Measure P.3)**

Since Slovenia has no direct sway in terms of increasing energy efficiency in the manufacturing of private vehicles, we may only influence, through additional measures, the vehicle market and the consumer choice (raising consumer awareness) to opt as much as possible for hybrid vehicles and vehicles with the latest environmental standards (EURO) that save more energy and emit less greenhouse gas. The activities under this measure are based essentially on the use of fiscal measures to stimulate the purchasing of more environment-friendly and more energy-efficient road motor vehicles, and also on the introduction of new regulations to reduce CO<sub>2</sub> emissions in exhaust gases and to raise vehicle efficiency. Promoting the use of electric and hybrid plug-in vehicles is also defined in the Transport Development Strategy of the Republic of Slovenia to 2030 with the aim of increasing the energy efficiency of road transport.

The measure includes:

- a regulation on the energy labelling of private vehicles;
- a regulation on the implementation of green public procurement;
- fiscal instruments for taxing private and goods vehicles and buses;
- co-financing of the purchase of more environment-friendly and energy-efficient road vehicles (including encouraging public transport providers to purchase more environment-friendly and energy-efficient vehicles);
- educational activities (courses in efficient driving).

Key activities of the measure:

- energy labelling of private vehicles;

- differentiation of the tax on private vehicles in respect of the energy efficiency of vehicles (specific emissions of CO<sub>2</sub>/km);
- green public procurement of energy-efficient and environment-friendly vehicles;
- cofinancing of the purchase of electric and hybrid plug-in vehicles and vehicles running on compressed natural gas.

Co-financing of the purchase of energy-efficient vehicles is being implemented within the Slovenian public environmental fund (Eco Fund) in the form of financial incentive grants to individuals to purchase electric vehicles and loans for environmental investments by individuals in the purchase of private vehicles, motorcycles, motorised bicycles and bicycles (pedelecs and E-bikes, etc.) using electric or hybrid engines from which CO<sub>2</sub> emissions, in the combined method of driving, do not exceed 110 g/km (manufacturer's data). Loans are also available for the purchase of serially produced private cars that use gas as their engine fuel.

The **additional activity** envisaged in the previous programming documents and the documents currently being compiled is the progressive planning of urban mobility, which should promote energy-efficient and more environment-friendly mobility, such as access to city centres only with low-emission private vehicles.

#### **Building cycle paths and support structures, and promoting cycling (Measure P.4)**

The construction of cycle paths and accompanying promotional activities are intended to promote cycling as an alternative mode of transport, which particularly in association with other modes of public transport represents an efficient alternative to private transport with minimal environmental impact. The strategic plan for the regulation of national cycle paths is also set out in the Transport Development Strategy up to 2030.

The measure contains the following financial instruments:

- financial incentives for the construction of cycle paths and support facilities;
- the financing of promotional and educational activities.

Key activities of the measure:

- the construction of cycle paths and other cycling infrastructure;
- the removal of obstacles to the acceptance of bicycles on trains/buses;
- the construction of safe parking places for bicycles;
- promotional and educational activities on the use of bicycles as an alternative mode of transport (modal shift).

The measure also has multiplier effects and synergies enabled by the development of cycling infrastructure:

- the development of tourism with connections to the international cycling network;
- lower environmental impact (air, noise).

Using OP EKP funds as part of Priority Axis 4 will make it possible to finance sustainable mobility measures in urban areas.

**Table 26: Existing EE measures in transport**

Code	Measure	Programme/Upgrading	Type of measure/Responsible entity	Target group	Deadline
P.1	Promoting sustainable mobility measures	<p><b>Existing measures</b></p> <ul style="list-style-type: none"> <li>The principle of promoting sustainable mobility, which helps to effect a modal shift by reducing car use and improving air quality in urban areas.</li> <li>The principle of technological neutrality in projects to increase the share of RES in transport; the criteria of the support schemes will contain target values for efficiency from the point of greenhouse gas and PM10 emissions, while the selection of a technology (sources of supply) will be subjected to a comprehensive cost/benefit analysis during implementation of the integrated development of sustainable mobility measure.</li> <li>An integrated approach to the implementation of sustainable mobility measures in urban areas with a clearly expressed continuity of implementation of the measures.</li> </ul>	<p>Group of instruments /</p> <p>Ministry responsible for transport, local communities</p>	Pedestrians, cyclists, public transport users, car drivers	
P.2	Promoting sustainable freight transport	<p><b>Existing measures</b></p> <p><b>OP TGP-2020/</b> Upgrading with instrument:</p> <ul style="list-style-type: none"> <li>subsidies for new freight vehicles and the design of a scheme of voluntary freight transport obligations (for encouraging the efficiency of freight vehicles).</li> </ul>	<p>Financial incentives /</p> <p>Ministry responsible for the environment and transport</p>	Freight transport	
P.3	Increasing the energy efficiency of road vehicles	<p><b>Existing measures</b></p> <p>Upgrading with instrument:</p> <ul style="list-style-type: none"> <li>loans and subsidies for electric and hybrid vehicles and vehicles running on compressed natural gas</li> <li>fiscal instruments for promoting the use of electric vehicles</li> </ul>	<p>Group of instruments /</p> <p>Ministries responsible for energy, the environment and transport Financial incentives / Ministry responsible for the environment</p>	Road transport	
P.4	Building cycle paths and support structures, and promoting cycling	<p><b>Existing measures</b></p> <p><b>OP EKP/</b> Upgrading with instrument:</p> <p>Financial incentives in the form of grants for sustainable transport infrastructure in urban areas in the 2014–2020 period (provision of funds for the 2014–2020 period for the development of cycling)</p>	<p>Financial incentives /</p> <p>Ministry responsible for transport</p>	Cycle transport	
	Labelling of vehicles	<p><b>Existing measures</b></p> <p>The Decree on Consumer Information on Fuel Economy, Carbon Dioxide Emissions and Emissions of Ambient Air Pollutants in Respect of New Passenger Cars lays down the content of the information and the method of informing consumers regarding fuel economy, CO2 emissions and emissions of ambient air pollutants for new passenger cars offered for sale or lease in the territory of the Republic of Slovenia (UL RS, 24/2014). This decree replaces the Decree on Consumer Information on Fuel Economy and CO(2) Emissions in Respect of New Passenger Cars (UL RS, 81/2010).</p>	<p>Regulations /</p> <p>Ministry responsible for the environment</p>	Road transport	
P.5	Providing funds for the 2014–2020 period for the development of railway transport	<p><b>OP EKP</b></p> <p>Financial incentives in the form of grants for railway transport infrastructure in the 2014–2020 period</p>	<p>Group of instruments /</p> <p>Ministry responsible for transport</p>	Railway transport	

### 3.6. Promotion of efficiency in heating and cooling (Article 14)

High-efficiency cogeneration of heat and power (CHP) is on the rise and has increased by more than 35 % in the last ten years, accounting for 7.5 % of all electricity generation in 2012 (Figure 5). District heating (DH) has a long tradition in Slovenia, with DH systems in operation in 49 municipalities. The supply of heat from CHP accounts for almost 80 % of all heat generated and supplied in district heating systems. The development of small district heating systems using wood biomass is encouraging.

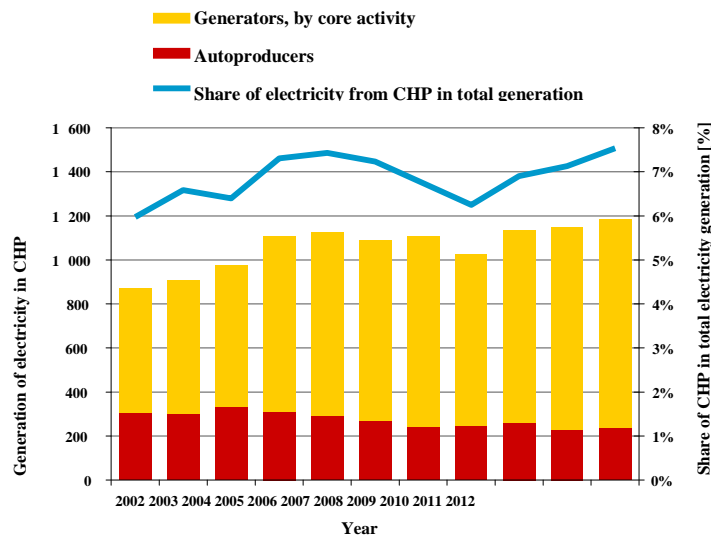


Figure 5: Volume and share of electricity generated in CHP

#### 3.6.1. Overall assessment

Under the new Energy Act (EZ-1), the ministry responsible for energy draws up a comprehensive assessment of the potential for the application of high-efficiency cogeneration and efficient district heating and cooling in accordance with the requirements of the Directive (Article 14(1)(3) and Annexes VIII and IX). The comprehensive assessment contains a cost-benefit analysis. The minister responsible for energy will issue rules prescribing the content of the cost-benefit analysis in more detail.

Slovenia has not yet begun compiling the comprehensive assessment of the potential for the application of high-efficiency cogeneration and efficient district heating and cooling, but is planning to do so in the second half of 2015. An outside expert institution will compile the comprehensive assessment and the methodology by the specified deadline of the end of 2015.

The comprehensive assessment of the potential for the application of high-efficiency cogeneration was drawn up in 2007 in accordance with Directive 2004/08/EC<sup>75</sup> and identified more than 1 000 MW<sub>e</sub> of technical potential. The market potential up to 2030 was estimated<sup>76</sup> in 2011 as up to 500 MW<sub>e</sub>. The future development of CHP will depend on the greatest extent on the funds available for implementing the support scheme for electricity generated from RES and CHP and on the economic development of industry, where the unexploited potential remains greatest. In service activities and households in particular, it will depend on the introduction and development of micro-CHP technologies.

<sup>75</sup> Directive 2004/8/EC of the European Parliament and of the Council of 11 February 2004 on the promotion of cogeneration based on a useful heat demand in the internal energy market and amending Directive 92/42/EEC.

<sup>76</sup> Draft National Energy Programme of the Republic of Slovenia to 2030: 'Active Energy Management'.

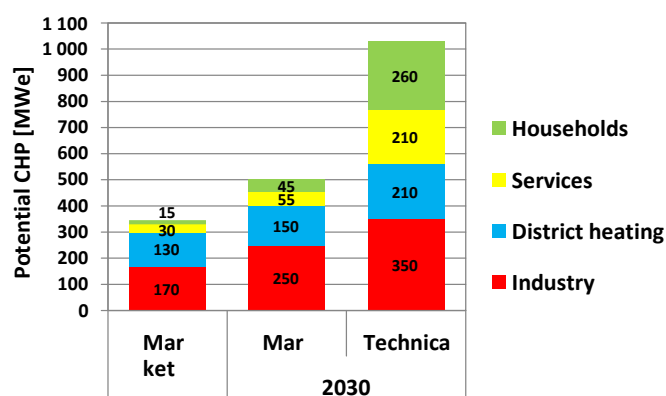


Figure 6: Estimate of the technical and market potential of CHP up to 2030

Slovenia does not yet have a detailed assessment of the market potential for efficient district heating and cooling. This will be compiled by the end of 2015.

### Main measures for promoting CHP, efficient DH and DC, and other energy-efficient heating and cooling systems

#### Support scheme for electricity generated from RES and CHP (Measure V.3)

The support scheme for electricity generated from RES and CHP has up to now been the main measure for promoting the development of CHP and, indirectly, DH and DC systems as well. The scheme provides operating support for large plants and guaranteed purchase prices for smaller plants for a period of 15 years for generation from RES and ten years for CHP from fossil fuels.

In 2009 the overhauled support scheme significantly expanded the promotion of CHP (in line with Directive 2004/08/EC) to all sectors (first and foremost in DH), it laid down the details of support for electricity generation from RES (more sources of RES and size classes for support) and set out clear methodological guidelines for determining the level of support (methodology of electricity reference costs, coordinating support relative to market conditions, etc.), and this distinctly improved the predictability of support and reduced the risks for investors. In ten years around 115 MW<sub>e</sub> of new CHP generating plants using fossil fuels and RES were constructed (Figure 7), mostly in DH systems; in recent years, the number of smaller units has grown markedly in the service sector.

A system of tenders for the entry of new plants into the support scheme was introduced by the EZ-1 in 2014. Implementing regulations are being prepared. Future development will be heavily conditioned by the limited funds available for the financing of the support scheme. Predictable and stable conditions for investors will be a key factor in the successful development of CHP; this depends on the provision of stable financing of the support scheme.

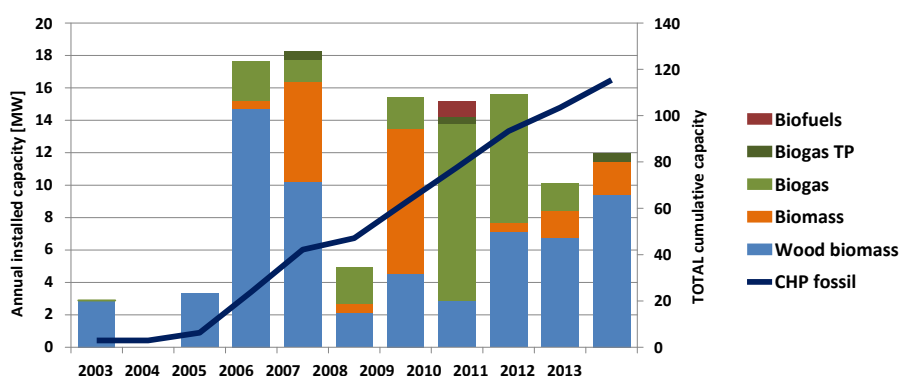


Figure 7: Development of new CHP generating plants 2003–2013

### **Energy suppliers' obligations (Measure I.2)**

Those liable to achieve energy savings and obliged to ensure that savings are made by final customers are all entities supplying electricity, heat, gas and liquid and solid fuels to final customers.

The Decree will also introduce an exception: that primary energy savings achieved in the energy conversion, distribution and transmission sectors, including infrastructure for efficient DH and DC, is factored into the end-use energy savings. Improvements to district heating systems to be made by liable entities will therefore also be included as eligible measures.

Liable entities will meet their energy-saving obligations through energy efficiency measures and measures to increase the consumption of renewable energy sources in the generation of heat in the public and service sector and in industry, which include promoting investments in CHP plants.

### **Co-financing programme for the construction of district heating systems using wood biomass (Measure I.2)**

The programme enables the allocation of grants for the co-financing of projects for district heating using wood biomass (DHWB). Financial incentives are aimed at investments in new DHWB systems and DHWB micro-systems, as well as the expansion of existing DHWB systems and the construction of new boiler rooms containing wood biomass boilers as a source for existing district heating. The programme is being implemented as part of the Operational Programme for Environmental and Transport Infrastructure Development 2007–2013 and will continue under the Operational Programme for the Implementation of European Cohesion Policy 2014–2020.

### **Other measures for promoting efficient heating and cooling**

- **Investment incentives and favourable loans** for efficient heating systems (see the measures in households and services)
- **Mandatory inspections of combustion appliances** for households and small industrial combustion appliances (inspection and cleaning of appliances, measurements of emissions and efficiencies, and the keeping of records by the chimney-sweeping service)
- **Inspections of heating systems** (new EZ-1 measure, inspections will be conducted by independent certified specialists who will provide an assessment of efficiency and adequacy in relation to the use of the building, and advice on improvements and alternative solutions for replacement, keeping of a register of reports of inspections of heating systems)
- **Regular inspections of air-conditioning systems with a rated power of over 12 kW** (assessment of efficiency and adequacy, advice on improvements and alternative solutions for replacement, keeping of a register of reports of inspections of air-conditioning systems)
- Advice in selecting, optimising and using heating systems **as part of the ENSVET (free citizens' advice) programme**
- **Regulations on the energy performance of buildings:** mandatory 25 % share of RES, action plan for nearly zero-energy buildings
- **Feasibility studies of alternative energy supply systems** for new construction and major renovation of buildings with a floor area of over 1 000 m<sup>2</sup> (decentralised RES systems, district or communal heating or cooling, CHP and heat pumps are classed as alternative systems).



**Table 27: Measures for promoting efficient heating and cooling**

No	Measure	Programme/Upgrading	Type of measure/Responsible entity	Target group	Deadline
V.1	<b>Support scheme for electricity generated from RES and CHP</b>	<p><b>Existing measures</b></p> <p>The overhauling of the EZ has led to the scheme being redesigned so that new entries into the scheme are regulated by tenders, thereby ensuring its financial sustainability. Predictable and stable conditions must be ensured for investors, along with the funds necessary to finance the scheme.</p>	<p>Financial incentives /</p> <p>Ministry responsible for energy</p> <p>Energy Agency, Borzen</p>	All sectors	2014–2020
I.2	<p><b>Financial incentives to raise energy efficiency in industry and the service sector and increasing the scope of RES and CHP</b></p> <p><b>Co-financing programme for the construction of district heating systems using wood biomass and geothermal energy</b></p>	<p><b>Existing measures</b></p> <p>The scheme of energy suppliers' programmes has undergone changes with the updating of the Energy Act. The programmes will be financed by energy suppliers directly. Projects for the construction and expansion of district heating systems using wood biomass (DHWB) and other renewable sources will continue to be financed from the Cohesion Fund (investment incentives in the form of grants, in accordance with the gap analysis).</p> <p>Incentives for investments in CHP in industry will also be implemented by energy suppliers.</p>	<p>Financial incentives /</p> <p>Ministry responsible for energy</p> <p>Energy suppliers</p>	Commerce : industry and the service sector, local communities, energy enterprises	2014–2020

### 3.6.2. Individual installations: cost-benefit analysis and results

Under Article 364 of the Energy Act (EZ-1), an investor must ensure that a cost-benefit analysis is carried out of the potential for the application of high-efficiency cogeneration and efficient district heating and cooling when planning the new construction and substantial refurbishment of the installations referred to in Article 14(5) of the Directive during the process of acquiring a construction permit.

The minister responsible for energy shall issue rules determining the methodology and assumptions of the cost-benefit analysis in more detail. The rules will be drawn up in 2016.

### 3.6.3. Individual installations: exemptions and exempting decisions

In accordance with the requirement referred to in Article 14(6) of the Directive, Slovenia has notified the exemptions it will adopt regarding the obligation to draw up a cost-benefit analysis to the Commission for individual installations. Slovenia will adopt all the exemptions allowed by the Directive:

- a) **peak load and back-up electricity generating installations which are planned to operate under 1 500 operating hours per year as a rolling average over a period of five years;**
- b) **nuclear power installations;**
- c) **installations that need to be located close to a geological storage site;**
- d) **the threshold in cases of the use of waste heat from the industrial installations** referred to in points (c) and (d) of the fifth paragraph of the Directive will be determined at the level of the minimum thermal load of the network of **1.5 GWh/year/km** (a cost-benefit analysis will not be compulsory for installations where the heat load does not exceed this level given the distance from the district heating network or the demand for heat).

Up to the publication of the Action Plan, no procedure was conducted to exempt an installation under Article 14(6) of the Directive.

### 3.7. Energy transformation, transmission, distribution, and demand response (Article 15)

In its development to date of the electricity sector, Slovenia has been able to achieve a balanced structure of primary sources for electricity generation (coal, hydroelectric and nuclear) and retains options for the further diversification of sources. In the future, the biggest challenge in electricity generation will be the gradual transition to low-carbon sources in energy supply and an increase in the efficiency of transformation resulting from the obsolescence of thermal energy facilities, which will, it is envisaged, have to be replaced in the coming years with newer and more efficient units using cleaner fuels.

An increase in efficiency is one of the priorities in the development of energy networks, where the active cooperation of energy consumers and diffuse local energy generation are proving to be an increasingly important factor.

#### 3.7.1. *Energy efficiency criteria in network tariffs and regulation*

As Slovenia's national regulatory authority in the area of the energy market, the Energy Agency has clearly defined fundamental operating objectives under the EZ-1, which include:

- cost-effective promotion of the development of safe, reliable, efficient and non-discriminatory consumer-focused systems that encourage sufficient capacity in the system and, in accordance with the general objectives of energy policy, **energy efficiency and the inclusion of electricity and gas production from renewable energy resources to a lesser and greater extent and the distribution of production in transmission and distribution networks;**
- the provision of appropriate incentives for operators and for users of systems to increase network efficiency and to **encourage market integration** in the short term and long term.

Under the EZ-1, the Agency pursues these objectives when performing its regulatory activities, directs network operators, and issues periodic consultation documents,<sup>77</sup> detailed situational analyses and additional concrete measures to remove incentives within tariffs that are detrimental to the overall efficiency (including energy efficiency) of the generation, transmission, distribution and supply of energy or those that might hamper demand response, in balancing markets and ancillary services procurement (Directive) and that have not yet been carried out.

Transmission network, system and distribution operators must, in accordance with the EZ-1 and the National Energy Development Plan (DREN), draw up ten-year network development plans. A development plan must contain an assessment of the potential for raising the energy efficiency of gas and electricity infrastructure through load management and interoperability, integration with energy generating installations, including micro-generation, and define a timetable and conduct a financial evaluation of the planned investments and the actual measures for cost-effective improvements in the network infrastructure. The minister responsible for energy shall prescribe the methodology for compiling development plans.

The introduction of intelligent metering is one of the key factors for the greater participation of consumers in network efficiency, including demand response in line with national conditions. In 2011 the Energy Agency drew up the Guidelines for Introducing an Intelligent Metering System in Slovenia,<sup>78</sup> which provided the starting points for the drafting of the new Energy Act with regard to the system operator's role in metering. In 2012 the electricity distribution network system operator in Slovenia (SODO) presented the Programme for the Development of Smart Grids in Slovenia,<sup>79</sup> which defines the strategic guidelines for the introduction of smart grids under which Slovenia will acquire a working system and an effective smart grid concept by 2020 (presented in detail in Chapter 3.1.3).

The key measure for promoting the development of smart distribution systems is contained in the OP EKP and presented in detailed in Table 28 below.

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<sup>77</sup> Consultation document 'Demand response', March 2012.

<sup>78</sup> [http://www.agen-rs.si/dokumenti/29/2/2011/POS\\_20110729\\_Posvetovanje\\_AMI\\_Pub\\_1601.pdf](http://www.agen-rs.si/dokumenti/29/2/2011/POS_20110729_Posvetovanje_AMI_Pub_1601.pdf)

<sup>79</sup> [http://www.sodo.si/\\_files/434/pametna\\_omrezja\\_2012\\_pop7.pdf](http://www.sodo.si/_files/434/pametna_omrezja_2012_pop7.pdf)

**Table 28: Measures for promoting the development of efficient distribution systems**

No	Measure	Programme/Upgrading	Type of measure/Responsible entity	Target group	Deadline
O.1	Investment incentive grants	<p><b>Existing measures</b></p> <p>Grants will be provided from OP EKP 2014–2020 funds for promoting the development of intelligent distribution networks by upgrading the existing electricity infrastructure with information and communications technology and a number of new elements that facilitate cost-effective solutions, including:</p> <ul style="list-style-type: none"> <li>the introduction of remote metering by actual consumption with two-way digital communication between supplier and consumer;</li> <li>the introduction of dynamic innovative tariffs;</li> <li>the incorporation and management of new elements such as diffuse sources of electricity, electric vehicles, energy storage systems and compensation devices;</li> <li>the development and provision of new energy services, such as demand response, the coordination of generation from diffuse sources, consumption management, own consumption, etc.</li> </ul>	Financial incentives / Ministry responsible for energy	Distribution network operators	2015–2020

### 3.7.2. Facilitation and promotion of demand response

Operating support for the diffuse generation of electricity from RES and CHP and the planned financial incentives to develop intelligent distribution systems (smart metering, ICT support for smart services, etc.) are an extremely important measure that will facilitate and encourage demand response services.

### 3.7.3. Energy efficiency criteria in network design and operation

Under Article 30 of the EZ-1, operators of gas and electricity infrastructure must, within the development plans, also draw up an assessment of the potential for raising energy efficiency, particularly as regards transmission, distribution, load balancing and interoperability, and integration with energy generating installations, including the potential for access by electricity micro-generators, and define a timetable and conduct a financial evaluation of the planned investments and the actual measures for improvements in the network infrastructure. The draft NEP<sup>80</sup> has analysed the issue of the efficiency of electricity networks and district heating distribution networks, as follows:

#### 1. Electricity

The development and construction of active electricity distribution networks in support of greater consumption efficiency and diffuse generation of electricity are classed as being among the priority areas. According to data from 2012, losses in the transmission and distribution of electricity amounted to 875 GWh, or 7 % of end-use energy consumption in Slovenia. The draft NEP sets our guidelines and measures that should ensure the further development of the electricity transmission and distribution network, and despite greater electricity generation, they should facilitate the containment of losses in the network and at least the maintenance of the situation attained in 2008. SOPO and SODO will put the proposed guidelines and measures into effect in their development plans.

<sup>80</sup> Draft National Energy Programme (NEP) to 2030: 'Active Energy Management', June 2011.

## 2. Heat

According to data from 2012, losses in the distribution of district heating amounted to 358 GWh<sup>5</sup> or around 15.7 % of gross heat generated in Slovenia's district heating systems. The draft NEP sets out the guidelines and measures that will ensure the conditions for effective implementation of all activities with the aim of reducing losses in district heating systems.

Under the EZ-1, a network operator must address the integration and operation of installations that generate electricity from RES and CHP separately:

- an electricity operator may not withhold consent to integration from an investor and must provide it with clear information on the costs of integration;
- the costs of all analyses for the issuing of consent to integration into the grid are borne by the electricity operator;
- an investor does not bear the costs of any upgrade of the existing transmission or distribution network required due to the integration of the generating installation;
- an electricity operator must guarantee the transmission and distribution of this type of electricity;
- an electricity operator must, when balancing the operation of the grid, give priority, on the basis of transparent and non-discriminatory rules, to these generating installations, if this ensures the safe operation of the electricity grid;
- the integration methods, the required technical equipment, the standard rules for setting the costs of integration, separately for units with a power of up to 10 MW<sub>e</sub> and in a simplified manner for units with a power of up to 1 MW<sub>e</sub>, are clearly set out in the system operating instructions.

In the future, priority will be given to activities to encourage own consumption among owners of small generating installations (simplifications regarding connection, introduction of net measurements and calculations of electricity, etc.), thereby reducing electricity transmission losses across the grid.

### 3.8. Financing of measures

The key sources of grants for the implementation of measures are:

- EU structural and investment funds for the implementation of European cohesion policy in the 2014–2020 financial perspective. The government has adopted the Operational Programme for the Implementation of European Cohesion Policy 2014-2020 (OP EKP). This is an implementing document based on the national strategies, schemes and action plans from individual areas, including energy efficiency targets. The programme defines those priority investments in which Slovenia will invest European cohesion policy funds in the 2014–2020 programming period with the aim of achieving the national and EU 2020 targets. The single Operational Programme for the Utilisation of All Three European Cohesion Policy Funds (European Regional Development Fund, European Social Fund and Cohesion Fund) will be applied for the 2014–2020 period;
- budget funds for ensuring Slovenian participation in the implementation of European cohesion policy;
- contributions or surcharges paid by energy consumers pursuant to the EZ-1;
- funds from the Climate Change Fund of the Republic of Slovenia, which are dedicated budget funds, while the income of the fund is income from the sale of emission allowances at auction, which is dependent on the market price of emission allowances on the European market. A portion of these funds is intended for energy efficiency measures;
- funds from other EU programmes in the 2014–2020 financial perspective are directed towards meeting the targets of the climate and energy package and, to a large degree, to the area of energy efficiency. These are the following programmes in particular: Horizont 2020 (framework EU research and innovation programme), the LIFE Programme for the environment and climate action, territorial cooperation programmes financed by the European Regional Development Fund,<sup>81</sup> Rural Development Programme of the Republic of Slovenia

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<sup>81</sup> In the 2014–2020 programming period, Slovenia will take part in 13 European territorial cooperation programmes (specifically, the

2014–2020, etc. Individual projects within these programmes are implemented by different entities in Slovenia.

Investments in the public sector will also be financed from private sources and a full start-up of the energy performance contracting mechanism planned. The above-mentioned public finance resources will therefore achieve a greater impact. Energy performance contracting is currently only being implemented through individual projects. As part of the 'Sustainable energy' priority investment within the OP EKP, and in order to achieve the greatest possible impact and provide the greatest possible leverage, the energy performance contracting system (contractual energy supply and contractual provision of energy savings) will be developed horizontal, chiefly in the public sector (where justified) and in the household sector chiefly through demonstration projects. Plans have been made for the development of a legal and institutional framework and the development and establishment of a financial scheme that encourages the involvement of commercial banks in the financing of these types of public-private partnership projects. The involvement of the ministry responsible for finance will be crucial in this regard.

Public funds totalling EUR 771 million (Table 30) have been set aside for incentives for EE measures that will enable implementation of the planned measures and achievement of the target set of raising energy efficiency by 2020. EE measures will, in addition to the national target of raising energy efficiency, also bring significant external benefits resulting from synergies with other energy and environmental policy targets (mitigation of the effects of climate change, improvements to air quality and increasing the share of renewable energy sources, increasing the competitiveness and security of supply of energy) and with the state's development targets (employment, economic growth and an exit from the economic crisis).

Table 29: OP EKP measures aimed at achieving the targets of raising energy efficiency by 2020<sup>82</sup>

Area of measures	EU funds [EUR millions]	Level of co- financing [ %]	National contribution [EUR millions]	Total public funds [EUR millions]	OP EKP Priority Axis	Fund <sup>83</sup>
<b>013 Renovation of public infrastructure for greater energy efficiency, presentation projects and support measures</b>	165.2	85	29.2	194.4	2.4 Sustainable energy consumption and production and smart grids	CF
<b>014 Renovation of the existing housing stock for greater energy efficiency, presentation projects and support measures</b>	21.5	85	3.8	25.3		
<b>015 Intelligent medium- and high-voltage energy distribution systems (including intelligent energy networks and ICT systems)</b>	24	85	4.2	28.2		
<b>016 High-efficiency cogeneration and district heating</b>	14	85	2.5	16.5		
<b>043 Infrastructure for environment-friendly urban transport and its promotion (including equipment and vehicle fleet)</b>	7.5	85	1.4	8.9		
<b>90 Cycle paths and paths for pedestrians</b>	11.5	85	2	13.5		
<b>044 Intelligent transport systems (including the introduction of demand management, toll-collection systems and information systems for monitoring, control and information)</b>	2	85	0.4	2.4		
<b>036 Multimodal transport</b>	5	85	0.9	5.9		
<b>043 Infrastructure for environment-friendly urban transport and its promotion (including equipment and vehicle fleet)</b>	1.7	80	0.4	2.2	2.4 Sustainable energy consumption and production and smart grids	ERDF
<b>083 Air quality measures</b>	21	80	5.2	26.2		
<b>065 Research and innovation infrastructure, processes, technology transfer and cooperation in enterprises, with an emphasis on a low-carbon economy</b>	68	80	17	85	2.1 International competitiveness of research, innovation and technological development in accordance with the smart specialisation for enhanced competitiveness and greening of the economy	ERDF

<sup>82</sup> Operational Programme for the Implementation of European Cohesion Policy 2014-2020 (OP EKP).

<sup>83</sup> CF – Cohesion Fund; ERDF – European Regional Development Fund.

<b>068 Energy efficiency and presentation projects at SMEs and support measures</b>	80 55 for V 24.9 for Z	75 for V 70 for Z	18.3 for V 10.7 for Z	109	2.3 Dynamic and competitive businesses for green economic growth	ERDF
<b>069 Support for environment-friendly production processes and efficient consumption of resources by SMEs</b>	8 5.5 for V 2.5, for Z	75 for V 70 for Z	1.8 for V 1.1 for Z	10.9		
<b>071 Development and provision of incentives to enterprises specialising in services that contribute to a low-carbon economy and resistance to climate change</b>	2 1.3 for V 0.6 for Z	75 for V 70 for Z	0.46 for V 0.27 for Z	2.7		
<b>024: Railways (central TEN-T network)</b>	153.1	85	27	180.1	2.7 Infrastructure construction and measures to promote sustainable mobility	CF

**Table 30: Sources of public funds for the financing of AN URE 2020 measures by area**

[EUR millions]	2015 <sup>84</sup>	2016	2017	2018	2019	2020	TOTAL
<b>EU funds and national budget – buildings</b>	35.3	35.6	36.2	36.8	37.5	38.1	<b>219.5</b>
<b>EU funds and national budget – smart grids</b>	4.3	4.3	4.3	4.3	4.3	4.3	<b>25.8</b>
<b>EU funds and national budget – other measures (air quality measures)</b>	1	1	1	1	1.1	1.1	<b>6.2</b>
<b>EU funds and national budget – EE in the industrial and service sectors</b>	34.6	34.6	34.6	34.6	34.6	34.6	<b>207.6</b>
<b>Climate fund<sup>85</sup></b>	5	12.8	16	16	16	16	<b>81.8</b>
<b>EE contribution</b>	40.5	38	37.4	38.3	38	38	<b>230.2</b>
<b>Total – guaranteed sources of public funds</b>	<b>120.7</b>	<b>126.3</b>	<b>129.5</b>	<b>131</b>	<b>131.5</b>	<b>132.1</b>	<b>771.1</b>
<b>Other funds contributing to EE</b>							
<b>EU funds and national budget – transport<sup>86</sup></b>	36.9	37.2	37.9	38.5	39.2	39.8	<b>229.5</b>

<sup>84</sup> Sources of financing for 2015–2020 are shown. Within the Operational Programme for the Implementation of European Cohesion Policy 2014–2020 (OP EKP), the utilisation of EU funds has already been programmed in 2014. However, because the programme was approved by the European Commission at the start of 2015, the first contracts based on the public tenders for the utilisation of these funds cannot be signed until 2015. These funds comprise EU and national funds (Slovenian budget) in a ratio of 85:15 for the CF, and 70:30 or 75:25 for the ERDF.

<sup>85</sup> 80% of Climate Fund resources 2016–2020.

<sup>86</sup> Of this, EUR 180.1 million for railway infrastructure.

## ANNEX A ENERGY EFFICIENCY DIRECTIVE ANNUAL REPORT

### A.1 National energy efficiency target for 2020

Pursuant to Article 3 of the Directive, Slovenia has set an indicative target for improving energy efficiency by 2020 of not more than 7 125 million toe (82.86 TWh) of primary energy. This target does not include the non-energy consumption of fuels, and has been based on national energy consumption statistics compiled using the EUROSTAT methodology.

### A.2 Key statistical data

**Table 31: Assessment of the key statistical data on energy consumption in 2012**

<i>Key statistics relating to energy consumption</i>	
1 Total primary energy consumption	81 273 GWh
2 Total end-use energy consumption <sup>(1)</sup>	57 671 GWh
3 End-use energy consumption – industry	14 001 GWh
4 End-use energy consumption – transport	23 523 GWh
5 End-use energy consumption – households	13 800 GWh
6 End-use energy consumption – service sector	5 681 GWh
7 Gross value added – industrial sector <sup>(2)</sup>	EUR 8 569 million
8 Gross value added – service sector <sup>(2)</sup>	EUR 17 899 million
9 Average disposable income per household	EUR 21 375
10 Total no of households	813 531
11 Gross domestic product (GDP) <sup>(2)</sup>	EUR 30 757 million
Electricity generation in thermal power plants	4 522 GWh
Electricity generation in CHP	1 185 GWh
Heat generation in thermal power plants <sup>(5)</sup>	0 GWh
Heat generation in CHP <sup>(6)</sup>	451 GWh
Fuel input for thermal power plants	12 677 GWh
Fuel input for CHP <sup>(7)</sup>	5 464 GWh
12 Energy transmission and distribution losses (all fuels) <sup>(8)</sup>	1 233 GWh
Total passenger km (pkm)	/
Total ton km (tkm) <sup>(3)</sup>	/
13 Total km <sup>(3)</sup>	25 477 million km
14 Total population	2 058 123
Heat generation from district heating plants <sup>(4)</sup>	2 539 GWh
Fuel input at district heating plants <sup>(4)</sup>	2 661 GWh

<sup>(1)</sup> Excluding climate adjustment.

<sup>(2)</sup> In constant prices (in volume) from 2005.

<sup>(3)</sup> Excluding transport in oil pipelines.

<sup>(4)</sup> Useful data to provide a clearer overview of the progress in the Member States, required by Energy Statistics Regulation (Regulation (EC) No 1099/2008).

<sup>(5)</sup> Including waste heat produced in industrial installations.

<sup>(6)</sup> Including waste heat recovered from industrial installations.

<sup>(7)</sup> Useful data to follow the improvements of efficiency of combined heat and power generation.

<sup>(8)</sup> Useful reference data, particularly for measures for the implementation of Article 15 of the Directive.

Sources<sup>1-11</sup>: Statistical Office of the Republic of Slovenia, <http://pxweb.stat.si/pxweb/dialog/statfile2.asp>

Source<sup>12</sup>: Energy Agency, [http://www.agen-rs.si/dokumenti/36/2/2013/PorociloSLO2012\\_1920.pdf](http://www.agen-rs.si/dokumenti/36/2/2013/PorociloSLO2012_1920.pdf)

Source<sup>13</sup>: ARSO, [http://cdr.eionet.europa.eu/si/un/colrftjsw/envu0ztvw/SVN\\_NIR\\_2014\\_annex\\_2.pdf](http://cdr.eionet.europa.eu/si/un/colrftjsw/envu0ztvw/SVN_NIR_2014_annex_2.pdf)

Source<sup>14</sup>: Statistical Office of the Republic of Slovenia, <http://pxweb.stat.si/pxweb/dialog/statfile2.asp>

### A.3 Analysis of energy consumption trends

As mentioned in Chapter 1.2.2, end-use energy consumption increased the most between 1992 and 2012 in transport and other consumption (service sector, agriculture) and fell in industry (for an analysis, see Chapter 3.4) and households (for an analysis, see Chapter B.2).



End-use energy consumption increased the most in the transport sector between 1992 and 2012. In 2012, 128 % more energy (13 190 GWh) was used than in 1992, with the first peak coming in 1997 as a result of 'petrol tourism'. After measures taken by neighbouring countries, consumption fell up to 2000. An average annual growth rate of 6.4 % was recorded between 2000 and 2008. The 2008 growth rate of 17.1 % was a record. Consumption fell by 13.4 % in 2009 and by 0.1 % in 2010. Consumption grew again in 2011 (by 6.8 %) and by 1.9 % in 2012. The high growth in end-use energy consumption in transport up to 2008 was the result of a growth in the level of car use by the population and an increase in the number of kilometres driven per private car. Since EU entry, one important generator of greater liquid fuel consumption has been the increase in transit traffic in combination with lower prices for engine fuels compared to neighbouring countries. The fall in energy consumption in 2009 was, to a large degree, the result of the economic crisis. The prices of engine fuels also had a significant impact, since diesel prices were higher in Slovenia than in neighbouring countries. The price conditions were similar in 2010, but changed again in 2011, since diesel fuel once again became cheaper in Slovenia than in neighbouring countries. Transport accounted for 38 % of end-use energy consumption in 2007; this made it the largest final customer of energy for the first time, a position it held in 2008 with a 41 % share. After the fall in the share in 2009 and 2010 to 39 % and 38 % respectively, it increased once again in 2011 (to 40 %) and 2012 (to 41 %).

The service sector has seen the second largest growth in end-use energy consumption, increasing by 111 % in 2012 relative to 1992. The greatest increase occurred in 1996, when consumption grew by 150 % as a result of changes in the methodology. From 2000 consumption in this sector fluctuated markedly on a number of occasions (2000 by -18 %, 2001 by +31 %, 2003 by -33 %, 2005 by -13 %, 2007 by -14 % and 2008 by +32 %). This is result of the method of determining energy consumption in this sector, which is calculated as the difference between total end-use energy consumption and end-use energy consumption in manufacturing, construction, transport and households. In 2010 end-use energy consumption in this sector rose by 5 % as a result of the colder winter and the inclusion of geothermal energy consumption in the balance. Consumption grew once again by 2 % in 2011, falling by 11 % in 2012. The 2012 reduction was most noticeable in the consumption of natural gas and petroleum derivatives. It should be noted here that the statistics do not measure the consumption of renewable energy sources for the generation of heat in this sector (with the exception of the direct consumption of geothermal energy). This means that service sector buildings are removed from the statistics when they replace fossil fuels with RES (heat pumps, solar energy collectors, wood biomass boilers); in addition to raising energy efficiency, this has probably contributed to a reduction in energy consumption in this sector. The share of total end-use energy consumption in 2012 was 10 %.

## **A.4 Updating of main measures implemented in the previous year**

### **A.4.1 Efficient energy consumption in households**

Great potential for efficient energy consumption in households lies in the consumption of energy for heating and in the consumption of electricity. While the measures are generally cost-effective, obstacles have appeared in particular in the provision of financial sources for the implementation of investments. A package of financial incentives covering the following measures has therefore been formulated within the AN URE:

- (G.1) Incentives for energy-efficient renovation and sustainable construction of buildings. The programme covers promotion of the energy renovation of buildings (thermal insulation of facades, thermal insulation of lofts, replacement of windows) and the construction of low-energy and passive buildings;
- (G.2) Incentives for energy-efficient heating systems;
- (G.3) Energy efficiency scheme for low-income households.

The first two are established measures whose scope of implementation has been considerably strengthened under the AN URE and OP ROPI, with a stable source of financing also having been secured.

**Financial investment incentives in the form of grants for EE and RES measures for households** were allocated by the Energy Efficiency Agency (AURE) from 1998, then by the responsible ministry, and, since 2008, by the Eco Fund. The volume of funds increased significantly after 2010, when financing was secured pursuant to the Decree on Guaranteeing End-Use Energy Savings, which brings the provisions of Article 6 of the ESD into force. In the 2008–2012 period, the Eco Fund paid out almost 44 000 incentives and supported investments worth EUR 342.5 million, with just over EUR 58 million in grants (accounting for 17 % of the value of investments) to individuals for EE and RES

investments in residential buildings. Around 30 % of the planned energy savings for the 2011–2016 period were realised through this, with fewer funds than envisaged being used.

The 2008 AN URE 1 also put in place plans for an **energy efficiency scheme for low-income households**. Since 2010 the level of the financial incentive grants provided under public calls issued by the Eco Fund for promoting EE and RES in multi-apartment buildings to the socially vulnerable who submit the appropriate proof has corresponded to 100 % of the investment costs granted. Response has been modest, with incentives being allocated to only 88 socially vulnerable apartment owners (totalling EUR 193 000) between 2010 and 2013. This year the measure is being upgraded with free-of-charge advice on energy efficiency to the socially vulnerable. As part of this advice, these households will receive a package of energy efficiency items free of charge (switch divider, protective wrapping, sealants, etc.). The measure will be financed from the climate fund and implemented via the ENSVET advice office network, in cooperation with social work centres.

Two further measures are planned for households:

- (G.4) Division and billing of heating costs in multi-apartment and other buildings according to actual consumption, which has been compulsory since 2011;
- (G.5) Citizens' energy advice programme – ENSVET. The measure has been implemented since 1993. See Chapter 3.1.

#### **A.4.2 Measures in the public sector**

The set of measures for raising energy efficiency covers four measures specially aimed at the public sector:

- (J.1) Financial incentives for the energy-efficient renovation and sustainable construction of buildings;
- (J.2) Financial incentives for efficient electricity consumption;
- (J.3) Introduction of energy management systems;
- (J.4) Green public procurement.

**Grants from the Cohesion Fund** are allocated for the energy renovation and sustainable construction of buildings in the public sector. In the 2008–2013 period, six public tenders were held for healthcare, schooling and education, retirement homes, public institutes in the areas of higher education and science, buildings owned by local communities, and primary schools, nursery schools, health centres and libraries owned by local communities. EUR 95.6 million were set aside for the financing of these measures. EUR 187.2 million in investment funds were allocated in the form of grants, which was made possible by the re-allocation of unused funds from other areas.

The energy renovation of buildings in the public sector was also financed within energy suppliers' programmes. These grants were put out to tender for the first time in 2012 and were aimed at other non-profit organisations and commercial entities, in addition to the public sector. EUR 10.4 million were allocated in the form of incentives from suppliers' programmes; initial assessments suggest that 55 % of this total was allocated to public buildings.

The special measure involves financial **incentives in the form of grants for efficient electricity consumption in the public sector (street lighting)**, and in other commercial public services, such as water supply and other utilities, and for other efficient electricity consumption measures in the public sector. The measures have been financed from various sources (EU Cohesion Fund – OP ROPI 2007–2013, EE supplement). In 2011 and 2012 the measure was only partly implemented, with EUR 4.2 million in incentives being allocated. The reduction in energy consumption achieved by the measures implemented is estimated at 14 GWh. The interest in the funds was lower than the amount of funds put out to tender. EUR 32 million in subsidies and 74 GWh in energy savings were planned for the measure over the 2011–2016 period. A total of EUR 3 million was allocated in funds in all sectors for the installation of energy-efficient lighting systems within energy suppliers' programmes.

The introduction of an energy management system in the public sector **is also a very important measure**.

The emphasis of this group of measures is on ensuring the quality of energy management in the public sector, particularly the preparation and implementation of projects, in addition to reducing energy costs. The adoption of legal acts for the introduction of energy management systems in the public sector is planned.

Energy efficiency is economically a very important segment of **green public procurement** in terms of both the volume of contracts and the energy savings made. The regulation governing the field was adopted in 2011. It envisages the adding of new products and services. For the moment, it includes the energy efficiency of the following products and services in the field of EE: buildings, including project design, construction, the regular and investment maintenance of buildings and the installation of individual devices and products within the building, electronic office equipment (computers, monitors, printers, optical readers, faxes, copying machines), appliances (television equipment, refrigerators, freezers, fridge-freezers, washing machines, dishwashers, air-conditioning equipment), private and transport vehicles, bus transport services and tyres. The plans were partly realised in the period up to 2012. Plans are in place for green public procurement to be supplemented and regulated by 2016, chiefly with the procurement of lighting in buildings, air-conditioning, ventilation and heating, office equipment, the reconstruction of smaller buildings, mobile telephones, etc. PURES (or subsidiary technical guidelines) contains stricter EE requirements for the public sector. PURES is also supplemented with minimum EE requirements for the public sector in smaller investments.

#### **A.4.3. Measures in households**

Although AN URE addresses measures for industry and the service sector separately, these are the same measures. For this reason, we present them together.<sup>87</sup> These measures are:

- (1.) Co-financing measures for efficient electricity consumption
- (1.2) Financial incentives for raising energy efficiency
- (1.3) Financial incentives for introducing energy management systems
- (1.4) Voluntary agreements with industry
- (V.I) Scheme of incentives for electricity generated from RES and in CHP systems

Cohesion Fund resources are allocated for energy efficiency measures in industry for individual wood biomass boilers and efficient electricity consumption. Since 2012 EE and RES measures have also been financed within energy suppliers' programmes. Initial figures show that EUR 14.1 million in grants were allocated to industry in 2011 and 2012. The commercial sector is also receiving subsidies as part of the support scheme for electricity generated from RES and CHP. Plans are in place for incentives to introduce energy management systems in industry to be financed from Cohesion Fund resources in the 2014–2020 period. The measure is currently being implemented only in part.

The measure of **establishing a development scheme and other incentives for the commercial sector in the entry of green energy products into the market** has not yet started in practice. It is aimed at providing comprehensive support to the commercial sector (industry and services) by promoting research, development, demonstrations and the market penetration of technologies, products, materials and services that affect energy consumption. The aim of the measure is to link the implementation of EE programmes founded on energy policy targets (competitiveness, security, the environment) with the objectives of technological development, economic growth and employment. According to the findings of the Development Group for Energy and Sustainable Sources of Energy, the following areas are the greatest areas of interest when it comes to further development: EE in transport (electric vehicles) and the energy-efficient construction of active buildings or nearly zero-energy buildings whose energy supply is based mainly on the use of RES, plus support technologies in this area (information and communications technologies, metering technology, etc.). The measure plans further developments in this area, as global markets are seeing the successful operation of energy-efficient device manufacturers (household appliances, electric motors, etc.) and their active involvement in developing technologies (CHP, etc.). Specific activities in support of development in this field are being pursued as part of the promotion of centres of excellence and competence centres. Other instruments intended to promote innovation, the purchase of technological equipment and other incentives for the development of small

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<sup>87</sup> The service sector covers retail trade, the catering and hospitality industry, financial services, real estate brokerage, recreational, cultural, sports and other activities. Office buildings are by far the most prevalent buildings. Industry includes the manufacturing industry and construction.

and medium-sized enterprises currently generally do not define priorities, nor do they stimulate additional objectives such as those relating to the environment.

#### **A.4.4 Measures in transport**

The set of measures to raise energy efficiency in transport is oriented towards the key challenge of sustainable mobility:

- (P.1) Promotion and competitiveness of public transport
- (P.2) Promoting sustainable freight transport
- (P.3) Increasing the energy efficiency of road vehicles
- (P.4) Building cycle paths and support structures, and promoting cycling

The following measures were implemented in the 2011–2012 period: The Eco Fund subsidised the purchase of vehicles running on compressed natural gas or biogas for legal entities and individuals and intended for public transport, and battery-powered electric vehicles. A little over EUR 400 000 in grant incentives was therefore allocated for investments worth EUR 5.8 million. The Decree on Green Public Procurement is also important for promoting the energy efficiency of vehicles, since an estimate of the costs occurring throughout the vehicle's lifecycle is a compulsory part of public contracts, with external costs also being taken into account. The Decree also regulates the purchase of buses and the leasing of bus services, and lays down the environmental criteria for public contracts for the provision of tyres. Tax measures constitute the third pillar. Since 2010 the tax on motor vehicles has been subject to a progressive tax rate linked to CO<sub>2</sub> emissions, which also encourages the purchase of more energy-efficient vehicles. Efficient driving courses are being held for drivers of passenger cars. Measures introduced at the EU level also play an important role, with binding targets being adopted for the emissions produced by new vehicles and light-duty vehicles. The second measure ensuing from an EU-level obligation is consumer information on fuel economy and CO<sub>2</sub> emissions in respect of new passenger cars.

EUR 7.4 million has been earmarked from the Cohesion Fund for the integrated public transport measure in order to promote public transport, with the same amount being put out to tender for the construction of 'park and ride' systems. The subsidising of pupil and student travel is one important public transport incentive.

Eight projects to construct cycle paths have been co-financed from the Cohesion Fund, with support totalling EUR 19 million.<sup>88</sup>

#### **A.4.5 Multi-sectoral and horizontal measures**

See Chapter 3.1.

##### **Legislative measures**

In 2013 preparations were completed and the procedure to decide on the umbrella Energy Act (EZ-1) begun. The act was adopted in February 2014.<sup>89</sup> A special chapter of the act regulates the field of energy efficiency. The act transposes the Directive into Slovenian legislation. It also retains and upgrades all the successful solutions provided by the previous act. The energy efficiency contribution has been retained and is intended to finance the Eco Fund in the implementation of tenders to raise energy efficiency in households and multi-apartment buildings. The Energy Act amends the scheme to promote the generation of electricity from RES and CHP so as to enable the scheme to become financially sustainable. The EZ-1 introduces incentives for heating and cooling. It lays down obligations within district heating and cooling systems regarding the share of RES and/or heat from CHP, or waste heat. It obliges the public sector to introduce energy management systems. The EZ-1 has also improved the legal structure of transposition of several energy efficiency directives (Directive 2009/125/EC), as the area will in future be regulated by a decree (*uredba*) and no longer by rules (*pravilnik*).

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<sup>88</sup> Contracts signed by the end of 2012.

<sup>89</sup> UL RS, 17/2014.

## **A.5 Central government buildings**

The total floor area of buildings or property in the current Register of Central Government Buildings (state of the register as at 18 April 2014) assumed not to meet the energy efficiency requirements laid down in Article 4 of the Directive stands at 708 296 m<sup>2</sup>. In the next phase (provisionally by the first half of 2015), this register will be replaced by a register drawn up as part of the Long-Term Strategy for the Promotion of Investments in the Renovation of Buildings and aligned with the data on the buildings of direct budget users. The register will then be established, as part of the relevant priority investments of the OP EKP 2014–2020, in cooperation with the ministries responsible for energy, the state's material assets, justice, the interior and defence in order to upgrade and integrate the existing registers in this area (e-land register, GURS, CEN MJU, etc.). Management of this register is also planned, as the nature of the data it contains means that it will change.

No central government buildings were renovated as part of the incentives in 2013. The incentives were allocated as described in detail in the first paragraph of Chapter 3.2.1 for the renovation of other public sector buildings.

Slovenia has not yet decided whether to take an alternative approach under Article 5(6) of the Directive, which allows the obligation to renovate a certain amount of floor area of state buildings to be replaced by other measures that would achieve the same energy savings in these buildings.

## **A.6 Energy efficiency obligations**

Figures on the end-use energy savings achieved in 2013 by the national energy efficiency obligation system are not available.

Chapter 3.1.1 contains a description of the alternative measures for achieving the target energy savings for the energy efficiency obligation system.

## ANNEX B BUILDING RENOVATION ROADMAPS

### B.1 Policies and measures for the extensive renovation of buildings and for new energy-efficient buildings

Preparations for the Long-Term Strategy for the Promotion of Investments in the Renovation of Buildings are under way. The points of departure are set out in two strategic documents: The Operational Programme to Reduce Greenhouse Gas Emissions by 2020 with the Outlook to 2030 and the Operational Programme for the Implementation of European Cohesion Policy 2014-2020, which are based on and update previous documents (AN URE, AN OVE, OP ROPI, etc.) and the measures in force. The next phase of the preparation of the Long-Term Strategy for the Promotion of Investments up to 2050 will focus on the economic and development aspects of the strategy. The Strategy is expected to be adopted in July 2015.

The points of departure of these policy measures are as follows:

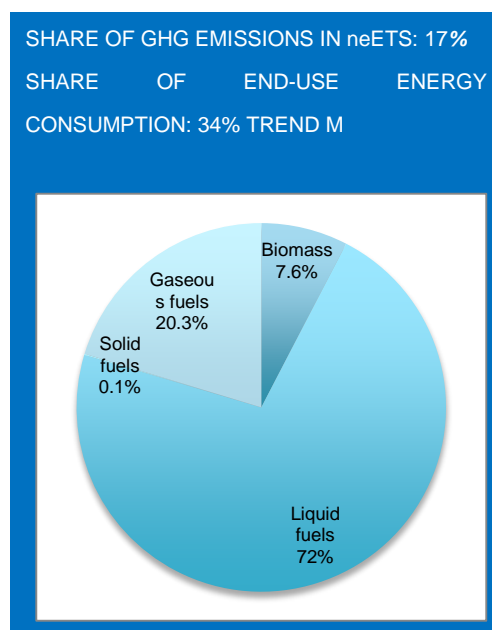
#### B.1.1 Situation

Buildings accounted for 34 % of end-use energy consumption in 2012 (1.6 million t, households 24 %, buildings in the service sector, public and private, 10 %). Buildings contribute 17 % of indirect greenhouse gas emissions (share of emissions for which national targets have been adopted under Decision 2009/406/EU). The potential for raising energy efficiency and reducing greenhouse gas emissions is very great with regard to buildings, i.e. through the renovation of existing buildings and the replacement of the energy products used.

#### B.1.2 Targets

The long-term vision is for there to be almost no GHG emissions from buildings by 2050; this will be achieved by buildings having low energy requirements that are covered by renewable energy sources as a matter of priority. Investments in this sector must therefore be accelerated considerably as a matter of urgency.

The measure requires significant financial investments. However, this is an area capable of attracting large investment capital from funds and other dedicated funds from international financial institutions, as well as private funding sources. As such, it is also important as a measure for rapid economic growth and a way out of the economic and financial crisis. Measures in this sector have considerable synergetic and multiplier effects, and strengthen economic competitiveness and employment in the long term as well. This involves the implementation or promotion of economically justified measures, some of which are more complex, with a relatively long payback period as well as a long lifecycle. The investment funds invested are partly or wholly repaid<sup>90</sup> by reducing the amount of input fuel.



**The target is to reduce end-use energy consumption in buildings by 15 % by 2030 and to reduce greenhouse gas emissions by 53 % by 2020 relative to 2005. This will require the complete energy renovation of buildings and the continued replacement of heating oil with low-carbon energy sources. First and foremost, this is a measure for rapid economic growth and an exit from the crisis.**

While the measures were implemented successfully in the 2008–2012 period, the existing measures do not suffice on their own. In the new period, efforts will be directed first towards ensuring that the public funds available encourage more investments and the energy renovation of more floor area.

The objective is also to improve the ratio between subsidies and the effects of the investments, especially in the public sector.

<sup>90</sup> Whether the investment is wholly or partly repaid by making savings in energy costs depends on a number of factors influencing the implementation of a specific project: the state of the building prior to energy renovation, the price of an energy product, optimisation or otherwise of the investment, the value of the discount rate, etc.

### B.1.3 Implementation

The existing and already adopted measures do not suffice to achieve the targets of the climate energy package and do not activate all the potentials for growth and development in this area. The range of measures is defined in the AN URE and AN OVE documents. New measures are being prepared within the Operational Programme for the Implementation of European Cohesion Policy 2014–2020. Supplementing of the existing measures to achieve the ambitious 2020 targets is proposed in

#### Factors influencing energy emissions and consumption:

- energy-efficient building envelope and heating system
- type of fuel
- location and architectural properties of the building
- user behaviour

Operational Programme for Reducing Greenhouse Gas Emissions by 2020 with the Outlook to 2030. The objective is to introduce a number of new instruments so as to promote increased building renovation with lower costs to the public purse. The activities will be focused on opening up possibilities for financing from private sources, encouraging the provision of dedicated grants, and promoting energy performance contracting instruments and green loans. Activities will also be directed towards acquiring dedicated grants from international institutions. A number of instruments which have already been introduced and which have not yet been directed towards reducing greenhouse gas emissions and achieving energy savings will also need to be directed towards achieving these targets (particularly as part of spatial planning and tax and housing policy). The objective is also to achieve greater synergy between incentives to improve energy efficiency, increase the share of RES, reduce greenhouse gas emissions and ensure air quality by designing measures, monitoring them and thereby reducing the overall costs of meeting international obligations in these areas.

The key new features regarding the measures already adopted are:

- the upgrading of regulations on the energy efficiency of buildings so as to encourage energy renovation (they are currently focused on new buildings);
- the provision of grant schemes, particularly from dedicated funds and programmes of international financial institutions for the public and housing sector, and the directing of part of the incentives to promoting the provision of grants;
- the formulation of criteria for the architectural/design aspect of energy renovation so that measures for the energy renovation of cultural heritage buildings do not damage or even destroy the protected elements of cultural heritage.

Some instruments that have been adopted have not yet come into force, or the funds for their implementation have not yet been provided. Activities will be strengthened so as to compensate for the shortfall in the implementation of measures from the AN URE and AN OVE programmes and ensure the provision of funds:

- for directing part of financial incentives to the introduction of energy performance contracting. This measure is planned within the framework of the ‘Sustainable consumption and generation of electricity and smart grids’ Priority Axis of the Operational Programme for the Implementation of European Cohesion Policy 2014–2020;
- the establishment of a support scheme for the supply of heat from renewable energy sources. This measure is confirmed in the EZ-1, with implementing regulations also being drawn up;
- the directing of part of financial incentives to pilot/demonstration projects. This measure is also planned within the framework of the ‘Sustainable consumption and generation of electricity and smart grids’ Priority Axis of the Operational Programme for the Implementation of European Cohesion Policy 2014–2020;
- the implementation of measures to optimise the operation of energy systems as part of the financing of the energy renovation of buildings, and for other buildings with financing from energy performance contracting.

Other measures to improve the state of buildings (sustainable renovation) will be carried out alongside energy renovation in accordance with the principles of due diligence and care.

The necessary funds for the financial incentives in the 2014–2020 period will have to be provided for new activities and the continuation of activities already planned. Funds will be provided and activities carried out for:

- the upgrading of financial aid for vulnerable groups of people with assistance in the form of social work (see Section 3.1.4);

- the development of solutions for the renovation of built cultural heritage and for other special building groups. The measure will be compiled in detail in the course of the next phases of preparation of the Long-Term Building Renovation Strategy;
- support for the energy renovation of buildings with the integration of energy efficiency targets and support measures for the energy renovation of buildings into housing legislation (particularly with regard to decision-making on renovation and the financing of renovation in multi-apartment buildings) and into other housing policy measures;
- the further financing of the energy renovation of buildings in the public sector and particularly central or core government buildings, to which such incentives have not yet been allocated.

The following supplements to measures will be drawn up in relation to new buildings:

- compliance with Directive 2010/31/EC for nearly zero-energy buildings (new construction may, under certain conditions, also be considered to be compliance with the obligation to renovate 3 % of central or core government buildings);
- the upgrading of regulations to reduce greenhouse gas emissions within the lifecycle (e.g. the introduction of materials with lower emissions, etc.);
- the promotion of energy-efficiency within the framework of spatial planning.

The responsibilities for specific new and supplemented tasks and the timetable of implementation of the measures are defined in the table. See also the reference documents for the measures already adopted.



**Table 32: Existing measures**

Code	Instrument	New measure or upgrading of existing measures	Type of measure/Entity responsible	Target group	Deadline
V.1	<b>Regulations on the energy performance of buildings</b> <b>Supplementing of the instrument</b>	OP TGP-2020/Supplementing of requirements for the introduction of nearly zero-energy buildings. Updating of regulations in relation to building renovation requirements. Updating of regulations in relation to reducing greenhouse gas emissions within the lifecycle.	Regulation / Ministry responsible for spatial planning	All buildings	
H.1	<b>Energy performance contracting</b> <b>Supplementing of instrument</b>	OP TGP-2020 / Preparation of acts for the public sector OP EKP 2014–2020 /	Regulations / Ministry responsible for finance  Financial incentives / Ministry responsible for energy	All buildings	
H.6	<b>Energy efficiency within the framework of spatial planning</b>	Existing measures (AN OVE, Measure 22)	Regulations / Ministry responsible for spatial planning		
G.1	<b>Financial incentives for the energy-efficient renovation of residential buildings</b> <b>Upgrading with instrument:</b>  • <b>Grant schemes</b>  • <b>Demonstration projects</b>	  OP TGP-2020/Eco Fund loan schemes and incentives to other providers of green loans for the residential sector. Financing of schemes, particularly from purpose-specific funds and programmes of international financial institutions. Link with incentives to introduction of energy performance contracting.  OP EKP 2014–2020/Pilot/Demonstration projects for the energy renovation of multi-apartment buildings in the private and public sectors (e.g. workers' hostels, apartments provided by housing funds, etc.) within the context of energy performance contracting.  OP EKP 2014–2020/Energy renovation of buildings, with the involvement of housing cooperatives, to be implemented as part of integrated territorial investments (ITI) in selected urban areas. Support will also be aimed at management and at technical and organisational support for the renovation of multi-apartment buildings OP TGP-2020/Provision of funds	  Financial incentives / Ministry responsible for energy  OP TGP-2020 / Provision of funds for demonstration projects and acceleration of the measure.	  Housing sector  Housing sector and public sector	

MEASURES IN BUILDINGS

Code	Instrument	New measure or upgrading of existing measures	Type of measure/Entity responsible	Target group	Deadline
		for demonstration projects and acceleration of the measure.			
G.2	<b>Financial incentives for energy-efficient heating systems</b> Upgrading as for G.1 and: <ul style="list-style-type: none"> <li>• Support scheme for the generation of heat from renewable energy sources</li> </ul>	Existing measures  (AN OVE, Measure 25)	Financial incentives / Ministry responsible for energy		
G.3	<b>Aid scheme for energy-efficiency improvements for vulnerable groups of people</b>	Existing measures  OP EKP 2014–2020 / Energy renovation measures in households faced with the problem of fuel poverty. The measures will be aimed at investments, as well as advice and measures to change patterns of behaviour.	Financial, technical and social assistance / Ministry responsible for energy	Residential buildings containing vulnerable households	
G.4	<b>Compulsory division and billing of heating costs in multi-apartment and other buildings according to actual consumption</b>	Existing measures	Regulations / Ministry responsible for energy	Housing sector/multi-apartment buildings	
G.5	<b>Citizens' energy advice network</b> Upgrading of the instrument with elements that support Measure G.3	Existing measures	Consulting / Eco Fund	Residential buildings generally and special groups: multi-apartment buildings, vulnerable households	
J.1	<b>Green public procurement</b>	Existing measures	Ministry of Finance, ministries responsible for the environment and spatial planning, energy and the state's material assets	Public sector	
J.2	<b>Financial incentives for the energy-efficient renovation and construction of buildings in the public sector</b> Upgrading of the instrument with elements:	Existing measures			

Code	Instrument	New measure or upgrading of existing measures	Type of measure/Entity responsible	Target group	Deadline
	<ul style="list-style-type: none"> <li><b>financing 2014–2020</b></li> </ul>	<p>Existing measures</p> <p>OP EKP 2014–2020 / In the 2014–2020 period, funds will be aimed at energy improvements to public sector buildings owned and used by direct and indirect budget users and municipalities. Special emphasis will be placed on central or core government buildings, which under the Directive are meant to serve as models in this area.</p> <p>The level of the incentives will encourage investors to undertake complete energy renovation and, at the same time, to protect the environment, particularly through emissions reductions, nature conservation, the use of natural materials and the promotion of EE technologies.</p> <p>OP TGP-2020 / In 2014, 25 % and in 2020 80 % of all financial support for the energy renovation of public buildings will be directed towards promoting energy performance contracting.</p>	<p>Financial incentives /</p> <p>Ministry responsible for energy</p>	Public sector	
	<ul style="list-style-type: none"> <li><b>Quality assurance for public sector projects</b></li> </ul>	<p>Existing measures (Measures J.2, J.3), AN OVE, Measure 35</p> <p>OP EPK 2014–2020 / The establishment and operation of a technical office as a coordinating body for project implementation will be supported, as will measures to improve the energy-efficient renovation of buildings or individual building elements, replace building fixtures, renovate heating and cooling systems, and improve the efficiency of interior lighting.</p> <p>OP EKP 2014–2020 / Financial incentives for the preparation of investment projects in the public sector.</p>	<p>Group of instruments /</p> <p>Ministry responsible for energy; ministries responsible for the state's material assets, internal affairs, justice and defence</p>	Public sector	
	<ul style="list-style-type: none"> <li><b>Promoting optimisation of the operation of energy systems (RE-CO)</b></li> </ul>	<p>upgrading</p> <p>The measure will be carried out within the framework of investments in the energy renovation of public buildings in the 2014–2020 period for achieving greater savings by optimising the operation of energy systems and promoting energy-efficient conduct on the part of users.</p> <p>The options for implementing measures to optimise the operation of energy systems in other existing public administration buildings through financing in the form of energy performance contracting and with the support of the above-mentioned office and local energy agencies will be studied.</p>	<p>Financial incentives /</p> <p>Ministry responsible for energy; ministries responsible for the state's material assets</p>	Public sector	
	<ul style="list-style-type: none"> <li><b>Demonstration projects</b></li> </ul>	<p>Existing measures (I.5, J.2, J.4, H.1, H.3)</p> <p>OP TGP-2020 / Provision of funds for demonstration projects and acceleration of the measure.</p> <p>OP EPK 2014–2020 / Pilot/Demonstration projects for energy-efficiency</p>	<p>Financial incentives /</p> <p>Ministry responsible for energy; ministries responsible for the state's material assets, internal</p>	Public sector	

**MEASURES IN BUILDINGS**

Code	Instrument	New measure or upgrading of existing measures	Type of measure/Entity responsible	Target group	Deadline
		<p>improvements to multi-apartment buildings in the private and public sectors (e.g. workers' hostels, apartments provided by housing funds, etc.) within the context of energy performance contracting.</p> <p>Implementation of demonstration projects for the complete energy renovation of various building types (public sector buildings, multi-apartment buildings, cultural heritage buildings).</p>	affairs, justice, defence and culture		
<b>J.3</b>	<b>Introducing an energy management system in the public sector</b>	Existing measures	Regulations / Ministry responsible for energy	Public sector	
<b>V.3</b>	<b>Support scheme for electricity generated from renewable energy sources and high-efficiency CHP</b>	Existing measures	Financial incentives / Ministry responsible for energy	All buildings	
<b>H.3</b>	<b>Information and awareness-raising activities</b>	Existing measures	Promotion and information-provision  / Ministry responsible for energy	All buildings – by target group	
<b>H.4</b>	<b>Training programmes</b>	Existing measures	Training / Ministry responsible for energy; ministries responsible for the state's material assets, internal affairs, justice, defence and finance	All buildings – by target group	

**Table 33: New measures**

Code	Instrument	New measure or upgrading of existing measures	Type of measure/Entity responsible	Target group	Deadline
H.7	<b>Examination of instruments for financing renovation in buildings with multiple owners</b>	Partly in AN OVE, Measures 30 and 28 Examination of the potential for amending property law regulations, housing legislation and legislation applying to commercial premises	Regulations and other instruments / Ministry responsible for housing policy; ministry responsible for the state's material assets	Multi-apartment buildings	2014–2020
H.8	<b>Distribution of incentives among owners and tenants in multi-apartment buildings</b>	Establishment of the option of dividing the benefits of energy efficiency measures between owners and tenants in multi-apartment buildings.	Legislative measure / Ministries responsible for energy and spatial planning	Multi-apartment buildings	2014–2020
H.9	<b>Establishing a guarantee scheme</b>	Establishment of a guarantee scheme The scheme enables loans taken out within the reserve fund of a multi-apartment building to be secured.	Legislative measure / Ministries responsible for finance, spatial planning and energy	Multi-apartment buildings	2014–2020
J.5	<b>Establishing a technical office</b>	Implementation of projects to improve the energy performance of central or core government buildings, i.e. buildings of direct budget users, as part of energy performance contracting where eligible, or in combination with grants.	Ministry responsible for energy	Buildings occupied by government, judicial and defence bodies, and the police force	2014–2020
J.6	<b>Support scheme for the renovation of built cultural heritage and other special building groups</b>	Preparation and implementation of a new instrument for the renovation of built cultural heritage and other special building groups: development of renovation criteria, demonstration projects, development and introduction of technologies, financial support scheme, provision of funds for the 2014–2020 period.	Group of instruments / Ministries responsible for construction, energy, culture, and the ministries responsible for the state's material assets, internal affairs, justice and defence	Cultural heritage buildings and other special building groups	2014–2020

### B.1.4 Effects

In the 2014–2020 period, 16.8 million m<sup>2</sup> of floor area in the housing sector and 6 million m<sup>2</sup> of floor area in the non-residential sector will be partly or comprehensively renovated in order to achieve the target. It is envisaged that one third of the housing sector will be renovated with the financial support of the state. Renovated buildings represent 26 % of the floor area of the entire building stock of 2010.

The expected total reduction in GHG emissions in buildings in 2020 is 439 kt CO<sub>2</sub> equivalent/year, which will be achieved with measures carried out across the entire 2013–2020 period.

### B.1.5 Funds and sources

The value of public funds necessary for implementing building-related measures in the 2014–2020 period is estimated at EUR 430 million. A higher share of private funds will have to be included in the energy renovation of buildings. Financial inefficiencies will be removed so that significantly greater effects will be achieved with fewer subsidies than was the case in previous periods. Leverage – ratio between the value of the subsidy and the promoted investment will be improved in the public sector from the current 1: 1.19 to 1: 3 by 2020. The effectiveness and effects of public finances will be increased through the promotion of energy performance contracting, activities to acquire funds from international financial institutions and promotion of the provision of green loans. It is envisaged that 25 % of all financial support for the energy renovation of public buildings will be directed towards promoting energy performance contracting in 2015, with this figure rising to 80 % by 2020.

The planned public sources of financing are:

- funds from the contribution for raising energy efficiency;
- climate fund resources;
- EU structural and investment funds;
- other sources under the legislation in force (funds from the surcharge on the price of heating fuels).

#### Technologies

Energy renovation and sustainable construction

- introduction of nearly zero-energy buildings
- low-energy and passive buildings
- integrated energy renovation of buildings
- renovation of building elements

Energy-efficient heating and cooling systems and transition to RES:

- solar collectors
- heat pumps
- wood biomass boilers
- district heating units
- CHP and micro-CHP
- high-efficiency natural gas boilers
- optimisation of heating/cooling systems Energy management systems

Intelligent meters

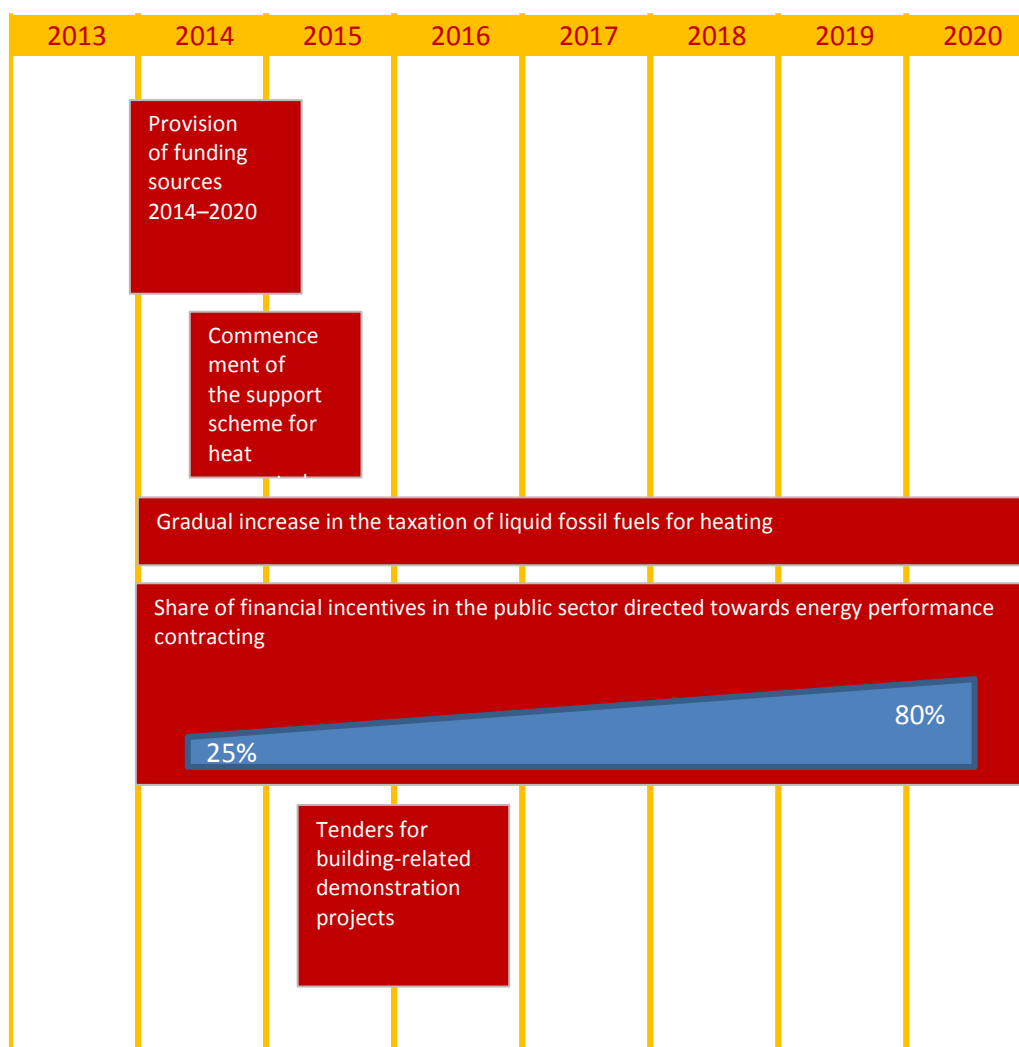
#### Services

Energy performance contracting Green loans

Performance of the function of building energy manager

Energy consulting Technical assistance Social assistance

Division and billing of heating costs in multi-apartment buildings

**Table 34: Timetable for the implementation of building-related measures**

### B.1.6 Expected savings and wider benefits

This group of measures is among the most important measures for kick-starting the economy, increasing unemployment and improving competitiveness. It gives a boost to the investment cycle, with investments at the same time being repaid from savings in the amount of input fuel required.

The energy renovation of buildings also contributes towards improving local air quality, which thereby has a positive effect on health as a result of a reduction in the emissions of harmful substances into the air.

The measure improves the strategic and operating security of energy product supply. It also contributes significantly to the achievement of the legally binding national targets of a 25 % share for RES under Directive 2009/28/EC<sup>91</sup> and a reduction in greenhouse gas emissions in accordance with Decision 2009/406/EC.

Energy renovation has positive additional effects on the users of buildings as it also increases their physical well-being at home, prevents energy poverty, makes an important contribution to adjusting to climate change and improves the security of supply for users in emergency situations.

<sup>91</sup> Directive 2009/28/EC of the European Parliament and of the Council of 23 April 2009 on the promotion of the use of energy from renewable sources and amending and subsequently repealing Directives 2001/77/EC and 2003/30/EC.

Only part of the externalities have been financially evaluated and included in the prices of goods to the benefit of the investor. An environmental tax for pollution of the air with CO<sub>2</sub> (CO<sub>2</sub> environmental tax) was introduced in Slovenia on 1 January 1997<sup>92</sup> with the aim of internalising the external costs of air pollution from CO<sub>2</sub> emissions. The price per unit of pollution was EUR 14.4/t CO<sub>2</sub> from 8 January 2013. Other external costs have not been systematically evaluated and taken into account when drawing up tax policy.

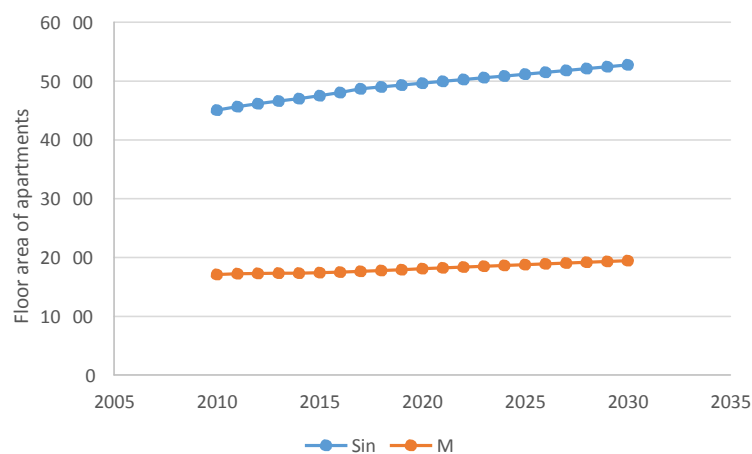
On the other hand, account will be taken of other factors such as environmental protection, especially reducing emissions, nature conservation, the use of natural materials and promoting energy-saving technologies when determining the method of providing incentives and the level of incentives for the energy renovation of buildings.

## B.2 Overview and analysis of the national building stock

The design of building renovation policies and measures is accompanied by a detailed analysis of the national building stock drawn up within the *Updating of Energy Balances up to 2030 and the Expert Foundations for Determining National Energy Targets* project and previous analyses.<sup>93</sup>

### B.2.1 Structure of the building stock relative to energy performance

The total floor area of apartments is increasing as a result of the construction of new housing.<sup>94</sup>



**Figure 8: Floor area of single-family and multi-apartment buildings by 2030**

The housing stock is divided into energy efficiency classes determined on the basis of period of construction and the type of renovation, which in turn is determined by the thickness of the insulation of the building envelope and the heat conductivity of the fittings, separately for single-family houses and multi-apartment buildings. Energy efficiency classes are shown in the tables below.

<sup>92</sup> Decree on the Tax for Polluting the Air with Carbon Dioxide Emissions, UL RS, 68/1996.

<sup>93</sup> Institut Jožef Stefan, CEU: Updating of Energy Balances up to 2030 and the Expert Foundations for Determining National Energy Targets, IJS-DP-11467, rev. 2, March 2014.

Institut Jožef Stefan, CEU; ELEK d.o.o., IREET d.o.o., ELAPHE d.o.o., GI ZRMK d.o.o. et al: Long-Term Energy Balances of the Republic of Slovenia 2010–2030 – Part 1: Points of Departure, IJS-DP-10548, ver. May 2011.

Institut Jožef Stefan, CEU; ELEK d.o.o., IREET d.o.o., ELAPHE d.o.o., GI ZRMK d.o.o. et al: Long-Term Energy Balances of the Republic of Slovenia 2010–2030 – Part 2: Results, IJS-DP-10581, ver. June 2011.

<sup>94</sup> Demolition applies to a mere 0.05% of the floor area of building stock.



**Table 35: Energy efficiency classes for single-family houses**

Building type	Period of construction	Type/Degree of renovation	Energy number [kWh/m <sup>2</sup> ]	Comparison of energy consumption relative to the baseline class [%]
Single-family house	before 1945	No renovation	185	0
Single-family house	before 1945	Renovation	151	-18
Single-family house	before 1945	Improved renovation	77	-58
Single-family house	before 1945	Low-energy renovation	15	-92
Single-family house	1946–1970	No renovation	185	0
Single-family house	1946–1970	Renovation	151	-18
Single-family house	1946–1970	Improved renovation	77	-58
Single-family house	1946–1970	Low-energy renovation	15	-92
Single-family house	1971–1980	No renovation	151	0
Single-family house	1971–1980	Renovation	111	-26
Single-family house	1971–1980	Improved renovation	77	-49
Single-family house	1971–1980	Low-energy renovation	15	-90
Single-family	1981–2002	No renovation	111	0

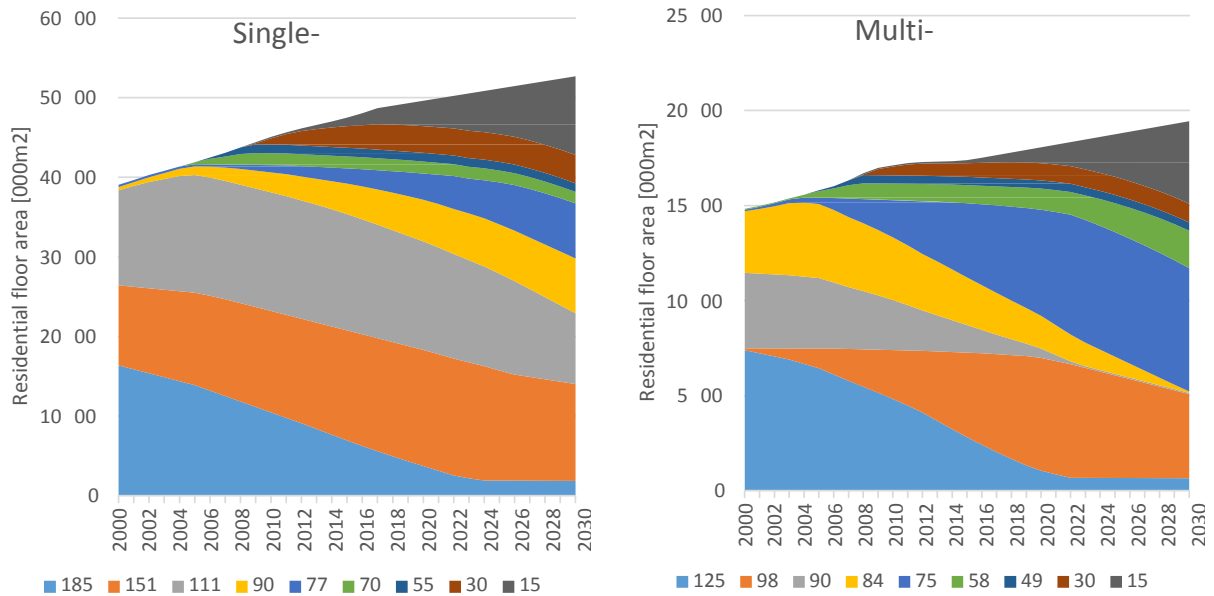
MEASURES IN BUILDINGS

<b>house</b>				
<b>Single-family house</b>	1981–2002	Renovation	90	–19
<b>Single-family house</b>	1981–2002	Improved renovation	77	–31
<b>Single-family house</b>	1981–2002	Low-energy renovation	15	–86
<b>Single-family house</b>	2003–2008	No renovation	70	0
<b>Single-family house</b>	2003–2008	Above-standard renovation	55	–21
<b>Single-family house</b>	2003–2008	Low-energy construction	15	–79
<b>Single-family house</b>	after 2008	No renovation	30	0
<b>Single-family house</b>	after 2008	Low-energy construction	15	–50

**Table 36: Energy efficiency classes for multi-apartment buildings**

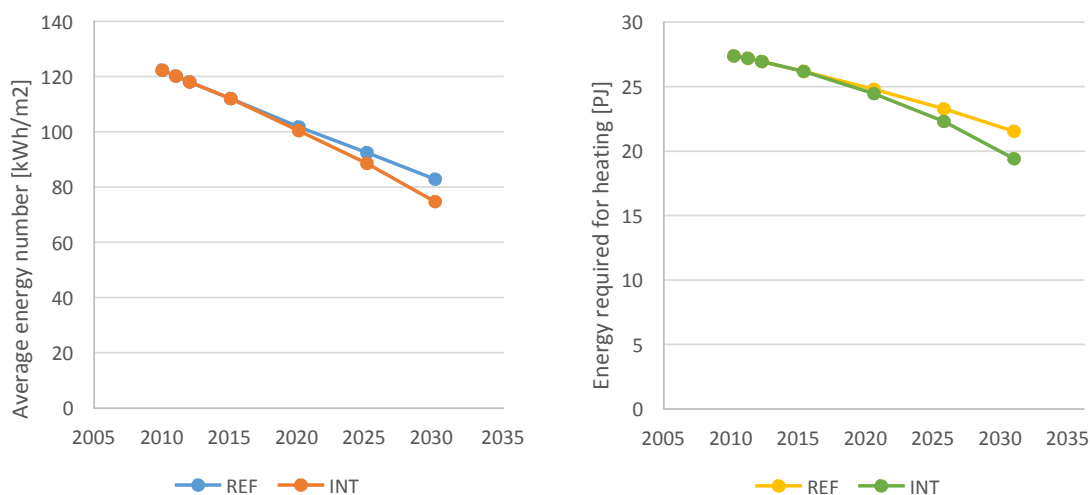
	Period of construction	Type/Degree of renovation	Energy number [kWh/m <sup>2</sup> ]	Comparison of energy consumption relative to the baseline class [%]
<b>BL</b>	before 1945	No renovation	125	0
<b>BL</b>	before 1945	Renovation	98	-22
<b>BL</b>	before 1945	Improved renovation	75	-40
<b>BL</b>	before 1945	Low-energy renovation	15	-88
<b>BL</b>	1946–1970	No renovation	125	0
<b>BL</b>	1946–1970	Renovation	98	-22
<b>BL</b>	1946–1970	Improved renovation	75	-40
<b>BL</b>	1946–1970	Low-energy renovation	15	-88
<b>BL</b>	1971–1980	No renovation	90	0
<b>BL</b>	1971–1980	Renovation	75	-17
<b>BL</b>	1971–1980	Improved renovation	58	-36
<b>BL</b>	1971–1980	Low-energy renovation	15	-83
<b>BL</b>	1981–2002	No renovation	84	0
<b>BL</b>	1981–2002	Renovation	75	-11
<b>BL</b>	1981–2002	Improved renovation	58	-31
<b>BL</b>	1981–2002	Low-energy renovation	15	-82
<b>BL</b>	2003–2008	No renovation	58	0
<b>BL</b>	2003–2008	Above-standard renovation	49	-16
<b>BL</b>	2003–2008	Low-energy construction	15	-74
<b>BL</b>	after 2008	No renovation	30	0
<b>BL</b>	after 2008	Low-energy construction	15	-50

The existing housing stock is being renewed. Apartments are therefore moving from classes with higher energy numbers to those with lower energy numbers. It is envisaged that a certain share of apartments will, because of technical limitations, be unable to move to classes with the lowest energy numbers. Transitions from the 'no renovation' to the 'renovation' class are dealt with in the model as partial renovation (e.g. replacement of windows). All transitions to the 'improved renovation', 'low-energy renovation', 'above-standard' and 'low-energy construction' classes are dealt with as complete building renovation.



**Figure 9: Movement of residential floor area between energy classes for single-family houses (left) and multi-apartment buildings (right) in the reference strategy**

The overall energy number is falling as a result of renovation of the existing housing stock and the consequent transition of apartments into classes with lower energy numbers. New buildings in the projections meet the requirements of the legislation in this area, i.e. PURES and EPBD (after 2020, all new buildings to be nearly zero-energy buildings) and account for a very small share of total energy consumption in residential buildings (under 5%).

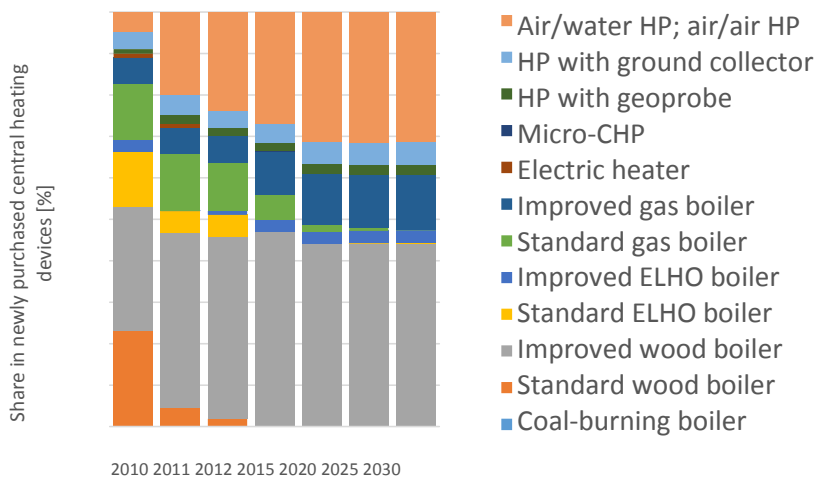


**Figure 10: Reduction in the total energy number (left) and the energy required for heating (right) for the reference and intensive strategy**

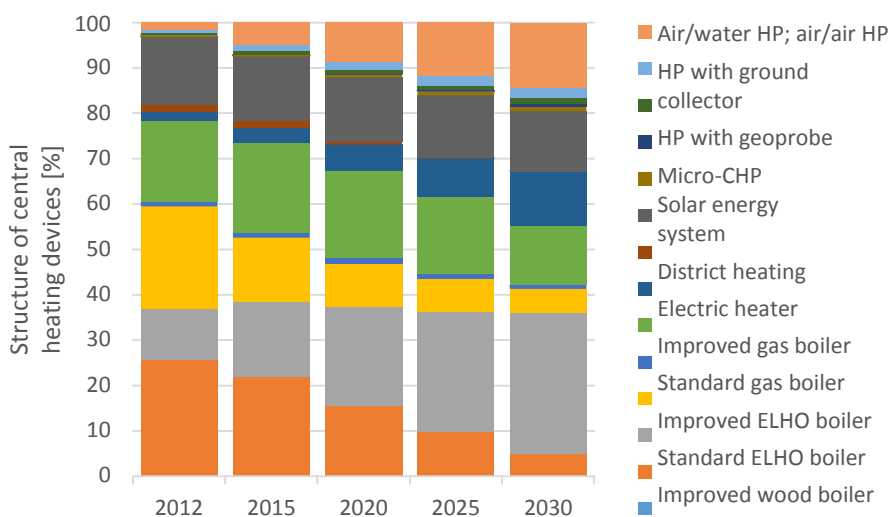
According to the reference strategy, the energy number will fall by 30 % between 2012 and 2030, while energy for heating will fall by 20 % because of the increase in residential floor area.

### *B.2.2: Structure of appliances for preparation of the required heat*

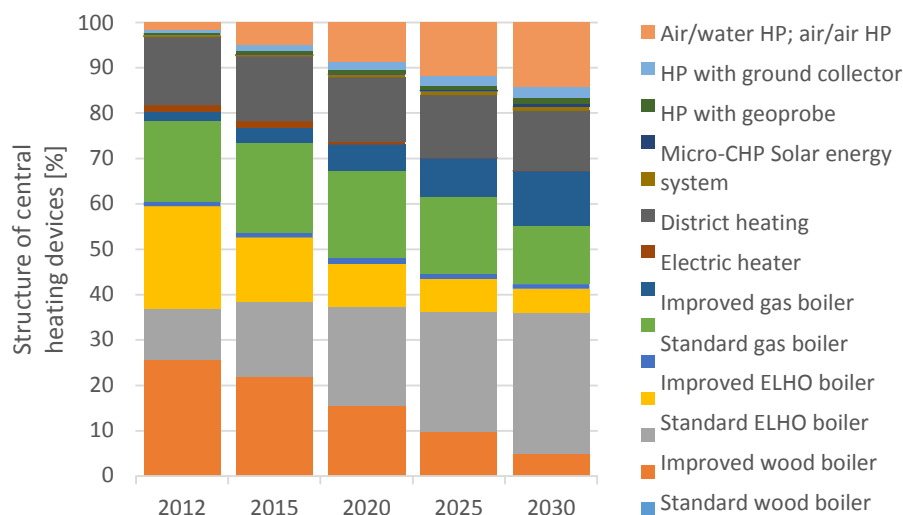
The structure of heating appliances changes through the simulation of the purchase of new appliances, which facilitates an analysis of the different measures that influence the purchase of new appliances and the replacement of existing appliances before the end of their lifecycle. The share of district heating is modelled separately on the basis of assumptions regarding transitions from central to district heating and from district to central heating for existing buildings, and the shares of district and central heating in new buildings. The purchase of new appliances is modelled separately for single-family and multi-apartment buildings. Single-family houses are additionally divided into buildings in built-up and sparsely populated areas, and multi-apartment buildings into built-up and sparsely populated areas and buildings with central heating for the whole building and buildings with central heating for separate floors. Solar energy systems have also been modelled separately as the projections come from annual calculations of the surface area on which solar collectors have been installed. The heat generated is then divided into the preparation of hot water and heating.



**Figure 11: Share of different technologies in newly purchased boilers for the central heating of residential buildings**



**Figure 12: Structure of devices for preparation of the required heat in a central heating system (for single-family houses and multi-apartment buildings)**

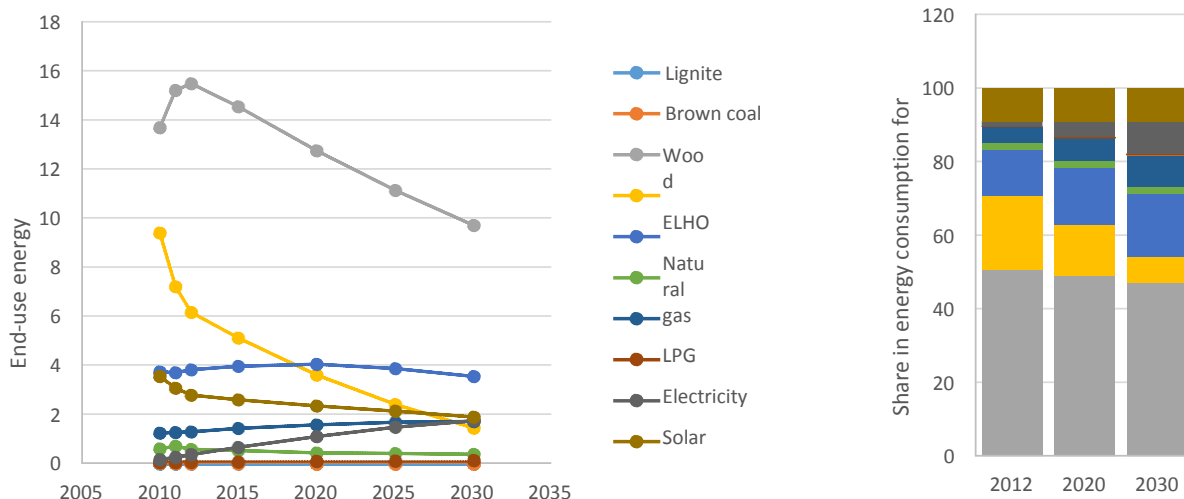


**Figure 13: Structure of devices for preparation of the required heat in a central heating system (for single-family houses and multi-apartment buildings) in the intensive strategy**

### B.2.3 Energy consumption for heating

Energy consumption for heating accounts for the highest proportion of end-use energy consumption in households.

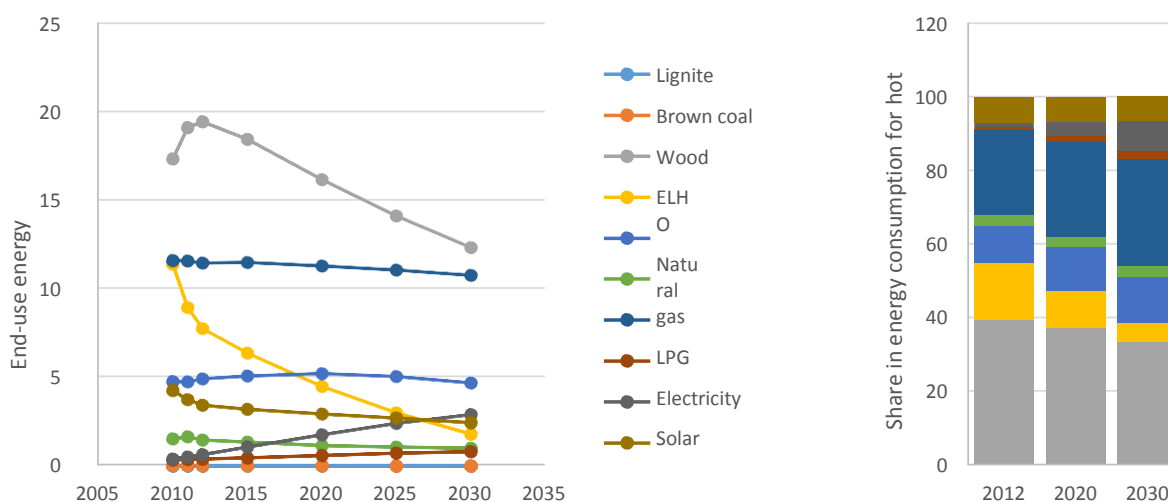
In both scenarios, the energy product seeing the greatest reduction in consumption is heating oil, followed by wood biomass. The reasons for the reduction are various. The main reason for the reduction in the consumption of heating oil is the replacement of heating appliances using oil with appliances using other energy products, while with wood it is the replacement of old boilers with poor efficiency with new wood boilers, as the figures in the previous chapter show. Under the intensive scenario, the consumption of heating oil is falling more rapidly because of the shortening of the lifecycle of heating oil boilers, which is a reflection of the assumption regarding the non-cost-effectiveness of the use of heating oil.



**Figure 14: Energy consumption for heating by energy product (left) and share of different energy products in total energy consumption for heating (right)**

The scenario is an ambitious one for the introduction of renewable energy sources. This ambitious approach is a result of trends from previous years, as shown by REUS research, where the key technologies listed by those surveyed for new appliances were wood boilers, heat pumps, solar energy collectors and gas boilers; it was not the result of additional measures.

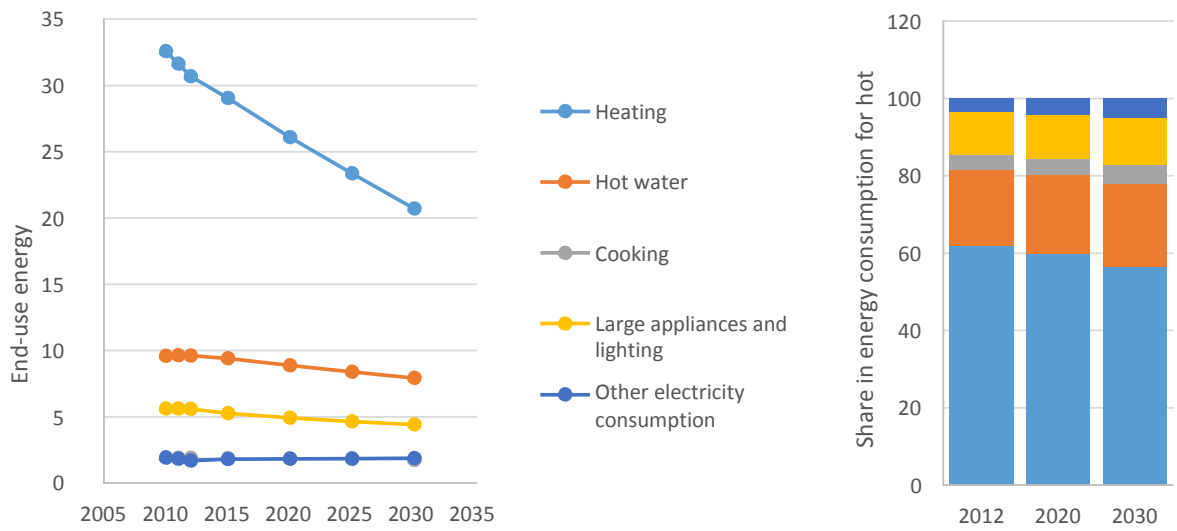
*B.2.4 Result of projections of energy consumption in households*



**Figure 15: Energy consumption in households by energy product (left) and share of different energy products in total energy consumption in households (right)**

A presentation of energy consumption in households by purpose of consumption shows that energy consumption for all purposes is falling, except for other consumption of electricity, where energy consumption for heating is falling most rapidly (the share of heating is therefore falling).





**Figure 16: Energy consumption in households by purpose (left) and share of energy consumption by purpose in total energy consumption (right)**

**ANNEX C**

**ASSESSMENT OF THE IMPLEMENTATION OF AN URE 1 AND ACHIEVEMENT  
OF THE OBLIGATIONS UNDER DIRECTIVE 2006/32/EC UP TO 2012**

## SUMMARY

The target of the National Energy Efficiency Action Plan 2008-2016 (AN URE 1)<sup>95</sup> complies with Article 4 of Directive 2006/32/EC on energy end-use efficiency and energy services (ESD)<sup>96</sup> in seeking a 9 % saving in end-use energy in 2016 (4 261 GWh) through implementation of the planned instruments, which cover measures for efficient energy consumption, energy services and the development of energy-efficient technologies and products. The average annual end-use energy saving in the nine-year period therefore amounts to 473 GWh, and the indicative intermediate target end-use energy saving<sup>97</sup> to 2 367 GWh in the 2008–2012 period.

End-use energy savings of 2 489 GWh were achieved up to and including 2012. This is 5 % more than the indicative target savings to 2012. In the industrial and transport sectors, the value of the savings was estimated using the 'top-down' (TD<sup>98</sup>) method. The other end-use energy savings calculated resulted directly from the implementation of active policies and measures and were calculated using the 'bottom-up' (BU<sup>99</sup>) method. The savings occasioned by some of the measures for which incentives were not tendered until towards the end of 2012 or whose implementation required more time<sup>100</sup> were recorded, but only partly ascribed to the 2011–2012 period. The remainder will be factored in in 2013 and 2014. In order to avoid counting savings twice, measures implemented in the industrial and transport sectors were omitted. In other cases of possible double counting, the appropriate correction factors were taken into account.

When calculating savings using the BU method, the appropriate methodologies set out in the Rules on the Methods for Determining End-Use Energy Savings<sup>101</sup> and the Methods for Calculating Energy Savings in Implementing Measures to Increase Energy Efficiency and Promote the Greater use of Renewable Energy Sources<sup>102</sup> were used. The latter were also used to calculate savings using the TD method. A factor of 2.5 was used in calculations of electricity savings.

The AN URE 1 target is not Slovenia's only target in the areas of energy efficiency (EE), reductions in greenhouse gas (GHG) emissions and the exploitation of renewable energy sources (RES). In 2011 the end-use energy savings required to meet these targets were therefore recalculated after these other, more ambitious targets of Slovenia in this area were factored in. The estimated savings therefore amount to 6 872 GWh by 2016, 10 281 GWh by 2020, and 3 044 GWh by 2012.<sup>103</sup> Despite this, the end-use energy savings achieved by 2012 exceeded the AN URE 1 target. At the moment they are 555 GWh, or 18.2 %, behind the 2020 targets for EE, use of RES and reduction in greenhouse gas emissions. This gap has arisen mostly in transport and industry, as well as in the public and services sectors and in households.

We should also be aware that the 2020 energy efficiency target is linked to energy supply (primary energy consumption),<sup>104</sup> which means that primary energy consumption should also be monitored alongside

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<sup>95</sup> [http://www.energetika-portal.si/fileadmin/dokumenti/publikacije/AN\\_URE/AN\\_UREI.pdf](http://www.energetika-portal.si/fileadmin/dokumenti/publikacije/AN_URE/AN_UREI.pdf)

<sup>96</sup> Directive 2006/32/EC of the European Parliament and of the Council of 5 April 2006 on energy end-use efficiency and energy services and repealing Council Directive 93/67/EEC.

<sup>97</sup> The intermediate target savings in end-use energy for 2012 were calculated using linear interpolation.

<sup>98</sup> Top-down.

<sup>99</sup> Bottom-up.

<sup>100</sup> The 'Sustainable energy development priority as part of the implementation of EU cohesion policy (energy supplier programmes).

<sup>101</sup> UL RS, 4/2010, 62/2013, 17/2014 – EZ-1.

<sup>102</sup> Annex 2: The Methods for Calculating Energy Savings in Implementing Measures to Increase Energy Efficiency and Promote the Greater use of Renewable Energy Sources, September 2011; Draft National Energy Efficiency Action Plan 2011–2016 – draft, October 2011 <http://www.energetika-portal.si/dokumenti/strateski-razvojni-dokumenti/akcijski-nacrt-za-energetska-ucinkovitost/>

<sup>103</sup> The target energy savings up to 2012 are calculated using a linear interpolation between the expected savings up to 2016 and the corrected achieved savings up to 2010, without factoring in the earlier activities (both from the National Energy Efficiency Action Plan 2011–2016, draft, October 2011).

<sup>104</sup> National Energy Efficiency Action Plan 2014–2020 (AN URE 2020) – draft, [http://www.energetika-](http://www.energetika-portal.si/fileadmin/dokumenti/publikacije/AN_URE/AN_UREI.pdf)

energy savings. It could otherwise happen that an intensive growth in activity (economic growth, residential floor area, kilometres driven) could lead to a requirement to make greater savings in end-use and primary energy consumption than those assumed in the energy consumption projections if the target energy supply level is to be achieved

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## 1. END-USE ENERGY SAVINGS UP TO 2012

### 1.1. Targets for raising energy efficiency by 2016

At the start of 2008 the Slovenian Government adopted the National Energy Efficiency Action Plan 2008-2016 (AN URE 1), which was formulated in accordance with Directive 2006/32/EC on energy end-use efficiency and energy services (ESD). Its target was to achieve end-use energy savings of nine percentage points (or 4 261 GWh) in 2016 relative to the end-use energy consumption in the 2001–2005 reference period by implementing the planned instruments. An analysis of the implementation of AN URE 1 from 2011 has shown that reductions in end-use energy consumption of 1 174 GWh per year were achieved up to 2010: 343.2 GWh in savings per year attributed to earlier activities<sup>105</sup> and the remainder (830.9 GWh per year) to measures to raise energy efficiency carried out between 2008 and 2010. The end-use energy savings target up to 2010, which was 1 184 GWh/year, was thereby practically achieved. There was still not enough data available in 2011 for calculating the overall savings made in the 2008–2010 period. End-use energy savings in transport and industry were not taken into account in 2010; therefore, the energy savings achieved up to 2010 were later corrected to 1 337 GWh per year, which is 12.9 % more than the target savings for that year.

AN URE 1 was the first of three action plans that Member States had to submit to the Commission in the 2008–2016 period. The draft National Energy Efficiency Action Plan 2011–2016 was then drawn up in 2011. The target energy-savings contained in this action plan did not remain at the level of the AN URE 1 targets; instead, it also proposed more ambitious energy-efficiency targets after taking into account Slovenia's other more ambitious targets in the areas of EE, reducing greenhouse gas emissions and the use of RES. Under the measures planned, savings will therefore have to amount to 6 872 GWh per year by 2016 and 10 281 GWh per year by 2020. Owing to the obligation to meet the new targets by 2020, this report has evaluated the savings achieved up to 2012 from the standpoint of both the ESD target and that contained in the National Energy Efficiency Action Plan 2011–2016. The indicative intermediate target savings in end-use energy up to 2012 under the ESD were therefore assessed at 2 367 GWh<sup>106</sup> per year, and at 3 044 GWh per year in relation to the EE, GHG emissions and RES targets.

### 1.2. End-use energy savings achieved up to and including 2012

The savings achieved up to 2012 are calculated as the sum of the savings up to 2010 under the draft National Energy Efficiency Action Plan 2011–2016, without taking earlier activities into account, and the savings achieved in 2011 and 2012. **The end-use energy savings achieved up to 2012 amount to 2 489 GWh per year (Table 37), which is 5 % more than the indicative target savings up to 2012 under the ESD and, at the same time, 18.2 % less than the more ambitious targets** directed towards meeting Slovenia's targets in the area of EE, reducing GHG emissions and the use of RES up to 2020. The current intensity of implementation of the measures means that it will probably be possible to achieve the AN URE 1 target by 2016; this does not apply to the targets that must be met by 2020. In the draft AN URE 2020, the 2020 energy efficiency target is linked to energy supply (primary energy consumption), which means that in future primary energy consumption should also be monitored alongside the evaluation of end-use energy savings.

Multi-sectoral measures accounted for the greatest share of overall energy savings, 25.6 % or 636 GWh per year, specifically the support scheme for electricity generated from RES and CHP (Measure V.3) and the energy labelling of household and other appliances (Measure V.2). Households come next with a 25.4 % share (or 633 GWh per year), mostly on account of the financial incentives for the energy-efficient renovation and

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<sup>105</sup> Measures to improve energy efficiency that were carried out prior to the implementation of the ESD in the 1995-2007 period or, exceptionally, measures carried out since 1991.

<sup>106</sup> The intermediate target savings in end-use energy for 2012 were calculated using linear interpolation.

sustainable construction of buildings (Measure G.1) and financial incentives for energy-efficient heating systems (Measure G.2). With the multi-sectoral measures, the savings achieved even slightly exceeded the more ambitious indicative target savings for 2012, although they fell short by 7.7 % in relation to households. The savings achieved fell short of the targets in the service and public sectors as well, as well as in industry and particularly in transport. In the public sector the effects of grants allocated for the energy renovation of buildings from the Cohesion Fund will largely not be noticeable until the 2013–2015.

The measures that delivered the greatest share of savings estimated using the BU methods were financial incentives for the energy-efficient renovation and sustainable construction of residential buildings (Measure G.1) and financial incentives for energy-efficient heating systems (Measure G.2), which together contributed 406.6 GWh/year or 30 %, the support scheme (Measure V.3) with 264 GWh/year or 19.5 %, and the energy-labelling of household and other appliances and the minimum requirements (Measure V.2) with 213 GWh/year (or 15.7 %).

**Table 37: End-use energy savings up to and including 2012, by measure and sector**

Name of measure	Code	End-use energy savings [GWh]			Target savings up to 2012 [GWh]
		up to 2010	2011–2012	up to 2012	
<b>HOUSEHOLDS</b>		<b>249</b>	<b>383</b>	<b>632.6</b>	<b>685.3</b>
Financial incentives for the energy-efficient renovation and sustainable construction of residential buildings	G.1	146	260.6	406.	453.7
Financial incentives for energy-efficient heating systems	G.2				
Energy efficiency scheme for low-income households	G.3	0	0	0	21.3
Division and billing of heating costs in multi-apartment and other buildings according to actual consumption	G.4	51	86.4	137.4	63.3
Citizens' energy advice network	G.5	52	36.5	88.5	147
<b>SERVICE SECTOR</b>		<b>15</b>	<b>45.8</b>	<b>60.8</b>	<b>109</b>
Financial incentives for efficient electricity consumption	I.1	0	18.6	18.6	10.3
Financial incentives to raise energy efficiency in industry and the service sector and significantly increase the scope of environmentally friendly electricity generation from RES and CHP systems	I.2	13	27.2	40.2	97.3
GHG emissions reduction scheme	I.4	2	0	2	1.3 <sup>107</sup>
<b>INDUSTRY (using the TD method)</b>		<b>218.8</b>		<b>559.3</b>	<b>690.5</b>
<b>TRANSPORT (using the TD method)</b>		<b>347.6</b>		<b>574</b>	<b>808.7</b>
<b>PUBLIC SECTOR</b>		<b>0</b>	<b>25.8</b>	<b>25.8</b>	<b>3</b>
Green public procurement		/	/		/

<sup>107</sup> The effect of the measure has not been estimated for the 2011–2016 period. When calculating the total savings for 2012, the value of 1.3 GWh was used for the sake of consistency.

Name of measure	Code	End-use energy savings [GWh]			Target savings up to 2012 [GWh]
		up to 2010	2011–2012	up to 2012	
Financial incentives for the energy-efficient renovation and sustainable construction of buildings in the public sector		0	21.4	21.4	38.7
Introducing an energy management system in the public sector		0	0	0	74
Financial incentives for efficient electricity consumption in the public sector		0	4.4	4.4	24.7
<b>MULTISECTORAL MEASURES</b>		<b>299</b>	<b>379.4</b>	<b>636.4</b>	<b>612.7</b>
Regulations on the energy performance of buildings		108	51.3	159.3	165.7
Energy labelling of household appliances and other devices, and the minimum requirements		149	64.4	213.4	2 270.7
Support scheme for electricity generated from RES and in CHP		42	263.7	263.7	176.3
<b>HORIZONTAL MEASURES</b>		<b>/</b>	<b>/</b>	<b>/</b>	<b>/</b>
Energy performance contracting		/	/	/	/
Exemption from payment of the environmental tax for polluting the air with CO <sub>2</sub>		/	/	/	/
Information and awareness-raising activities		/	/	/	/
Education and training		/	/	/	/
<b>TOTAL MEASURES</b>		<b>1 129.4</b>	<b>834.5</b>	<b>2 488.8</b>	<b>3 043.6</b>

In the industrial and transport sectors, the value of the end-use energy savings was estimated using the TD method. The other savings calculated resulted directly from the implementation of active policies and measures and were calculated using the BU method. When calculating savings using the BU method, the appropriate methodologies set out in the Rules on the Methods for Determining End-Use Energy Savings<sup>108</sup> and the Methods for Calculating Energy Savings in Implementing Measures to Increase Energy Efficiency and Promote the Greater use of Renewable Energy Sources were used.<sup>8</sup> The latter were also used to calculate savings using the TD method. A factor of 2.5 was used in calculations of electricity savings. In order to avoid counting savings twice, the effects of measures implemented in the industrial and transport sectors and assessed using BU methods were omitted from the total savings. In other cases of possible double counting, the appropriate correction factors were taken into account.

<sup>108</sup> UL RS, 4/2010, 62/2013, 17/2014 – EZ-1.

## 2. ENERGY SAVINGS IN HOUSEHOLDS

The implementation of five measures was envisaged for households in the 2010–2016 period: financial incentives for the energy-efficient renovation and sustainable construction of residential buildings (Measure G.1), financial incentives for energy-efficient heating systems (Measure G.2), energy-efficiency scheme for low-income households (Measure G.3), the division and billing of heating costs in multi-apartment and other buildings according to actual consumption (Measure G.4) and the citizens' energy advice network (Measure G.5). The savings for Measures G.1, G.2 and G.5 have been determined on the basis of the available data. For Measure G.4 the savings have been estimated, as more reliable data is not available. The savings resulting from the implementation of Measure G.3 are taken into account in the savings resulting from Measures G.1 and G.2. All savings relating to households are assessed using the BU method.

In accordance with the ESD, the total energy savings resulting from EE measures and the use of RES in households and achieved up to 2012 amount to 632.6 GWh (Table 38). The savings achieved up to 2010 (249 GWh)<sup>109</sup> and those achieved in 2011 and 2012 (383.6 GWh) are taken into the calculation of the savings. Given the cumulative value of the savings up to 2016, i.e. 1 558 GWh, or 685.3 GWh up to 2012, this means that the energy savings in households achieved up to 2012 fall slightly short of those planned (by 7.7 %, or 52.7 GWh).

**Table 38: End-use energy savings in households up to and including 2012**

Code	Name of measure	Savings achieved up to 2012 [GWh]	Target savings up to 2012 [GWh]
G.1	<b>Financial incentives for the energy-efficient renovation and sustainable construction of residential buildings</b>	<b>406.6</b>	453.7
G.2	<b>Financial incentives for energy-efficient heating systems</b>		
G.3	<b>Energy efficiency scheme for low-income households</b>	/	21.3
G.4	<b>Division and billing of heating costs in multi-apartment and other buildings according to actual consumption</b>	<b>137.4</b>	63.3
G.5	<b>Citizens' energy advice network</b>	<b>88.5</b>	147
<b>Total end-use energy savings in households</b>		<b>632.6</b>	<b>685.3</b>

### 2.1. Financial incentives for the energy-efficient renovation and construction of buildings (Measure G.1) and financial incentives for energy-efficient heating systems (Measure G.2).

Eco Fund resources were also available in 2011 and 2012 to individuals for investments in EE measures and the use of RES in single-family houses, two-family households or multi-apartment buildings<sup>110</sup> in the form of grants and loans at favourable interest rates. Grants could also be obtained for investments in RES within the Rural Development Programme<sup>111</sup> – specifically, Measure 121 (Modernisation of Agricultural Holdings), Measure 123 (Adding Value to Agricultural and Forestry Products), Measure 311 (Diversification into Non-Agricultural Activities) and Measure 312 (Aid for the Establishment and Development of Micro-Enterprises). However, the effects of these investments in terms of their contribution to energy efficiency and renewable energy sources have not been monitored.

<sup>109</sup> Earlier activities not taken into account.

<sup>110</sup> <http://www.ekosklad.si/>

<sup>111</sup> The funds are drawn from the European Agricultural Fund for Rural Development (EAFRD).



Individuals may obtain grants for the installation of solar panels or vacuum solar collectors, the replacement of an existing heating boiler with a wood biomass boiler (logs, woodchips, pellets) or natural gas condensing boiler, the installation of heat pumps for the heating of buildings, the replacement of an electric boiler for the preparation of sanitary hot water with a heat pump, connection to district heating on wood biomass, the renovation of individual elements of the envelope (thermal insulation of external walls, roof, foundations and ground, installation of building fittings), ventilation with heat recovery, the construction of low-energy and passive houses, the purchase of passive construction apartments, the installation of thermostat valves and the hydraulic balancing of heating systems, the installation of split meters and the billing of energy costs. In 2011 and 2012, grants totalling almost EUR 41 million supported 29 427 investments with a total value of EUR 235.7 million. Most of these investments (44.8 %) and 53.8 % of all the grants were intended for the renovation of individual elements of the envelope, which also contributed the largest share of energy savings (46.4 %) and reductions in CO<sub>2</sub> emissions (41.6 %, Figure 17). Savings in end-use energy consumption of 245.7 GWh were achieved in total in 2011 and 2012, with CO<sub>2</sub> emissions falling by 41.1 kt. The Eco Fund's financial incentives for households brought about savings in end-use energy consumption of 253.3 GWh in 2011 and 2012 (or 260.6 GWh under the ESD). Alongside this, individuals could also obtain grants for RES projects (biomass, biogas, solar energy, hydro energy) within tenders under the Rural Development Programme (PRP): according to the data available, 148 investments were supported and almost EUR 13 million in grants paid out. There is no data available on the effects of these investments.

Data on energy savings and the reduction in CO<sub>2</sub> emissions are calculated for an individual measure in accordance with the methodology prescribed under the Rules on the Methods for Determining End-Use Energy Savings.<sup>112</sup> The data collected relates to projects that have already been implemented.

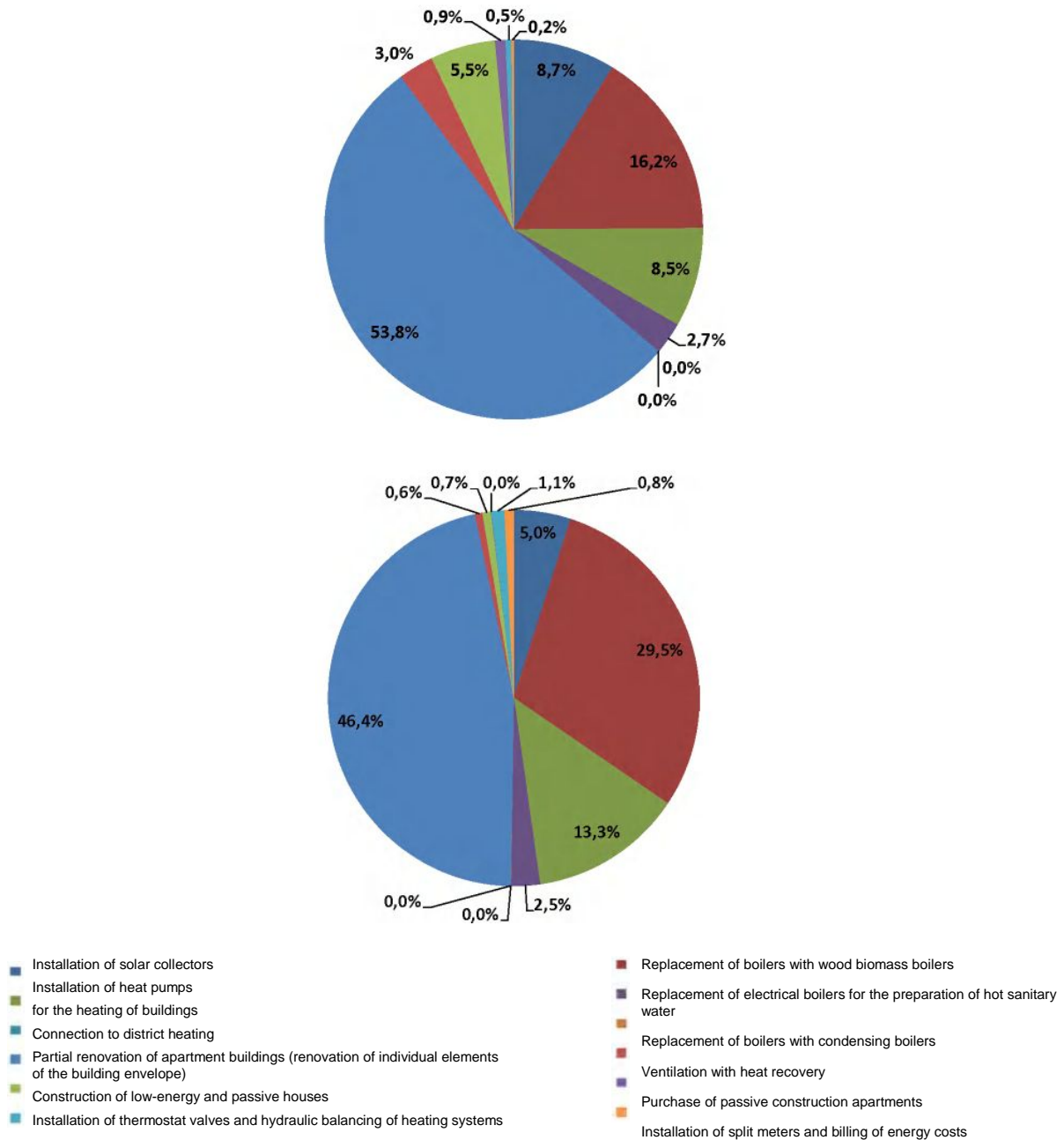
When determining end-use energy savings under the ESD, the savings achieved through the installation of split heating meters are not taken into account in the Eco Fund's grants, as these savings are assessed within the framework of Measure G.4 (Chapter 2.3). In the measure of replacement of electric boilers for the preparation of sanitary hot water with heat pumps, a factor of 2.5 was used for the calculation of the savings since this involves a reduction in electricity consumption. The end-use energy savings achieved by the Eco Fund's grants are therefore 253 GWh under the ESD.

In addition to grants, individuals were also able to obtain loans at a favourable interest rate from the Eco Fund in 2011 and 2012 for investments in EE and the use of RES. As with grants, individuals may obtain loans for the installation of solar panels or vacuum solar collectors, the replacement of an existing heating boiler with a wood biomass boiler (logs, woodchips, pellets) or natural gas condensing boiler, the installation of heat pumps for the heating of buildings, the replacement of an electric boiler for the preparation of sanitary hot water with a heat pump, the renovation of individual elements of the envelope (thermal insulation of external walls, roof, foundations and ground, installation of building fittings), ventilation with heat recovery, the construction of low-energy and passive houses, the purchase of passive construction apartments and, in addition, for the generation of electricity and the purchase of more environment-friendly means of transport or energy-efficient household appliances.

A total of 666 loans were made in 2011 and 2012, most of them for the renovation of individual elements of the envelope (303 loans, 45.5 %). EUR 7.3 million in loans were allocated, with energy consumption being reduced by 7.6 GWh and CO<sub>2</sub> emissions by 1.2 kt.

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<sup>112</sup> UL RS, 4/2010 and 62/2013.



**Figure 17: Distribution of Eco Fund incentives allocated to individuals for investments in residential buildings (left) and the energy savings achieved (right), by individual measure 2011–2012**

As with the grants, data on energy savings and the reduction in CO<sub>2</sub> emissions resulting from the loans are calculated for an individual measure in accordance with the methodology prescribed under the Rules on the Methods for Determining End-Use Energy Savings. The data collected relates to projects that have already been implemented. If an investor received a grant as well as a loan for the same purpose, half the effect was attributed to the grant and half to the loan in order to avoid double counting.

When determining end-use energy savings under the ESD, the Eco Fund loans did not take account of the generation of electricity using photovoltaic modules (this was taken into account in devices included in the support scheme for electricity generated from RES and high-efficiency CHP, Chapter 7.3). The savings achieved through the purchase of more environment-friendly means of transport were taken into account in

the energy savings in transport (Chapter 5). With the purchase of energy-efficient household appliances, the savings were assessed on the basis of data on the sale of new household appliances in Slovenia (Chapter 7.2). In the measure of replacement of electric boilers for the preparation of sanitary hot water with heat pumps, a factor of 2.5 was used for the calculation of the savings since this involves a reduction in electricity consumption. The end-use energy savings achieved by Eco Fund loans were therefore 7.5 GWh under the ESD.

The Eco Fund's financial incentives for households brought about savings in end-use energy consumption of 253.3 GWh in 2011 and 2012 (or 260.6 GWh under the ESD). Alongside this, individuals could also obtain grants for RES projects within tenders under the Rural Development Programme<sup>113</sup> (PRP); however, there is no data available on the effects of these investments.

**Table 39: End-use energy savings resulting from financial incentives from the Eco Fund 2011–2012**

Item	End-use energy savings [MWh]		
	2011	2012	Total
<b>Grants</b>			
RES measures <sup>114</sup>	39 278	84 240	123 518
EE measures <sup>115</sup>	55 680	66 551	122 231
Total end-use energy savings	94 958	150 791	245 749
End-use energy savings under the ESD	<b>97 691</b>	<b>155 384</b>	<b>253 075</b>
<b>Loans</b>			
RES measures <sub>20</sub>	578	3 077	3 656
EE measures <sub>21</sub>	2 287	1 742	3 928
Total end-use energy savings	2 765	4 819	7 584
End-use energy savings under the ESD	<b>2 734</b>	<b>4 812</b>	<b>7 546</b>
<b>Total financial incentives from the Eco Fund</b>			
Total end-use energy savings	97 723	155 610	253 333
End-use energy savings under the ESD	<b>100 425</b>	<b>160 196</b>	<b>260 621</b>

## 2.2. Energy efficiency scheme for low-income households (Measure G.3)

The energy efficiency scheme for low-income households was also only implemented as part of tenders for new investments in the use of renewable energy sources and the increased energy efficiency of multi-apartment buildings in 2011 and 2012. Under these tenders, socially vulnerable individuals were entitled to a higher grant percentage, i.e. covering 100 % of the costs of the investment relative to their appurtenant share of the financing of the investment, while the level of the financial incentive grants for all other investors was up to 25 % of the investment costs granted. Thirty-five socially vulnerable individuals were among the

<sup>113</sup> The PRP is the programming basis for the utilisation of the resources of the European Agricultural Fund for Rural Development (EAFRD).

<sup>114</sup> RES measures are: solar collectors, wood biomass boilers, heat pumps, connections to district heating using wood biomass.

<sup>115</sup> EE measures are: fossil fuel boilers, the renovation of individual elements of a building envelope, ventilation with heat recovery, the construction of low-energy and passive houses, the purchase of passive construction apartments, thermostat valves and hydraulic balancing, split heating meters.

applicants in 2011. This rose to 36 in 2012, giving a total of 71 for those two years. The effects of the grants received by socially vulnerable individuals are evaluated within the framework of the financial incentives for the energy-efficient renovation and construction of buildings (Measure G.1) and the financial incentives for energy-efficient heating systems (Measure G.2) in Chapter 0.

The upgrading of the energy efficiency scheme for low-income households is also envisaged in 2014 through the provision of advice on possible measures to reduce energy consumption among socially deprived groups and the allocation of EE appliances. Visits will be made by regional social work centres and advice provided by advisers from the network of energy advice offices (ENSVET), with 300 such visits being planned for 2014. Individual assistance could provide households with savings of up to EUR 150 on their energy bills per year.

### **2.3. Division and calculation of heating costs in multi-apartment and other buildings according to actual consumption (Measure G.4)**

The obligatory division and billing of heating costs according to actual consumption in multi-apartment buildings and other buildings with at least four separate sections, which are supplied with heat from a common heating system, was introduced in 2008 in the amendments to Article 94 of the Energy Act in force at the time.<sup>116</sup> Pursuant to this Article, the Rules on the Method of Dividing and Billing the Costs of Heating in Residential and Other Buildings with Several Individual Parts<sup>117</sup> were adopted in 2010. With this the division and billing of heating costs according to actual consumption became compulsory on 1 October 2011.

In 2010 and 2011 individuals who owned individual parts of multi-apartment buildings could also receive, as part of Eco Fund tenders, grants for the installation of metering devices that enable the division and billing of heating costs. Thirty-seven applicants received just over EUR 68 000 in grants for investments totalling almost EUR 427 000 for this purpose. The end-use energy reductions achieved are estimated at 1.9 GWh/year and the CO<sub>2</sub> emissions at 0.4 kt/year. In 2011 an information campaign entitled I pay for what I use [*Plačam kolikor porabim*] was run by the Ministry of the Economy, and as part of this all households in multi-apartment buildings received a brochure with information on the legal basis, on the actual implementation of the division and billing of costs, information on efficient energy management and on financial incentives.

Despite the fact that the division and billing of heating costs by actual consumption was meant to be introduced by the end of September 2011, according to REUS 2012 research data only 61 % of multi-apartment buildings had split heating meters in 2012, with 49 % of multi-apartment buildings being equipped with thermostat valves. Estimating that the floor area of multi-apartment buildings with central heating is around 11 million m<sup>2</sup>, with almost 72 % being connected to district heating systems, the energy savings in 2011 and 2012 were estimated at 86 416 MWh.

The energy savings in multi-apartment buildings do not take into account heat saved for preparing sanitary hot water, and commercial buildings are not included.

### **2.4. Citizens' energy advice network (Measure G.5)**

The network of energy advice offices (ENSVET) also continued to operate in 2011–2012. The Ministry of Infrastructure and Spatial Planning's programme, which is aimed at the provision of energy advice in relation to EE and the use of RES, is funded by the Eco Fund and its implementation managed by the Gradbeni inštitut ZRMK. Fifty-eight energy advisers are currently working for the ENSVET energy advice network, which has been in operation for over 20 years, within municipal energy advice offices.

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<sup>116</sup> UL RS, [27/2007](#) – official consolidated text. [70/2008](#), [22/2010](#), [10/2012](#), [94/2012](#) - ZDoh-2L.

<sup>117</sup> UL RS, [7/2010](#).

Local communities (currently over 40) are actively involved in securing the conditions for work in these offices and helping to draw up the annual programmes of work.

A new assessment of the effect of ENSVET energy advice was drawn up in 2013 on the basis of a survey of municipal residents who have turned to ENSVET for advice. The results of the survey also formed the points of departure for updating the method of evaluating the effects of ENSVET. In the assessment of the effects, the proposed new evaluation method can be used under which the energy savings are calculated separately for existing buildings and new construction, if the new construction also has an extensive effect on savings. In both cases, the calculation takes into account that the measure is implemented approx. two years after the advice received. Using different correction factors negates the effect of these effects or measures being counted twice. Taking account of the fact that the average annual energy savings made per advice session for existing buildings is 8.24 MWh and for new construction 1.7 MWh, the savings resulting from the ENSVET energy advice network in 2011–2012 are assessed as 36.5 GWh and the reduction in CO<sub>2</sub> emissions as 9.4 kt. Table 40 shows the end-use energy savings on the basis of the updated method of evaluating the effects of ENSVET, where existing buildings and new construction are dealt with together because of the minimum impact of new construction.

**Table 40: End-use energy savings resulting from the ENSVET programme 2011–2012**

	Unit	2011	2012	Total
Number of advisory sessions	–	5 797	5 867	11 664
End-use energy savings <sup>118</sup>	MWh/year	16 303	20 164	36 467
Reduction in CO <sub>2</sub> emissions	kt CO <sub>2</sub> /year	4.25	5.25	9.5

### 3. ENERGY SAVINGS IN THE SERVICE SECTOR

The implementation of three measures, which are common to industry and the service sector, have been envisaged in the 2011–2016 period in the service sector, which covers trade, catering and hospitality, financial services, real estate brokerage, and recreational, cultural and sports activities: financial incentives for efficient electricity consumption (Measure I.1), financial incentives for raising energy efficiency (in industry and) the service sector and a significant increase in the scope of environment-friendly energy generation from RES and CHP systems (Measure I.2) and schemes to reduce GHG emissions (Measure I.4). For Measures I.1 and I.2, the savings were, on the basis of the available data, assessed using BU methods. The savings take into account the savings made in the service sector and partly also in industry, as data by sector is not available. Since savings in industry are assessed using the TD method, the double counting of savings does occur; however, this was negligible for 2011–2012. In light of the intensity of the incentives for the service sector and industry, the double counting of savings will no longer be negligible; it would therefore make sense to provide the necessary data on effects on a sector by sector basis in the future. The scheme of exemption from payment of the CO<sub>2</sub> tax for the implementation of measures to reduce GHG emissions was not implemented under Measure I.4 in the 2011–2012 period.

In accordance with the ESD, the total energy savings resulting from EE measures and the use of RES in the service sector and achieved up to 2012 amount to 60.8 GWh (Table 41). The savings achieved up to 2010 (15 GWh) and those achieved in 2011 and 2012 (45.8 GWh) are taken into the calculation of the savings. Given the target cumulative value of the savings up to 2016, i.e. 297 GWh, or 109 GWh up to 2012, this means that

<sup>118</sup> Owing to the delay in implementation, the end-use energy saving is calculated on the basis of advice given in the 2009–2010 period (number of advisory sessions: 5 159 in 2009 and 6 381 in 2010).

the energy savings in the service sector achieved up to 2012 constitute only 55.8 % short of those planned and are therefore significantly lower than envisaged.

**Table 41: End-use energy savings in the service sector up to and including 2012**

Code	Name of measure	Savings achieved up to 2012 [GWh]	Target savings up to 2012 [GWh]
1.1	Financial incentives for efficient electricity consumption	18.6	10.3
1.2	Financial incentives to raise energy efficiency in (industry and) the service sector and significantly increase the scope of environmentally friendly electricity generation from RES and CHP systems	40.2	97.3
1.4	GHG emissions reduction scheme	2	0 <sup>119</sup>
<b>Total end-use energy savings in the service sector</b>		<b>60.8</b>	<b>109</b>

### 3.1. Financial incentives for efficient electricity consumption (Measure I.1)

A public tender for cofinancing operations to raise the efficiency of electricity consumption in the commercial sector for the 2011–2013 period (UREE1) was published in 2010 as part of the ‘Sustainable energy’ development priority within the Operational Programme for Environmental and Transport Infrastructure Development (OP ROPI) 2007–2013. Grants from the Cohesion Fund amounting to EUR 3 million were allocated to 33 investors for investments worth EUR 9.9 million for efficient electricity consumption. Reductions in electricity consumption of 29.2 GWh were envisaged with the projects, along with reductions in CO<sub>2</sub> emissions of 14.6 kt per year. In 2011 and 2012, 23 projects were completed, with EUR 6.9 million in investments being realised through EUR 1.9 million in grants. Electricity savings of 22.3 GWh were achieved (55.7 GWh under the ESD, taking into account a factor of 2.5), along with a reduction in CO<sub>2</sub> emissions of 11.1 kt per year. Almost 80 % of these savings were realised in industry. In the service sector, there were electricity savings of 4.5 GWh (or 11.3 GWh under the ESD).

In 2012 grants also began to be allocated as part of the programme of large liable entities for investments in EE and RES.<sup>120</sup> The measures under which incentives could be obtained included the installation of energy-efficient lighting systems, the installation of energy-efficient electric motor drives and the raising of the efficiency of systems for the preparation of compressed air. Seventy-four applicants received funds for lighting, three for electric motor drives and four for compressed air (total of 81). Incentives of EUR 3.1 million realised investments of EUR 12.4 million, with the envisaged annual savings amounting to 29.2 GWh of electricity (72.9 GWh under the ESD) and reductions in CO<sub>2</sub> emissions of 12.3 kt. Since most of the projects did not begin to be implemented until towards the end of 2012, we conclude that only a tenth of the savings mentioned were actually realised in 2012, i.e. approx. 7.3 GWh under the ESD. The sectoral distribution of funding recipients is not known; therefore, part of these savings could also be achieved in industry. However, given that the above-mentioned savings account for only 0.3 % of the overall savings achieved up to 2012, we conclude that any double counting of savings have a negligible impact on their total value. Separate sector-by-sector data needs to be provided if the savings made in 2013, which will be considerably higher than in 2012, are to be calculated correctly.

Applicants from the service sector and industry were also able to obtain Eco Fund loans at a favourable interest rate for the implementation of measures to reduce electricity consumption. The majority of these

<sup>119</sup> The effect of the measure has not been estimated for the 2011–2016 period. When calculating the total savings for 2012, the value of 1.3 GWh was used for the sake of consistency.

<sup>120</sup> Decree on Guaranteeing End-Use Energy Savings (UL RS, [114/2009, 22/2010](#) – EZ-D, [57/2011, 17/2014](#) – EZ-1). Up to 2014 the incentives within this programme were allocated from public funds. In the new scheme established in the EZ-1 that obliges energy companies that sell energy to make end-use energy savings, the method of financing the measures under which enterprises ensure savings is not determined.

measures were expressed in savings in heat, which are taken into account in Measure I.2 (Chapter 3.2). Savings of 31 MWh (77.5 MWh under the ESD) were achieved in 2012 with the reduction in electricity consumption as part of projects to construct new low-energy or passive buildings.

The financial incentives for efficient electricity consumption brought about savings in end-use electricity consumption of 7.4 GWh in 2011 and 2012 (or 18.6 GWh under the ESD). Figures on the effect of projects supported by the European Regional Development Fund (ERDF) in this area are not available.

### **3.2. Financial incentives to raise energy efficiency in (industry and) the service sector and significantly increase the scope of environmentally friendly electricity generation from RES and CHP systems (Measure I.2)**

In order to increase the scope of the environment-friendly generation of heat in the service sector and in industry, two tenders for the co-financing of individual wood biomass heating systems were published in 2011 for the 2011–2014 period (KNLB 3) and the co-financing of district heating using wood biomass for the 2011–2015 period (DOLB 3) within the ‘Sustainable energy’ development priority under the OP ROPI. Tenders had already been published for the same purpose in 2009 and 2010. The savings achieved in the service sector in the 2011–2012 period relate to the two tenders published in 2010 and 2011 for the installation of wood biomass combustion installations (KNLB).

Under the 2010 tender, investments totalling EUR 4.1 million were supported with EUR 4.1 million in grants (20 contracts signed). The energy savings achieved were estimated at 10.2 GWh/year and the reductions in CO<sub>2</sub> emissions at 8.2 kt/year. Four projects supported under this tender were implemented in 2010. The remaining 16 helped to reduce energy consumption by 6 GWh (2.5 GWh in the service sector and 3.5 GWh in industry).

Thirty-four contracts had been signed by the end of 2012 under the 2011 tender. Grants of EUR 2 million supported investments of EUR 6 million in wood biomass combustion installations. Annual reductions in electricity consumption of 31.6 GWh were envisaged, along with reductions in CO<sub>2</sub> emissions of 10.5 kt per year. In 2012, 19 projects were implemented with just under EUR 1 million in grants; these contributed to reductions in energy consumption of 20.9 GWh/year: 2.2 GWh in the service sector and 18.7 GWh in industry.

Reductions in energy consumption of 4.7 GWh in the service sector and 22.2 GWh per year in industry were achieved with Cohesion Fund resources in 2011 and 2012.

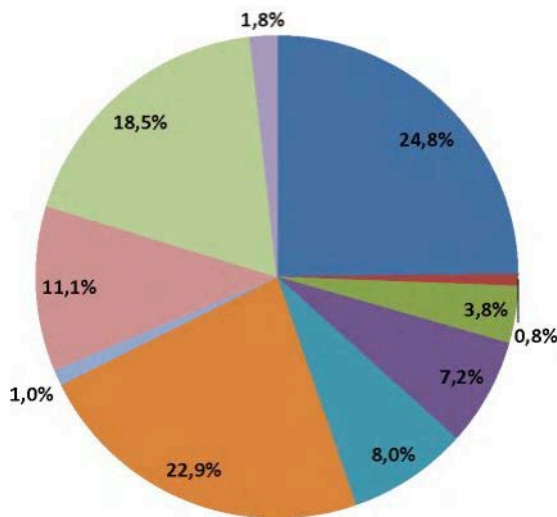
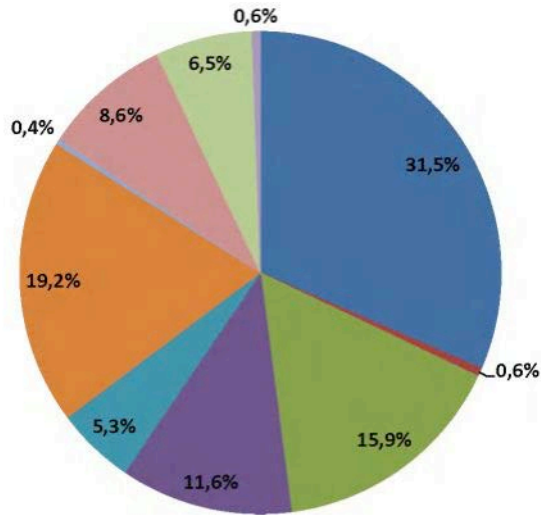
As mentioned in relation to Measure I.1 (Chapter 3.1), investments grants also began to be allocated in 2012 as part of the large liable entities’ programme for investments in EE and RES. In addition to the measures geared towards reducing energy consumption, applicants were also able to acquire incentives for the renovation of individual elements or the entire external envelope of buildings in the public and service sectors, the installation of solar energy collectors, heat pumps and other installations for generating heat from renewable energy sources in the public sector and industry, the energy-efficiency upgrading of common heating or cooling systems, including heating units, the energy-efficiency upgrading of heating or cooling systems, including heating units in public buildings and the service sectors, the replacement of fuel oil, heating oil and gas boilers with new high-efficiency natural gas boilers, the replacement of boilers using all types of fuel with new wood biomass or natural gas boilers, the connection of buildings to the district heating system, systems for the exploitation of waste heat, and equipment for the implementation of operational monitoring and energy management at final customers.<sup>121</sup> Grants totalling EUR 6.4 million were received by 322 applicants, with the largest part, 23.5 %, going to the renovation of building envelopes in the public and

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<sup>121</sup> Incentives could also be obtained for programmes for the implementation of energy audits and information and awareness-raising activities, with only investment measures being included in the evaluation of the effects of the large liable entities’ programme.

service sectors. Of all the grants intended for the implementation of investment measures within the large liable entities' programme, the largest share of incentives, 31.5 %, was claimed by the measure of the installation of energy-efficient lighting systems (Figure 18) Investments totalling EUR 32.5 million led to savings in energy consumption of 77.2 GWh, with CO<sub>2</sub> emissions falling by 22.6 kt. Since most of the projects did not begin to be implemented until towards the end of 2012, we conclude that only a tenth of the savings mentioned were actually realised in 2012, i.e. 7.7 GWh. The sectoral distribution of funding recipients is not known; therefore, the savings achieved in the public sector and industry are also factored into the savings even though their respective shares are unknown. However, given that the above-mentioned savings account for only 0.3 % of the overall savings achieved up to 2012, we conclude that any double counting of savings have a negligible impact on their total value. Separate sector-by-sector data needs to be provided if the savings made in 2013, which will be considerably higher than in 2012, are to be calculated correctly.





- Lighting
- Building envelopes in the public and service sectors
- sectors
- Systems for common heating or cooling
- Connection to district heating
- Electric motor drives
- Installations for heat generation from RES
- Wood mass or natural gas boilers
- Exploitation of waste heat
- Compressed air systems

**Figure 18: Distribution of grants within the large liable entities' programme (left) and the envisaged energy savings (right) by individual measure<sup>122</sup> for projects supported by incentives in 2012**

Applicants from the service sector and industry were also able to obtain Eco Fund loans at a favourable interest rate for the implementation of EE and RES measures. The savings achieved with the installation of wood biomass boilers or high-efficiency natural gas boilers, the installation of heat pumps, the replacement of building fittings, the heat insulation of foundations and the ground and the construction of new low-energy or passive houses are factored into the calculation of the savings made in 2011–2012 (heat only).

<sup>122</sup> Also taking into account the measures included in the calculation of savings under Measure I.1. The measures of the upgrading of common heating or cooling systems and the replacement of boilers are combined in the pie chart.

The reduction in heat consumption achieved by these measures was estimated at 9.3 GWh in 2011 and 5.5 GWh in 2012, giving a total of 14.8 GWh. The sectoral distribution of loan recipients is not known; therefore, the savings achieved in the public sector and industry are also factored into the savings even though their respective shares are unknown. However, given that the above-mentioned savings account for only 0.6 % of the overall savings achieved up to 2012, we conclude that any double counting of savings have a negligible impact on their total value. There is also the possibility that some of the loan recipients also received grants from the Cohesion Fund or large liable entities' programme for the same purpose; however, no data is available on this.

Financial incentives to raise energy efficiency in (industry and) the service sector and significantly increase the scope of environment-friendly electricity generation from RES and CHP systems lead to reductions in energy consumption of 27.2 GWh in 2011–2012. Figures on the effect of projects supported by the ERDF in this area are not available.

#### 4. ENERGY SAVINGS IN INDUSTRY

The implementation of five measures has been envisaged in industry in the 2011–2016 period: financial incentives for efficient electricity consumption (Measure I.1), financial incentives for raising energy efficiency in industry and the service sector and a significant increase in the scope of environment-friendly energy generation from RES and CHP systems (Measure I.2), incentives to introduce energy management systems in industry (Measure I.3), the scheme to reduce GHG emissions (Measure I.4) and the development scheme and other incentives for the commercial sector in the entry of green energy products onto the market (Measure I.5).

The total energy savings resulting from the implementation of EE measures and the use of RES in industry, achieved up to and including 2012 and which could be assessed using bottom up methods amount to 133.6 GWh (Table 42). The savings achieved up to 2010 (67 GWh)<sup>123</sup> and those achieved in 2011 and 2012 (66.6 GWh) are taken into the calculation of the savings. The target end-use energy savings for industry therefore amount to 1 634 GWh by 2016, or 690.5 GWh by 2012. Under the TD method, the estimated end-use energy savings in industry achieved up to 2012 amount to 559.3 GWh, which is 131.2 GWh or 19 % less than the expected reduction in end-use energy consumption for that year.

**Table 42: End-use energy savings in industry up to and including 2012**

Code	Name of measure	Savings achieved up to 2012 [GWh]	Target savings up to 2012 [GWh]
1.1	Financial incentives for efficient electricity consumption	44.4	/
1.2	Financial incentives to raise energy efficiency in (industry and) the service sector and significantly increase the scope of environmentally friendly electricity generation from RES and CHP systems	76.2	/
1.3	Incentives to introduce energy management systems in industry	/	/
1.4	GHG emissions reduction scheme	13	/
1.5	Development scheme and other incentives for the commercial sector in the entry of green energy products into the market	/	/
<b>Total end-use energy savings in industry (BU)<sup>124</sup></b>		<b>133.6</b>	<b>/</b>
<b>Total end-use energy savings in industry (TD)<sup>125</sup></b>		<b>559.3</b>	<b>690.5</b>

##### 4.1. Energy savings in industry determined using the BU method

In order to increase the efficient electricity consumption (Measure I.1), industrial enterprises could receive grants from the Cohesion Fund<sup>126</sup> and the large liable entities' programme, as well as Eco Fund loans. Reductions in electricity consumption in industry of 44.4 GWh were achieved from Cohesion Fund resources in 2012 under the ESD. Any savings achieved with funds from the large liable entities' programme and Eco Fund loans had already been taken into account in the calculation of savings for the service sector, since the sectoral distribution of savings is not known (Chapter 3.1).

Grants from the Cohesion Fund<sup>127</sup> and the large liable entities' programme, as well as Eco Fund loans, were likewise earmarked for the implementation of Measure I.2. Reductions in energy consumption in industry of 22.2 GWh were achieved from Cohesion Fund resources in 2012. Any savings achieved with funds from the

<sup>123</sup> Earlier activities not taken into account.

<sup>124</sup> Energy savings determined using the BU method.

<sup>125</sup> Energy savings determined using the TD method.

<sup>126</sup> Public tender for co-financing operations to raise the efficiency of electricity consumption in the commercial sector for the 2011–2013 period (UREE1).

<sup>127</sup> Public tenders for co-financing individual wood biomass heating systems.

large liable entities' programme and Eco Fund loans had already been taken into account in the calculation of savings for the service sector, since the sectoral distribution of savings is not known (Chapter 3.2).

For energy management systems under Measure I.3, grants were earmarked from the large liable entities' programme.<sup>128</sup> Twenty-eight contracts were signed, with the end-use energy reductions achieved being estimated at 19.6 GWh and the reductions in CO<sub>2</sub> emissions at 6.4 kt. Since most of the projects did not begin to be implemented until towards the end of 2012, we conclude that only a tenth of the savings mentioned were actually realised in 2012, i.e. approx. 2 GWh. Here as well, any savings achieved by this measure in industry had already been taken into account in the calculation of savings for the service sector, since the sectoral distribution of savings is not known (Chapter 3.2).

The scheme of exemption from payment of the CO<sub>2</sub> tax for the implementation of measures to reduce GHG emissions was not implemented under Measure I.4 in the 2011–2012 period. Measure I.5 aimed to promote commercial sector development projects in all phases of developing energy-efficient products, production processes and services, and was especially geared towards providing incentives for the commercial sector in demonstration projects and in introducing these products to the market. In 2011–2012 the measure was implemented through the co-financing of strategic research and development projects within enterprises,<sup>129</sup> the financing of centres of excellence and competence centres, implementation of the EUREKA programme, etc.

The total energy savings resulting from the implementation of EE measures and the use of RES in industry, achieved in 2011–2012 and able to be assessed using bottom up methods amount to 66.6 GWh.

#### **4.2. Energy savings in industry determined using the TD method**

The method for calculating energy savings in the manufacturing sector is based on the indicator of energy consumption relative to the index of industrial output of specific branches of manufacturing (method A – P14).<sup>8</sup> Energy savings are determined on the basis of the difference in the specific energy consumption in the base year (2007) and in the observed year (t), the index of industrial output in the observed year (t) and the share of energy consumption of the specific area in 2007 that was not included in the Emissions Trading System. End-use energy consumption by enterprises included in the Emissions Trading System (ETS) is not taken into account in end-use energy consumption. Energy savings are determined separately for each branch of manufacturing, while the total savings are calculated as the sum of savings of individual branches.

In accordance with the Standard Classification of Activities<sup>130</sup> (SKD 2008), manufacturing activities (Area C) are divided into Sections C10 to C33, where Section C19 (Manufacture of coke and petroleum derivatives) does not fall under the ESD.

In 2012 the energy savings of 825.1 GWh relative to 2007 were achieved in 13 branches of the manufacturing sector. The largest energy savings, which together represented 64.7 % of all savings, were achieved, as in the 2008–2010 period, in branches of the manufacture of fabricated metal products, except machinery and equipment (C25, 213 GWh), the manufacture of chemicals and chemical products (C20, 205 GWh) and the manufacture of computer, electronic and optical products (C26, 115 GWh). In the other ten branches, the average energy savings achieved were 29 GWh per branch.

In ten branches energy savings were negative (increased specific energy consumption), amounting to -265.8 GWh. Specific energy consumption increased the most in the manufacture of basic metals (C24, -167 GWh)

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<sup>128</sup> The measure of equipment for operational monitoring and energy management at customer locations.

<sup>129</sup> Operational Programme for Strengthening Regional Development Potentials 2007–2013, development priority: Competitiveness and Research Excellence.

<sup>130</sup> Decree on the Standard Classification of Activities (UL RS, 69/2007, 17/2008).

and the manufacture of rubber and plastic products (C22, -48 GWh). The other seven branches accounted for 19 % of the total negative energy savings.

End-use energy savings in manufacturing activities in 2012, estimated using the TD method, therefore amount to 559.3 GWh.

## 5. ENERGY SAVINGS IN TRANSPORT

The implementation of four measures has been envisaged in transport in the 2011–2016 period: Promotion and competitiveness of public transport (Measure P.1), Promoting sustainable freight transport (Measure P.2), Increasing the energy efficiency of road vehicles (Measure P.3) and Building cycle paths and support structures, and promoting cycling (Measure P.4).

The total energy savings resulting from the reduction in energy consumption in transport that were achieved up to 2012 and that could be assessed using BU methods amount to 45.2 MWh (Table 43). The savings achieved up to 2010 (45 GWh) and those achieved in 2011 and 2012 (0.2 GWh) are taken into the calculation of the savings. The target end-use energy savings for transport therefore amount to 1 731 GWh by 2016, or 808.7 GWh by 2012. Under the TD method, the estimated savings achieved up to 2012 amount to 574 GWh, which is 71 % of the expected reduction in end-use energy consumption in transport for that year.

**Table 43: End-use energy savings in transport up to and including 2012**

Code	Name of measure	Savings achieved up to 2012 [GWh]	Target savings up to 2012 [GWh]
P.1	Promotion and competitiveness of public transport	/	/
P.2	Promoting sustainable freight transport	/	/
P.3	Increasing the energy efficiency of road vehicles	45.2	/
P.4	Building cycle paths and support structures, and promoting cycling	/	/
<b>Total end-use energy savings in transport (BU)<sup>131</sup></b>		<b>45.2</b>	<b>/</b>
<b>Total end-use energy savings in transport (TD)<sup>132</sup></b>		<b>574</b>	<b>808.7</b>

### 5.1. Energy savings in transport determined using the TD method

In 2011–2012 individuals were able to obtain loans as part of Eco Fund calls for the purchase of environment-friendly vehicles (31 vehicles, energy savings of 56 MWh, reductions in CO<sub>2</sub> emissions of 15.3 t), as well as grants for the purchase of electric vehicles (38 vehicles, energy savings of 129 MWh, reduction in CO<sub>2</sub> emissions of 45 t). Eco Fund grants could also be received for the purchase of electric vehicles by legal entities (17 vehicles, energy savings of 54 MWh, reductions in CO<sub>2</sub> emissions of 17 t). These entities were also able to receive incentives for the purchase of public transport vehicles running on natural gas or biogas (20 vehicles). Energy savings resulting from the measure to raise the energy efficiency of road vehicles therefore totalled 239 MWh.

The energy savings achieved as a result of implementation of the other measures in the transport sector cannot be assessed using bottom up methods. The measure of promotion and competitiveness of public transport saw practically no implementation in 2011–2012; the measures of promoting sustainable freight transport with a transition to the railway and building cycle paths and support structures, and promoting cycling were implemented only in part.

### 5.2. Energy savings in transport determined using the TD method

End-use energy savings in transport are calculated on the basis of four indicators: end-use energy consumption in road transport for private and goods vehicles and end-use energy consumption in goods and passenger rail transport.

<sup>131</sup> Energy savings determined using the BU method.

<sup>132</sup> Energy savings determined using the TD method.

The method for calculating energy savings in road transport for private vehicles (P8-A1)<sup>8</sup> is based on the indicator of the average energy consumption of private vehicles relative to kilometres travelled. The method determines energy savings based on the difference in the average specific consumption of energy by private vehicles in the base year (2007) and the observed year (t) and the annual number of kilometres travelled in private vehicles in the observed year (t). The total estimated energy savings in road transport for private vehicles in 2012 amounted to 91 GWh (Table 44).

The method for calculating energy savings in road transport for goods vehicles (P9)<sup>133</sup> is based on the indicator of the average energy consumption of goods vehicles in terms of transport of goods in ton-km. The method determines energy savings based on the difference in the average specific consumption of energy by goods vehicles relative to ton-km in the base year (2007) and the observed year (t) and the annual transport of goods in ton-km in the observed year (t). Energy savings for road freight vehicles in 2012 amounted to 440 GWh (table 44), accounting for 76.6 % of all savings in the transport sector.

The method for calculating energy savings in rail freight transport (Pil)<sup>134</sup> is based on the indicator of energy consumption in terms of the scope of goods transport in ton-km. Energy savings are determined based on the difference in the specific consumption of energy for rail freight in the base year (2007) and the observed year (t) and the total transport of goods in ton-km in the observed year (t). Under this method, energy savings in rail freight transport amounted to 41 GWh in 2012 (Table 44).

The method for calculating energy savings in rail passenger transport (PIO)<sup>135</sup> is based on the indicator of energy consumption in terms of the scope of transport in passenger km. Energy savings are determined based on the difference in the specific consumption of energy for rail passenger transport in the base year (2007) and the observed year (t) and total transport in passenger km in the observed year (t). In 2012 energy savings in rail passenger transport amounted to a mere 2 GWh (Table 44).

Total end-use energy savings in 2012, estimated using the Top Down method, therefore amount to 574 GWh.

**Table 44: Energy savings in transport up to 2012 relative to 2007, in GWh**

		2012
P8-A1	<b>Private road vehicles</b>	91
P9	<b>Road freight vehicles</b>	440
P11	<b>Rail freight</b>	41
P10	<b>Rail passenger transport</b>	2
<b>Total</b>		<b>574</b>

The data needed to calculate the energy savings was obtained from various sources. Energy consumption in road transport, distances travelled by type of vehicle and the number of vehicles by types were obtained from the Slovenian Environment Agency (ARSO), where as part of the preparation of records on greenhouse gas and atmospheric pollutant emissions, fuel consumption in road transport is divided by type of vehicle with the help of COPERT model data. In calculating emissions, ARSO must capture the entire quantity of fuel sold in Slovenian territory, so their data is not ideal for calculating savings owing to measures affecting freight transport by domestic vehicles. Data on ton kilometres travelled by freight vehicles and trains and rail

<sup>133</sup> Equation 154 – Annex 2: Methods for Calculating Energy Savings in Implementing Measures to Increase Energy Efficiency and Promote the Greater Use of Renewable Energy Sources, September 2011; Draft National Energy Efficiency Action Plan 2011–2016 – draft, October 2011. <http://www.energetika-portalsi.si/dokumenti/strateski-razvojni-dokumenti/akcijski-nact-z-energetsko-ucinkovitost/>

<sup>134</sup> Equation 157 – Annex 2.

<sup>135</sup> Equation 156 – Annex 2.

passenger kilometres were obtained from the Statistical Office of the Republic of Slovenia (SURS) via the SI-STAT application. Data on the energy consumption of passenger and freight trains was obtained from Slovenske železnice.



## 6. ENERGY SAVINGS IN THE PUBLIC SECTOR

The implementation of four measures has been envisaged in the public sector in the 2011–2016 period: Green public procurement (Measure J.1), Financial incentives for the energy-efficient renovation and sustainable construction of public sector buildings (Measure J.2), Introducing an energy management system in the public sector (Measure J.3) and Financial incentives for efficient electricity consumption in the public sector (Measure J.4). For Measures J.2 and J.4, the savings are determined on the basis of the available data using BU methods. The necessary data is not available for determining the savings resulting from the implementation of Measure J.3, while savings have not been envisaged as resulting from the green public procurement measure.

Under the ESD methodology, the total energy savings resulting from the implementation of EE measures and the use of RES in the public sector and achieved up to 2012 amount to 25.8 GWh (Table 45). Given the target cumulative value of the savings up to 2016, i.e. 412 GWh, or 137.3 GWh up to 2012, this means that the energy savings resulting from the implementation of measures in the public sector achieved up to 2012 constitute only 18.8 % of the envisaged savings.

**Table 45: End-use energy savings in the public sector up to and including 2012**

Measure	Name of measure	Savings achieved up to 2012 [GWh]	Target savings up to 2012 [GWh]
J.1	<b>Green public procurement</b>	/	/
J.2	<b>Financial incentives for the energy-efficient renovation and construction of buildings in the public sector</b>	<b>21.4</b>	38.7
J.3	<b>Introducing an energy management system in the public sector</b>	/	74
J.4	<b>Financial incentives for efficient electricity consumption in the public sector</b>	<b>4.4</b>	24.6
<b>Total savings in end-use energy consumption in the public sector</b>		<b>25.8</b>	137.3

### 6.1. Green public procurement (Measure J.1)

Energy efficiency is economically a very important segment of green public procurement in terms of both the volume of contracts and the energy savings made. The regulation governing this field<sup>136</sup> was adopted in 2011. It envisages the adding of new products and services. For the moment, it includes the energy efficiency of the following products and services in the field of EE: buildings, including project design, construction, the regular and investment maintenance of buildings and the installation of individual devices and products within the building, electronic office equipment (computers, monitors, printers, optical readers, faxes, copying machines), appliances (television equipment, refrigerators, freezers, fridge-freezers, washing machines, dishwashers, air-conditioning equipment), private and transport vehicles, bus transport services and tyres. The plans envisaged within the green public procurement measure were partly realised in the period up to 2012. Plans are in place for green public procurement to be supplemented and regulated by 2016, chiefly with the procurement of lighting in buildings, air-conditioning, ventilation and heating, office equipment, the reconstruction of smaller buildings, mobile telephones, etc. PURES (or subsidiary technical guidelines) contains stricter EE requirements for the public sector.

<sup>136</sup> Decree on Green Public Procurement (UL RS, [102/2011](#), [18/2012](#), [24/2012](#), [64/2012](#), [2/2013](#)).

## 6.2. Financial incentives for energy-efficient renovation and construction of buildings in the public sector (Measure J.2)

Most of the financial incentives for the energy-efficient renovation and construction of buildings in the public sector were available in 2011 and 2012 as part of the 'Sustainable energy' development priority within the Operational Programme for Environmental and Transport Infrastructure Development (OP ROPI) 2007–2013. Six tenders<sup>137</sup> for the allocation of grants from the Cohesion Fund were published: one each in 2010 and 2013 and two each in 2011 and 2012. As part of the tenders published by the end of 2012, EUR 144.5 million in grants for just over EUR 156 million in investments for the energy renovation of public buildings were allocated for 168 signed contracts. The envisaged annual savings were estimated at 199.4 GWh of energy and 36.1 kt of CO<sub>2</sub>. Only the savings resulting from the five measures actually implemented by the end of 2012 were factored into the savings for 2011–2012. EUR 8.9 million of the EUR 9.5 million in grants allocated for these projects was used; it was envisaged that reductions in energy consumption of 14 GWh would be achieved, with CO<sub>2</sub> emissions falling by 5.3 kt per year (Table 46). End-use energy savings under the ESD amount to 20.7 GWh per year, using a factor of 2.5 for electricity. The financial leverage of the projects co-financing by the Cohesion Fund is currently relatively high: for tenders in 2011 it is EUR 0.82 of subsidy for EUR 1 of investment and for tenders in 2012 it is EUR 0.84 of subsidy per EUR 1 of investment.

An Eco Fund tender for EE subsidies for municipalities<sup>138</sup> was published in 2012 under which four applicants received grants of EUR 1 million for EUR 7.5 million in investments. This resulted in annual energy savings of 0.7 GWh and reductions in CO<sub>2</sub> emissions of 167 t (Table 46). Since these are only savings in heat, the savings under the ESD amount to 0.7 GWh.

The data that forms the basis for the calculation of energy savings relate, in the Cohesion Fund, to the contracts signed and in the Eco Fund to the projects implemented. The figures on energy savings and reductions in CO<sub>2</sub> emissions are taken from the figures stated by project applicants in their applications.<sup>139</sup>

The annual savings achieved by financial incentives for the energy-efficient renovation and construction of buildings in the public sector therefore amount to 14.7 MWh (21.4 MWh under the ESD). The reduction in CO<sub>2</sub> emissions is estimated at 5.5 kt per year. The estimated savings are considerably lower than the planned 64.4 GWh. Any savings achieved by the projects that have been in receipt of Eco Fund loans are factored into the savings made in the service sector, as there is no adequate data on the effects of the loans by sector. The savings achieved by projects supported by European Regional Development Fund resources have also not been factored into the calculation (data on these savings is not available). Data on the savings achieved by incentives under the large liable entities' programme, which did not begin to be implemented until 2012, is not available by sector; therefore, with certain assumptions taken into account, they are factored into the savings in the service sector (Chapter 3.2). The same also applies to Eco Fund loans.

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<sup>137</sup> Public tenders for buildings of legal entities of public law founded by the Republic of Slovenia and under the responsibility of the MZ which perform healthcare activities at the secondary and/or tertiary level, for public institutes in the areas of schooling and education founded by the Republic of Slovenia and under the responsibility of the MŠŠ, for retirement homes, for buildings owned by local communities (LS1), for public institutes in the areas of higher education and science and for primary schools, nursery schools, health centres and libraries owned by local communities (LS2). Under the LS2 tender, grants could only be obtained for the implementation of EE measures on building envelopes (thermal insulation of the facade and loft space, replacement or installation of fittings). Under all the other tenders, grants could only be obtained for complete energy renovation, which, in addition to the implementation of EE measures on the building envelope, also includes the implementation of EE measures on energy systems and measures for the use of RES.

<sup>138</sup> Public call 14SUB-VIS12: Financial incentive grants for the low-energy or passive construction or renovation of buildings owned by municipalities in which education and training activities are being carried out.

<sup>139</sup> The applicants have taken these figures from the expanded energy audits and from projects to implement the envisaged measures.

**Table 46: End-use energy savings resulting from financial incentives for energy-efficient renovation and the construction of buildings in the public sector in 2012<sup>140</sup>**

Item	Unit	Cohesion Fund	Eco Fund	Total
No of projects	–	5	4	9
End-use energy savings	MWh/year	13 974	726	14 700
End-use energy savings under the ESD	MWh/year	20 684	726	21 410
Reduction in CO <sub>2</sub> emissions	kt CO <sub>2</sub> /year	5.31	0.17	5.48

In the 2013–2015 period, we can further expect energy savings of at least 105.4 GWh (or 156.9 GWh under the ESD), or a total of 178.3 GWh by 2015 relating to the contracts signed for the allocation of funds from the Cohesion Fund as part of tenders by the end of 2012; this considerably exceeds the targets envisaged and will at least partly cover the deficit resulting from what are expected to be lower-than-planned savings under Measure J.3. The savings envisaged as resulting from the LS2 tender from 2013 have not yet been factored into the calculation of the cumulative savings.

### 6.3. Introducing an energy management system in the public sector (Measure J.3)

The measure of introduction of an energy management system in the public sector was to lead to the implementation of several key activities, from the introduction of an energy management system in all ministries and urban municipalities by 2015 and mandatory energy accounting for all buildings with a useful floor area of over 500 m<sup>2</sup> to the obligation to conduct energy manager tasks within public sector organisations and the upgrading of the energy audit methodology so as to support the preparation of tenders for the contractual lowering of energy costs (energy performance contracting), i.e. for the contractual provision of energy supply and the contractual provision of energy savings. The measure was partly implemented in 2011–2012, most actively in the introduction of energy accounting and energy management in local self-governing communities segment, which lies within the remit of local energy agencies. The energy accounting introduced at the same time makes it easier to draw up energy audits, which are mandatory for all public buildings that wish to receive Cohesion Fund grants. The data required for a determination of energy savings through the introduction of an energy management system in the public sector is not available.

### 6.4. Financial incentives for efficient electricity consumption in the public sector (Measure J.4)

In the area of efficient electricity consumption in the public sector, a public tender for the co-financing of operations for the energy-efficient renovation of street lighting for the 2011–2013 period was published in 2011 within the OP ROPI. Under this tender, 22 contracts were signed and EUR 3.2 million in grants allocated for investments of just under EUR 10 million. Grants totalling EUR 2.8 million were used. Only two projects were implemented in 2012. EUR 0.3 million were allocated to them, leading to reductions in electricity consumption of 1.7 GWh, or 4.4 GWh under the ESD, per year. CO<sub>2</sub> emissions fell by 0.87 kt/year.

Public sector investors were also able to receive grants under the large liable entities' programme or Eco Fund loans for the implementation of measures to reduce electricity consumption. Since data is not available on a sector-by-sector basis, it is factored into the savings made in the service sector (Chapter 3.1).

<sup>140</sup> No savings were achieved with this measure in 2011.

## 7. ENERGY SAVINGS WITH MULTI-SECTORAL MEASURES

Multisectoral measures to improve energy efficiency have an effect on the level of at least two sectors. Their activities target broad consumption (household, service and public sectors) and industry, but do not cover the transport sector. The implementation of three measures is envisaged: regulations on the energy performance of buildings (Measure V.1), the energy labelling of household and other appliances and the minimum requirements (Measure V.2) and the support scheme for electricity generated from RES and in CHP (Measure V.3). For all three measures, the savings are determined on the basis of the available BU data.

Under the ESD methodology, the total energy savings resulting from the implementation of multi-sectoral measures and achieved up to 2012 amount to 636.6 GWh (Table 47). The savings achieved up to 2010 (299 GWh) and those achieved in 2011 and 2012 (337.6 GWh) are factored into the calculation of the savings. Given the target cumulative value of the end-use energy savings up to 2016, i.e. 1 240 GWh, or 612.7 GWh up to 2012, this means that the energy savings resulting from the implementation of multi-sectoral measures achieved up to 2012 exceeded those planned by 23.9 GWh, or 3.9 %, primarily on account of the support scheme.

**Table 47: End-use energy savings with multi-sectoral measures up to and including 2012**

Measure	Name of measure	Savings achieved up to 2012 <sup>141</sup> [GWh]	Target savings up to 2012 [GWh]
V.1	Regulations on the energy performance of buildings	159.5	165.7
V.2	Energy labelling of household appliances and other devices, and the minimum requirements	213.4	270.7
V.3	Support scheme for electricity generated from RES and in CHP	263.7	176.3
<b>Total measures</b>	<b>end-use energy savings with multi-sectoral</b>	<b>636.6</b>	<b>612.7</b>

### 7.1. Regulations on the energy performance of buildings (Measure V.1)

The new Rules on the Energy Performance of Buildings,<sup>142</sup> adopted pursuant to the Construction Act and in accordance with the provisions of Directive 2010/31/EU on the energy performance of buildings (EPBD) in 2010, had the greatest impact on reducing energy consumption as a result of the implementation of Measure V.1 in 2011–2012. The rules cover new construction, reconstruction and also a range of capital works that intervene in parts of buildings and affect their energy performance. The savings resulting from the implementation of PURES in relation to new-builds in 2011 and 2012 were estimated at 51.3 GWh. Taking into account the savings of 108.2 GWh in the 2008–2010 period resulting from mandatory regular inspections of boilers under the Environmental Protection Act as part of the chimney maintenance service, the total savings achieved in 2012 as a result of the introduction of regulations on the energy performance of buildings amounted to 159.5 GWh.

### 7.2. Energy labelling of household appliances and other devices, and the minimum requirements (Measure V.2)

The energy labelling of products intended for household use constitutes one of the most important measures to reduce electricity consumption in households, as the energy-efficiency class has become an

<sup>141</sup> The savings achieved up to 2012 are calculated for Measures V.1 and V.2 as the sum of the savings up to 2010 and the savings achieved in 2011 and 2012.

<sup>142</sup> UL RS, 52/2010, PURES-2.

important criterion in the purchase of new appliances. Appliances of the A+++ class came onto the market for the first time in 2011. Sales of these appliances have been growing year on year. In relation to washing machines, which account for the highest share (around one-third of all household appliances), 11.3 % of those purchased in 2010 were of energy-efficiency class A+++.

Two years later, this figure was 28.4 %. According to figures from GfK Slovenija, 355 655 new household appliances were purchased in 2011–2012; 62 % of these were washing machines and refrigerators, the remainder were freezers, dishwashers and drying machines. Reductions in energy consumption resulting from the use of new household appliances is estimated at 25.8 GWh (Table 48) and reductions in CO<sub>2</sub> emissions at 13.1 kt. The calculation of energy savings took into account the proportions of new appliances that replaced old appliances. These proportions depend on the type of appliance and change from year to year. They are highest for freezers (99–100 %), and lowest for dryers (39–58 %).

Energy savings under the ESD amount to 64.4 GWh, using a factor of 2.5 for electricity. The total savings resulting from the purchase of energy-efficient household appliances in 2012 were estimated at 213.4 GWh relative to the savings made in 2010 (149 GWh).

**Table 48: Number of household appliances bought in 2011–2012, and the effects of replacing old with new appliances**

Type of household appliance	2011		2012		Total	
	Number of purchases	Energy savings of appliances [GWh/year]	Number of new purchases	Energy savings of appliances	Energy savings of new purchases [GWh/year]	Energy savings of appliances
Refrigerators	51 916	3.7	52 082	4.1	103 998	7.8
Freezers	23 587	4.8	23 140	4.6	46 727	9.4
Washing machines	29 495	0.8	29 080	0.8	58 576	1.5
Drying machines	57 904	3.3	58 579	2.9	116 483	6.2
Dishwashing machines	13 133	0.4	13 740	0.5	26 874	0.9
Total	179 034	12.9	176 621	12.9	355 655	25.8
End-use energy savings under the ESD		<b>32.2</b>		<b>32.2</b>		<b>64.4</b>

In addition to refrigerators, freezers, washing machines, drying machines and dishwashers, energy labelling is also prescribed for a number of other household appliances (household washer-dryers, lightbulbs and lamps for household use, household electric ovens and household air-conditioning equipment), television sets, office equipment (computer equipment, photocopiers, printers, etc.), along with the labelling of tyres with regard to fuel efficiency and other basic parameters. Owing to a lack of data, the savings resulting from the purchase of these appliances and equipment have not been taken into account in the savings calculation.

### 7.3. Support scheme for electricity generated from RES and in CHP (Measure V.3)

The new support scheme for electricity generated from RES and high-efficiency CHP was introduced in 2009 and replaced the system of incentives introduced in 2002 (the old scheme), which expired at the end of 2011. The operation and organisational structure of the scheme is regulated by two decrees: Decree on Support for Electricity Generated from Renewable Energy Sources<sup>143</sup> and the Decree on Support for Electricity Produced from High-Efficiency Cogeneration of Heat and Power.<sup>144</sup> Other implementing regulations also regulated the area, particularly with regard to the competencies and tasks of the institutions charged with operating the scheme.

<sup>143</sup> UL RS, 37/2009, 53/2009, 68/2009, 76/2009, 17/2010, 94/2010, 43/2011, 105/2011, 43/2012.

<sup>144</sup> UL RS, 37/2009, 53/2009, 68/2009, 76/2009, 17/2010, 81/2010.

Under the Commission's interpretation, the framework of the ESD only includes diffuse electricity generation facilities that are located at the end-use energy consumer, and that reduce the consumer's take-off of electricity, as energy efficiency measures. With due regard to these criteria, the following types of electricity-generating installations were taken into account when calculating the savings:

- solar installations on buildings up to 1 000 kW (Categories SE11<sup>145</sup> and SE12);
- wind-power installations of up to 50 kW (Category VE01);
- installations for the high-efficiency cogeneration of heat and power (CHP) in industry and broad consumption (Categories SF and SL).

The calculation of energy savings resulting from operation of the support scheme for 2012 is based on the values of the electricity generated. A factor of 2.5 was used to determine the savings under the ESD for solar and wind-power installations. For CHP units, the primary energy savings factors were used per individual installation. Total energy savings resulting from the operation of installations included in the support scheme were estimated at 263.7 GWh in 2012. Savings resulting from the operation of solar and wind-power installations accounted for 91.6 % of the total savings made.

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<sup>145</sup> The category codes are in line with the code table of resources for the new support system:  
<https://www.borzen.si/Portals/0/SL/CP/Sifrant%20virov%20nova%20shema.pdf>.

## **8. ENERGY SAVINGS USING HORIZONTAL MEASURES**

Horizontal measures to raise energy efficiency have an effect at the level of all sectors: in broad consumption (household, service and public sectors), industry and transport. The implementation of four horizontal measures has been envisaged: Energy performance contracting (Measure H.1), Environmental tax for polluting the air with CO<sub>2</sub> (Measure H.2), Information and awareness-raising activities (Measure H.3) and Education and training (Measure H.4). The scheme of exemption from payment of the CO<sub>2</sub> tax for the implementation of measures to reduce GHG emissions was not implemented under Measure H.2 in the 2011–2012 period. The other three measures were implemented at least in part; however, measurement of the effects in the form of the energy savings achieved is not envisaged.

### **8.1. Energy performance contracting (Measure H.1)**

The first energy performance contracting project in Slovenia was implemented in 2002. Since then, energy performance contracting projects have been carried out in various sectors (particularly in the public sector) for different EE and RES measures and different investment volumes, etc. Financial incentive grants for energy services to raise energy efficiency (energy performance contracting, etc.) were also put up for tender in large liable entities' programmes in 2012. A stimulating support environment for the development of energy performance contracting has been planned in previous documents; however, the tasks planned as part of Measure H.1 have mostly not been implemented. The energy performance contracting market therefore continues to be poorly developed, with only a number of providers present.<sup>146</sup>

### **8.2. Information and awareness-raising activities (Measure H.3)**

The preparation and implementation of long-term communications programmes for households, the public sector and SMEs have been envisaged as part of Measure H.3. These programmes have not been compiled. The provision of information is therefore continuing via the ENSVET network of energy advice offices (Chapter 2.4), with information on EE and use of RES measures continuing to be sent to consumers by other entities on the energy services market, such as energy companies (e.g. the Energy Solutions Centre, the Positive Energy EE and RES website, including the REUS Research Study into Energy Efficiency in Slovenia), the Eco Fund, local energy agencies, etc. These activities are also currently being implemented within final customer energy saving schemes (large liable entities schemes): 80 contracts were signed for the provision of information programmes in 2012m with almost EUR 639 000 in grants being earmarked for this.

### **8.3. Education and training (Measure H.4)**

In formal education settings, EE issues are also addressed in various education programmes (e.g. the 'Energy' course at the Faculty of Energy at the University of Maribor, the Eco School programme for nursery, primary and secondary schools, optional subjects in environmental protection, which include energy efficiency, in grammar schools and primary schools, etc.). The 2011 White Paper on Education in the

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<sup>146</sup> There is no official list of available providers and their qualifications, although an overview of the situation on the energy performance contracting market has been compiled as part of the Intelligent Energy – Europe projects. The latest information is available on the IEE TRANSPARENSE project website.  
<http://www.transparense.eu/si/si-domov/dobrodosli-na-spletni-strani-projekta-transparense>.

Republic of Slovenia<sup>147</sup> also mentions sustainable development, part of which includes energy efficiency, as one of the strategic challenges and policies of the national education system.

Since 2012 Slovenia has been providing training to those drawing up energy performance certificates for buildings. This training includes four days of lectures and the individual production and presentation of two certificates (calculated and metered). The training of 96 participants was successfully completed in that year, with the first licences for independent energy performance certificate specialists being allocated a year later (80 received their licences in 2013). Training programmes for independent specialists conducting audits of air-conditioning or heating systems did not get under way in 2011–2012.

Education and training has taken place or is still ongoing within various projects and programmes, e.g. 'Evropski Energy Manager – EUREM', training for green professions in the construction sector as part of the IEE<sup>148</sup> project BUILD UP SKILLS Slovenija, supplementary professional training for energy auditors as part of the IEE project ENFORCE, the training of engineers and architects in the fields of sustainable construction, energy efficiency, green public procurement at the Chamber of Engineers of Slovenia, the Chamber of Architecture and Environmental Planning and the Slovenian Association for Sustainable Construction – GBC Slovenija, etc.

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<sup>147</sup> [http://www.belaknjiga2011.si/pdf/bela\\_knjiga\\_2011.pdf](http://www.belaknjiga2011.si/pdf/bela_knjiga_2011.pdf)

<sup>148</sup> Intelligent Energy Europe Programme.