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MINISTRY OF THE ENVIRONMENT AND SPATIAL PLANNING

Slovenia's Second Biennial Report Under the United Nations Framework Convention on Climate Change

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Introduction

Slovenia is pleased to submit its Second Biennial Report (BR2) which has been prepared in accordance with the UNFCCC biennial reporting guidelines for developed country Parties (Decision 2/CP.17).

Slovenia's obligation in the first commitment period (2008–2012) of the Kyoto Protocol was to reduce its greenhouse gas emissions by 8% relative to its base year (1986). For the second commitment period Slovenia has decided to fulfil its commitment jointly with other EU Member States and Iceland. The EU's quantified economy-wide emission reduction target for the period 2013–2020 is -20%, compared to 1990 levels. Therefore, Slovenia and other Member States of the EU, have not submitted individual economy-wide emission reduction targets to the UNFCCC secretariat.

This biennial report from Slovenia contains: information on GHG emissions and emission trends for the time period 1986–2013; information on its quantified economy-wide emission reduction target; information on policies and measures; and information on projections. Furthermore, the report includes also information on Slovenia's financial support to developing Parties not included in Annex I to the Convention.

The information to be reported electronically in the Common Tabular Format in accordance with Decision 19/CP.18 is submitted separately to the UNFCCC using the CTF software.

1 Information on GHG emissions and trends, GHG inventory including information on national inventory system

1.1 Greenhouse gas emissions from 1986 to 2013

1.1.1 Description and Interpretation of Emission Trends for Aggregated GHG emissions

Total emissions of GHG in 2013 (LULUCF not considered) amounted to 18,165.8 kt CO2 eq., which represents a 10.5% decrease of emissions compared to the year 1986. In the period 1986−1991 a reduction of emissions was recorded due to the economic conditions at that time and the Republic of Slovenia gaining its independence. In the period 1992−1997 a strong increase of emissions was recorded, which was a consequence of increasing economic growth and revival of industrial production. In the second half of that period, the increased emissions were a consequence of "gasoline tourism" (25% of the total sale of motor fuels in the Republic of Slovenia), since the prices of motor fuels in the Republic of Slovenia were appreciably lower than in the neighbouring countries.

In the period 1998−1999, emissions decreased due to the measures undertaken by the neighbouring countries to curb the "gasoline tourism" and due to the increased supply of electrical energy from the Krško Nuclear Power Plant. In the period 2000−2002, emissions kept increasing again due to the renewal of the obligatory export of electrical energy from the Krško Nuclear Power Plant to the Republic of Croatia. After joining the EU in 2004 and after the admission of Romania and Bulgaria into the EU in 2007, emissions from road transport have increased drastically and prevailed over the decrease in other sectors which has occurred due to the policies and measures in manufacturing industry, agriculture and waste sectors.

In 2009, emissions from fuel used and industrial processes emissions started to decrease due to the global financial crisis. In 2010 and 2011, emissions stayed almost the same as in 2009, while in 2012 and 2013 a further decrease was observed.

CO_2 emissions in 2013 represented 83.5% of overall emissions of greenhouse gases. CO_2 emissions excluding LULUCF followed the consumption of energy and with regard to their proportion exerted a major impact on total emissions. Compared to 1986, they decreased by 9.0% in 2013. CH_4 emissions represented 10.7% of total emissions in 2013 (12.1% in 1986) and were 21.0% lower than in 1986. N_2O emissions represented 4.1% of total emissions and were 19.8% lower than N_2O emissions in 1986. F-gases represented 1.7% of total emissions and some (HFCs and SF_6) have shown significant increases since 1995 (base year for F-

gases), while PFCs decreased in 2008 and continued to decrease in 2009. Since then a slow increase of emissions has been observed.

1.1.2 Description and Interpretation of Emission Trends by Sector

According to the 2006 IPCC Guidelines, emissions estimates are grouped into five categories: Energy, Industrial Processes and Product Use, Agriculture, Land Use, Land-Use Change and Forestry (LULUCF), and Waste. Emissions are presented in the Figure 1 and in the Table 1.

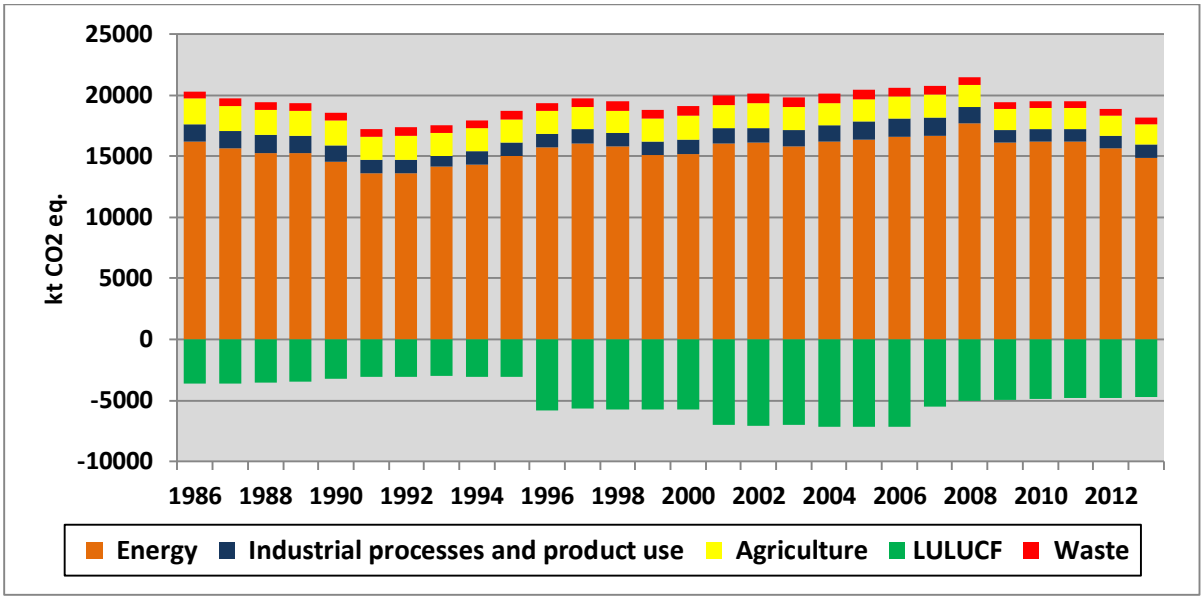

Figure 1: GHG Emissions in Slovenia by sector

By far the most important sector is Energy, which in 2013 accounted for 81.9% of total GHG emissions. In this sector emissions have decreased by 8.2%, compared to the levels in 1986. Within this sector, in the period 1986–2013, GHG emissions from the Energy Industry, as the biggest sub-sector, decreased by 15.6%. In the period 1999–2007, steep growth (+27.2%) was recorded due to the increased consumption of electrical energy.

Undoubtedly the greatest increase in GHG emissions was observed in the transport sector, by as much as 203.6% until 2008, due to the increase in road transport, while emissions from other modes of traffic slightly declined. In 2009 GHG emissions from transport decreased by 13.5% compared to 2008. The traffic emissions have further decreased by 1.1% in 2010, but increased again in 2011 by 8.2% and by 1.3% in 2012, while in 2013 a decrease of 5.4% was recorded.

There was an appreciable reduction of GHGs from industry between 1986 and 2001 (-50.3%). After 2001, a stabilisation of emissions was observed until 2008. Due to the global financial crisis, emissions from manufacturing industry and construction decreased in 2009 by 16.0%, in 2010 by 1.4%, in 2011 by 10.3%, in 2012 by 3.9%, and in 2013 by 0.2% compared to the previous year. Altogether since 2008, due to the economic crisis, emissions from manufacturing industries and construction have decreased by 28.8%.

Fugitive emissions from fuel represent only 3.1% of emissions in the sector and have decreased by 22.5% compared to emissions in 1986.

Since 1986, GHG emissions from Industrial Processes at first fell sharply to reach their lowest value in 1993, but then started to rise again and in 2007 were 7.1% above the 1986 level. Due to the global financial crisis and lower industrial production, emissions in 2009 were 26.9% below the 1986 emissions; in the period 2010 – 2013, emissions stayed almost the same. The most important GHG of this sector was carbon dioxide, with 68.6% of emissions from this category, followed by HFCs with 25.5%, N_2O with 3.3%, PFCs with 1.4%, and SF_6 with 1.2%. In this sector, no CH_4 emissions have occurred since 2011. The main source of emissions is Mineral Production, of which the production of cement and lime alone contributed 41.3% of the emissions in this sector.

In Agriculture, as the second most important sector, emissions in 2013 amounted to 1,675 kt CO_2eq., which represents 9.2% of all emissions. Agriculture represents the main source of methane and N_2O emissions, namely 59.2% of all methane emissions and 68.6% of all N_2O emissions. In the agricultural sector, N_2O emissions account for 30.6% of emissions, and CH_4 emissions account for 68.8% of emissions while CO_2 emissions are almost negligible. GHG emissions from agriculture show small variations for individual years, but the general trend is on the decrease. In 2013, emissions were 19.9% below those of the base year. The most important sub-sector represents emissions from enteric fermentation, which contributes 53.1% of all emissions from agriculture, followed by emissions from agricultural soils, with 24.8%; the rest is contributed by emissions of methane and N_2O from animal manure (21.4%) while emissions due to liming and urea applications represent only 0.6% of emissions in this sector.

In the LULUCF sector, the CO_2 sink was estimated at 4,746 kt CO_2eq. in 2013, which is 30% more than in 1986. The increase in sinks was primarily the result of an increase in timber growing stock in existing forests.

Methane emissions from the Waste sector are the second largest source of methane and represent 23.6% of all methane emissions in Slovenia in 2013. The proportion of methane emissions in this sector amounts to 87.7%, while the remaining part represents N_2O (10.1%), while the CO_2 emissions are nearly negligible (2.2%). Solid waste handling contributes 69.7% to the total emissions from this sector, wastewater handling 26.3%, incineration of waste 2.2% and composting 1.7%. Emissions are 11.4% lower than in 1986. Compared to the base year, emissions from solid waste disposals are almost the same despite a strong decrease in the last 10 years (40.0% since 2004). Emissions from wastewaters are 36.7% lower than in 1986, mostly due to recovery of gas in wastewater treatment plants and the decrease in industrial production.

Table 1: GHG emissions and removals in Slovenia by sectors and sub-sectors 1986–2013.

	1986	1990	1995	2000	2005	2010	2012	2013	Change to 1986 (%)	Change to 2012 (%)
1. Energy	16,214	14,516	15,024	15,184	16,397	16,166	15,622	14,878	-8.2	-4.8
A. Fuel Combustion	15,624	14,006	14,539	14,713	15,872	15,646	15,106	14,421	-7.7	-4.5
1. Energy Industries	6,841	6,375	5,725	5,594	6,448	6,340	6,053	5,774	-15.6	-4.6
2. Man. Industries and Construction	4,455	3,149	2,632	2,275	2,475	1,910	1,646	1,641	-63.2	-0.2
3. Transport	2,028	2,733	3,823	3,857	4,427	5,265	5,772	5,459	169.2	-5.4
4. Other Sectors	2,258	1,718	2,357	2,983	2,518	2,129	1,632	1,544	-31.6	-5.4
5. Other	41	32	1	3	3	3	3	3	-92.7	-10.8
B. Fugitive Emissions from Fuels	590	509	485	470	524	520	516	457	-22.5	-11.4
1. Solid Fuels	548	459	440	423	472	472	477	420	-23.4	-12.0
2. Oil and Natural Gas and other…	42	50	45	48	53	48	39	37	-11.9	-3.2
2. Industrial Processes	1,405	1,392	1,086	1,188	1,440	1,032	1,047	1,087	-22.6	3.9
A. Mineral Industry	756	706	553	610	647	489	417	477	-36.9	14.4
B. Chemical Industry	81	70	80	100	119	75	36	45	-43.8	25.3
C. Metal Industry	469	551	373	357	445	147	224	223	-52.4	-0.6
D. Non-energy products	11	13	16	20	22	19	20	16	42.0	-19.8
E. Electronics industry	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
F. Product uses as ODS substitutes	NO	NO	35	45	147	257	277	278	NA	0.2
G. Other product manufacture and use	89	52	29	56	60	45	73	49	-44.6	-32.6
H. Other	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
3. Agriculture	2,089	2,011	1,906	1,935	1,821	1,741	1,689	1,675	-19.8	-0.8
A. Enteric Fermentation	982	936	903	947	914	901	898	889	-9.5	-1.0
B. Manure Management	595	587	494	460	430	387	360	359	-39.7	-0.3
C. Rice Cultivation	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
D. Agricultural Soils	459	435	452	483	445	436	420	416	-9.3	-0.8
E. Prescribed Burning of Savannahs	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
F. Field Burning of Agricultural Residues	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
G. Liming	44	44	44	33	20	6	1	1	-98.5	0.0
H. Urea applications	9	9	12	12	12	11	11	10	13.9	-7.9
I. Other carbon-containing fertilizers	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
J. Other	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO

	1986	1990	1995	2000	2005	2010	2012	2013	Change to 1986 (%)	Change to 2012
4. Land Use, Land-Use Change and Forestry	-3,646	-3,188	-3,058	-5,735	-7,148	-4,888	-4,755	-4,746	30.2	-0.2
A. Forest Land	-5,094	-5,082	-5,115	-7,763	-9,213	-7,131	-7,108	-7,158	40.5	0.7
B. Cropland	287	298	309	325	340	353	359	361	25.7	0.4
C. Grassland	711	735	766	796	867	935	958	970	36.4	1.2
D. Wetlands	45	46	48	49	52	55	56	57	25.9	0.9
E. Settlements	713	730	751	785	826	859	871	877	23.1	0.7
F. Other Land	150	152	155	158	164	170	172	173	15.6	0.6
G. Harvested wood products	-457	-67	28	-85	-185	-129	-64	-25	-94.4	-60.4
H. Other	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
6. Waste	592	644	678	767	798	555	540	525	-11.4	-2.7
A. Solid Waste Disposal	372	433	483	568	605	401	393	366	-1.5	-6.7
B. Biological treatment of solid waste	NO	NO	NO	NO	3	5	9	9	NA	-2.8
C. Incineration and open burning of	1	1	0	2	2	5	5	12	778.8	116.5
D. Waste water treatment and	219	210	195	196	188	143	133	138	-37.0	4.1
E. Other	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
6. Other	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO

Memo Items:

International Depots	58	48	57	69	137	140	247	295	412.9	19.8
Aviation	58	48	57	68	61	74	67	74	27.7	9.8
Marine	NO	NO	NO	NO	75	66	179	221	NA	23.4
Multilateral Operations	NO	NO	NO	1	0	0	0	0	NA	158.3
CO_2 Emissions from Biomass	2,350	2,178	2,123	1,984	2,393	2,719	2,906	2,967	26.3	2.1
Long term storage of C in waste	584	747	999	1,304	1,604	1,823	1,853	1,861	218.6	0.4
Indirect N_2O	162	154	150	156	144	140	134	132	-18.8	-1.3
Total CO_2 eq. Emissions without	20,300	18,562	18,695	19,074	20,456	19,494	18,898	18,166	-10.5	-3.9
Total CO_2 eq. Emissions with LULUCF	16,654	15,374	15,637	13,339	13,307	14,606	14,143	13,420	-19.4	-5.1

1.2 The national system

1.2.1 Summary information on National Inventory Arrangements

In Slovenia, the institution responsible for GHG inventory is the Slovenian Environment Agency (ARSO). In accordance with its tasks and obligations to international institutions, the ARSO is charged with making inventories of GHG emissions, as well as emissions that are defined in the Convention on Long Range Transboundary Air Pollution within the specified time limit. In making the inventories, the Environmental Agency cooperates with numerous other institutions and administrative bodies which relay the necessary activity data and other necessary data for the inventories (see Figure 2 below).

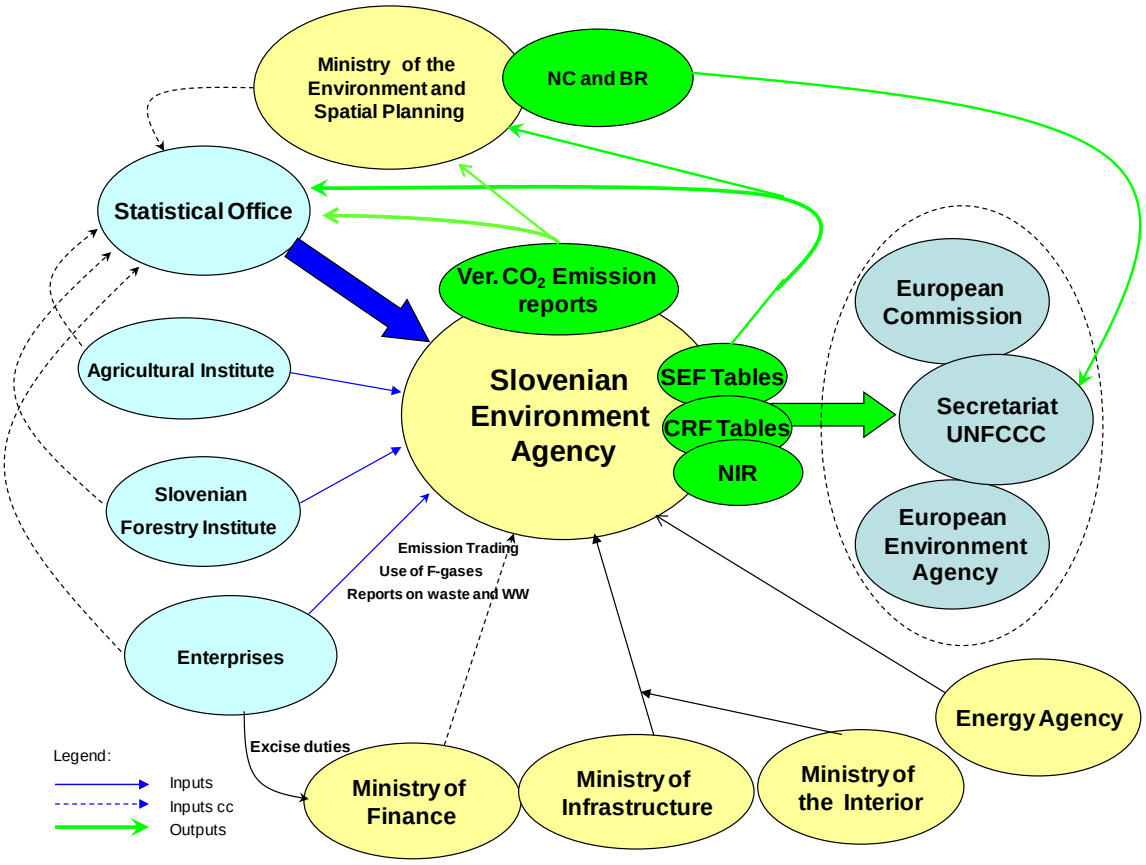

Figure 2: Data flow in the Slovenian Inventory System

A Memorandum of Understanding has been concluded with institutions that participate in inventory preparation, binding these institutions to submit verified and quality data to the Environmental Agency in due time.

Part of the legal and institutional arrangements in place as the basis for the national system concerns the data availability for the annual compilation of the GHG inventory. The main data source for the Slovenian inventory preparation is the Statistical Office of the Republic of Slovenia (SORS). The compilation of several statistics is regulated by European and Slovenian statistical legislation and partly complemented by contracts at national level.

At the beginning of 2007, the agreement between the Statistical Office of the Republic of Slovenia (SORS) and the Environmental Agency came into force. Accordingly, all statistical data necessary for preparing GHG inventories are available each year by October 30 at the latest. In exchange, ETS data and emission estimates are reported to the Statistical Office within a defined time frame. In 2014 the new agreement was signed which includes more data sets and updated time lines.

Other data sources include reporting obligations under national and European regulations and reports of companies and associations. Experts from the Slovenian Forestry Institute and the Agricultural Institute of Slovenia work on GHG inventories according to the standing rules of institutes (ordinance). Financing is assured by governmental institutions according to the yearly work plan. All data from external institutions are submitted to the Slovenian Environmental Agency, where they are archived.

1.2.2 Overview of inventory planning, preparation and management

A process of inventory preparation is designed according to the PDCA-cycle (Plan – Do – Check – Act). This is a generally accepted model for pursuing systematic quality work according to international standards, in order to ensure the maintenance and development of the quality system.

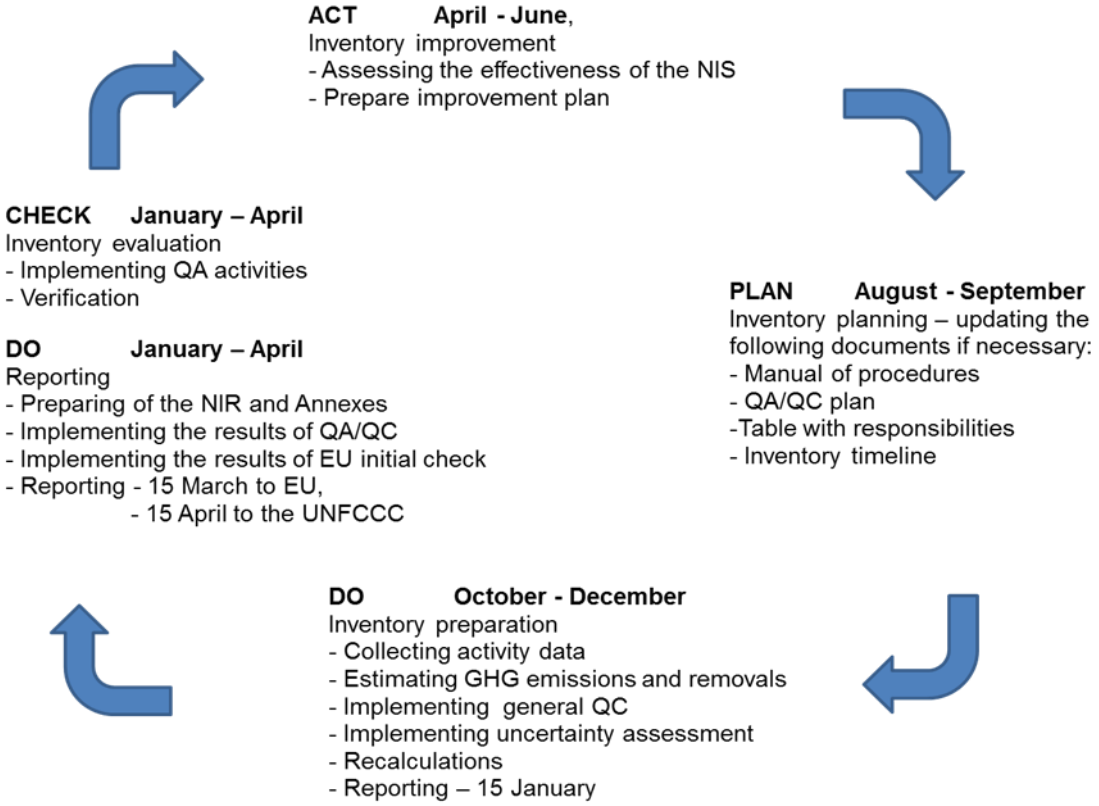

Figure 3: The inventory cycle.

This structure is described in decision 19/CMP.1 and in the 2006 IPCC Guidelines. The system consists of inventory planning, inventory preparation, inventory quality checking

and follow-up improvements which are integrated into the annual cycle and preparation as illustrated in the Figure 3.

Owing to the ever-increasing obligations of Slovenia with regard to reporting, the ARSO has decided to implement a unified system of data collection for the purposes of making inventories, as well as secure reliable financing in accordance with the annual program of its work.

For submitting reports to different institutions, various report formats have been devised, since the same data are used to report to the UNFCCC, EEA, EC, and CLRTAP. All external reports of the ARSO are prepared in accordance with ISO 9001 via the Agency's reporting service, which keeps inventories of reports. Parallel to this, emissions data are submitted to the SORS, which makes them available in its publications and submits them to EUROSTAT and the IEA.

Before the inventory is reported to the EU, EEA or UNFCCC Secretariat, it goes through an approval process. The institution designated for approval is the Ministry of the Environment and Spatial Planning.

1.2.3 Quality assurance, quality control and verification plan

In 2014, Slovenia developed and implemented a new Quality Assurance and Quality Control Plan as recommended by the IPCC Good Practice Guidelines and 2006 IPCC Guidelines. The QA/QC and the Manual of Procedures have been elaborated in 2005 and updated in 2014. This update was necessary due to the new methodology guidance (IPCC, 2006) and also in response to recommendations from the UNFCCC review report in 2013. In the same year the QA/QC team was established.

The inventory management as part of the quality management system includes a control system for data and calculations, for records and their archiving as well as documentation on QA/QC activities. This ensures the necessary documentation and archiving for future reconstruction of the inventory and for the timely response to requests during the review process.

More detailed information on inventory data and inventory arrangements can be found in Section 1 of the Slovenian National Inventory Report 2015.

1.2.4 Summary information on Changes to National Inventory Arrangements

There have been no significant changes to the inventory system since the last Biennial Report.

2 Quantified economy-wide emission reduction target

In 2010, the EU submitted a pledge to reduce its GHG emissions by 2020 by 20% compared to 1990 levels, in order to contribute to achieving the ultimate objective of the UNFCCC: 'to stabilise GHG concentrations at a level that would prevent dangerous anthropogenic (human-induced) interference with the climate system', or, in other words, to limit the global temperature increase to less than 2°C compared to temperature levels before industrialization[1].

As this target under the Convention has only been submitted by the EU-28 and not by each of its Member States (MS), there are no specified Convention targets for single MS. Due to this, Slovenia, as part of the EU-28, takes on a quantified economy-wide emission reduction target jointly with all Member States. See Table 2 for key facts of the Convention target of the EU-28.

Table 2: Key information on joint quantified economy-wide emission reduction target of the EU-28 and its Member States.

Parameters	Target
Base Year	1990
Target Year	2020
Emission Reduction target	-20% in 2020 compared to 1990
Gases covered	CO2, CH4, N2O, HFCs, PFCs, SF6
Global Warming Potential	AR4
Sectors Covered	All IPCC sources and sectors, as measured by the full annual inventory, partly international aviation.
Land Use, Land-Use Change, and Forests (LULUCF)	Excluded
Use of Flexible Mechanisms	Possible to certain extent under the Emissions Trading System (EU-ETS) and the Effort Sharing Decision (ESD).

The definition of the Convention target for 2020 is documented in the revised note provided by the UNFCCC secretariat on the 'Compilation of economy-wide emission reduction targets to be implemented by Parties included in Annex I to the Convention'[2]. In addition, the EU provided additional information relating to its quantified economy-wide emission

1 FCCC/CP/2010/7/Add.1

2 FCCC/SB/2011/INF.1/Rev.1 of 7 June 2011

reduction target in a submission as part of clarifying the developed country Parties' targets in 2012[3].

In addition to the Convention target, the EU and its member states have a commitment under the Kyoto protocol for the period 2013–2020. For the EU as a whole, the Kyoto commitment is the same as the Convention target except that it also includes LULUCF.

With its 2020 climate and energy package, the EU set internal rules to underpin the implementation of the target under the Convention. The package introduced a clear approach to achieving the 20% reduction in total greenhouse gas emissions from 1990 levels, which is equivalent to a 14% reduction compared to 2005 levels. This 14% reduction objective is divided between two sub-targets, equivalent to a split of the reduction effort between EU-ETS and non-ETS sectors of two thirds versus one third[4].

Under the revised EU-ETS Directive[5], one single EU-ETS cap covers the EU Member States and the three participating non-EU Member States (Norway, Iceland and Liechtenstein), i.e. there are no further differentiated caps by country. For allowances allocated to the EU-ETS sectors, annual caps have been set for the period from 2013 to 2020; these decrease by 1.74% annually, starting from the average level of allowances issued by Member States for the second trading period (2008–2012). The annual caps imply interim targets for emissions reductions in sectors covered by the EU-ETS for each year until 2020. For further information on the EU-ETS and for information on the use of flexible mechanisms in the EU-ETS see EU-BR2 chapter 4.2.2.

Non-ETS emissions are addressed under the Effort Sharing Decision (ESD)[6]. The ESD covers emissions from all sources outside the EU-ETS, except for emissions from international maritime transport, domestic and international aviation (which were included in the EU-ETS from 1 January 2012) and emissions and removals from land use, land-use change and forestry (LULUCF). It thus includes a diverse range of small-scale emitters in a wide range of sectors: transport (cars, trucks), buildings (in particular heating), services, small industrial installations, fugitive emissions from the energy sector, emissions of fluorinated gases from appliances and other sources, agriculture and waste. Such sources currently account for about 60% of total greenhouse gas emissions in the EU.

While the EU-ETS target is to be achieved by the EU as a whole, the ESD target was divided into national targets to be achieved individually by each Member State. In the Effort Sharing Decision, national emission targets for 2020 are set, expressed as percentage changes from

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3 The EU submission is documented in FCCC/AWGLCA/2012/MISC.1 from 24 April 2012 with the title "Additional information relating to the quantified economy-wide emission reduction targets contained in document FCCC/SB/2011/INF.1/Rev.1"

4 Directive 2009/29/EC of the European Parliament and of the Council of 23 April 2009 amending Directive 2003/87/EC so as to improve and extend the greenhouse gas emission allowance trading scheme of the Community (OJ L 140, 05.06.2009, p. 63)

5 Directive 2009/29/EC of the European Parliament and of the Council amending Directive 2003/87/EC so as to improve and extend the greenhouse gas emission allowance trading scheme of the Community

6 Decision No 406/2009/EC of the European Parliament and of the Council of 23 April 2009 on the effort of Member States to reduce their greenhouse gas emissions to meet the Community's greenhouse gas emission reduction commitments up to 2020

2005 levels. These changes have been transferred into binding quantified annual reduction targets for the period from 2013 to 2020 (EC 2013)[7,8], expressed in Annual Emission Allocations (AEAs).

The quantified annual reduction targets of Slovenia in the period 2013–2020 are set to 12.324 Million AEAs in 2013, and to 12.533 Million AEAs in 2020. Targets for intermittent years follow the linear interpolation between the listed values. Thus, Slovenia committed not to increase emissions in sectors covered under the ESD more than 4% by 2020 compared to 2005 levels.

In the year 2013, verified emissions from stationary installations covered under the EU-ETS in Slovenia amounted to 7.39 million tonnes of CO2 equivalents. With total GHG emissions of 18.17 Mt CO2 equivalent (without LULUCF) the share of ETS emissions is 40.7%.

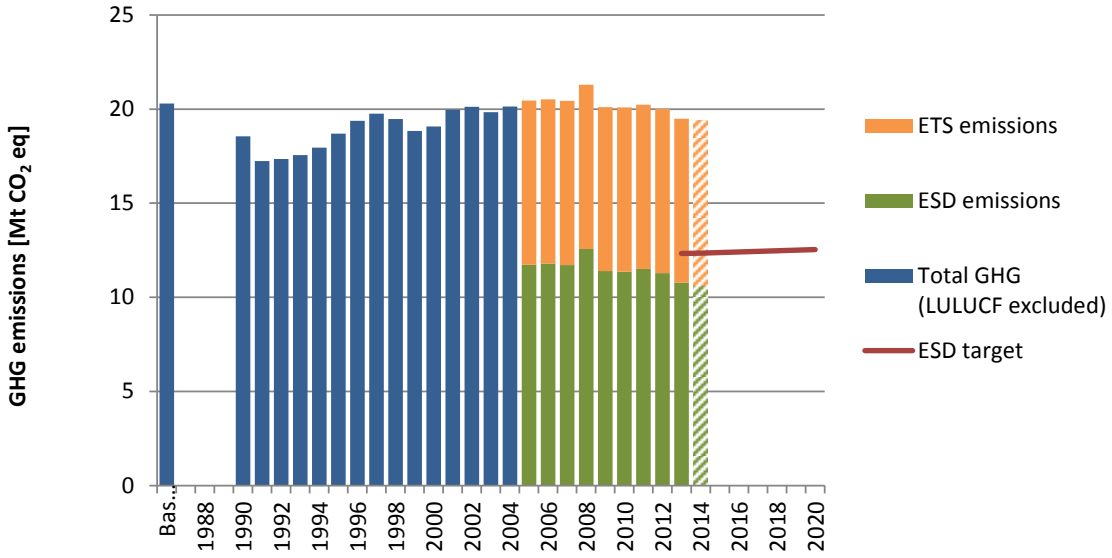

Figure 4: Trends in greenhouse gas emissions and the separation into EU-ETS and ESD of Slovenia.

The monitoring process is harmonized for all EU MS, especially laid down in the Monitoring Mechanism Regulation[9]. The use of flexible mechanisms is possible under the EU-ETS and the ESD. For the use of CER and ERU under the EU-ETS, please refer to the European BR2 (EU-BR2).

The ESD allows Member States to make use of flexibility provisions for meeting their annual targets, with certain limitations. There is an annual limit of 3% for the use of project-based

7 Commission decision of 26 March 2013 on determining Member States' annual emission allocations for the period from 2013 to 2020 pursuant to Decision No 406/2009/EC of the European Parliament and of the Council (2013/162/EU)

8 Commission Implementing Decision of 31 October 2013 on the adjustments to Member States' annual emission allocations for the period from 2013 to 2020 pursuant to Decision No 406/2009/ EC of the European Parliament and of the Council (2013/634/EU)

9 Regulation (EU) No 525/2013 of the European Parliament and of the Council of 21 May 2013 on a mechanism for monitoring and reporting greenhouse gas emissions and for reporting other information at national and Union level relevant to climate change and repealing Decision No 280/2004/EC

credits for each MS. If these are not used in any specific year, the unused part for that year can be transferred to other Member States or be banked for own use until 2020.

As Slovenia (together with Austria, Belgium, Cyprus, Denmark, Finland, Ireland, Italy, Luxembourg, Portugal, Spain and Sweden) fulfils additional criteria as laid down in ESD10 Article 5(5), an additional use of credits is possible from projects in Least Developed Countries (LDCs) and Small Island Developing States (SIDS) up to an additional 1% of Slovenia's verified emissions in 2005. These credits are not bankable and transferable.

2.1 Progress to quantified economy-wide emission reduction target

For the quantification of the progress to 2020 targets, the development of GHG emissions is the key indicator. The Convention target of a reduction of emissions by 20% from 1990 to 2020 only refers to the emissions of the EU-28 as a whole. GHG emissions of EU-28 are calculated as the sum of MS emissions. With this, GHG emissions of Slovenia are part of EU-28 emissions with a percentage of 0.41% in the year 2013.

The development of GHG emissions is reported in CTF Table 4 for Slovenia. Emissions in the sector of LULUCF are not included under the Convention target, therefore they are not included in CTF Tables 4 and 4(a).

The use of flexible mechanisms takes place on the one hand by operators in the EU-ETS, on the other hand by governments for the achievement of ESD targets. For information on the use in the EU-ETS please see the 2nd BR of the European Union.

The use of flexible mechanisms under the ESD cannot be quantified at the moment: As the compliance assessment for the first year 2013 under the ESD will only take place in 2016, any potential use of units for the first year will only take place in 2016. Thus, for the 2nd BR the EU and its MS can only report that no units have been used under the ESD so far. This is why no quantitative information can be given for the use of flexible mechanisms in BR2 in CTF Table 4b.

At the moment Slovenia does not plan to make use of flexibility provisions under the ESD.

[10] Decision No 406/2009/EC

3 Progress in achieving quantified economy-wide emission reduction targets and other relevant information

3.1 Background and recent policy development

The Operational Programme of measures for Reducing GHG Emissions until 2020 (OP GHG 2020) has set the objective of changing Slovenia into a resource efficient, green and competitive low-carbon economy and it is the key implementation plan for measures aiming at achieving the legally binding Slovenia's target for reducing GHG emissions until 2020 as set in in the Decision 2009/406/EC under the EU Climate and Energy Package. The Programme was adopted by the Government of the Republic of Slovenia in December 2014.

A new OPGHG-2020 is mainly based on the well-established instruments known from the previous operational programme. The implementation of measures has been assigned by the Government of the Republic of Slovenia on ministries responsible for individual areas of work. The new programme includes better defined assignments for the implementation of activities by individual ministries, and it includes time limits and defined resources and financial funds.

Today, the majority of measures are being implemented by pursuing several objectives at the same time which contributes to a significant decrease of costs for the implementation of measures and to an increase in benefits owing to synergy and multiplicative effects. Such are, for example, the energy efficiency measures (EE) and renewable energy sources measures (RES) which reduce air pollution due to SO_2 and NO_x pollutants and dust particles while simultaneously decreasing GHG emissions This policy will be additionally strengthened in the implementation of the climate policy until 2020. Therefore, the reduction of GHG emissions will mainly depend on the implementation of the adopted sectoral policies having integrated climate objectives and on the further inclusion of climate objectives and climate change mitigation measures into new sectoral programmes that are in being prepared.

Even more so than the previous OP GHG-1, the OP GHG 2020 is linked to the implementation of sectoral and development programmes, defining and supplementing the activities for the reduction of GHG emissions. These are manly programme documents in the area of energy efficiency, renewable energy sources, municipal waste management, implementation of the European cohesion policy and Rural development programme. The Table 3 presents in detail the new or renewed programme documents which are important for the climate change mitigation, only changes and updates compared to the information provided in the Slovenia’s 6th national communication and first biennial report under the UNFCCC (SI-NC6/BR1) are given.

In comparison to previous reporting, an important progress has been achieved in regard to providing for the financing of measures by way of adopting the Operational Programme for Implementing European Cohesion Policy for 2014–2010 (OP ECP) and the Rural Development Programme of the Republic of Slovenia for the period 2014–2020. In addition, revenues from the European GHG emission allowance trading scheme are now fully deposited into the Climate Change Fund, and not partially as in the period before 2015.

Table 3: Strategic documents of the Republic of Slovenia relevant to the mitigation of climate change. Changes and updates compared to the information provided in the SI-NC6/BR1.

Document title	Adoption	Implementation management	Monitoring and reports on implementation	Energy supply	Transport	General use	Industry	Agriculture	LULUCF	Waste
Climate changes										
Operational Programme of measures for Reducing GHG Emissions until 2020, (OP GHG-2020).	2014, Government of the Republic of Slovenia	Ministry responsible for environmental protection	Annually (2016)	✓	✓	✓	✓	✓	✓	✓
Programme for Resources Use of Climate Change Fund in 2015 and 2016	2015, Government of the Republic of Slovenia		Annually		✓	✓				
Development/financing of measures										
Operational Programme for the Implementation of the EU Cohesion policy in the period 2014–2020, (OP EKP).	2014, Government of the Republic of Slovenia	Ministry responsible for development	Annually	✓	✓	✓	✓			✓
Energy										
Energy Efficiency Action Plan for the period 2014–2020, (AP-EE 2020).	2015, Government of the Republic of Slovenia	Ministry responsible for energy	Annually	✓	✓	✓	✓			

Document title	Adoption	Implementation management	Monitoring and reports on implementation	Energy supply	Transport	General use	Industry	Agriculture	LULUCF	Waste
National Action Plan for Nearly-Zero-Energy Buildings for the period until 2020, (AP nZEB).	2015, Government of the Republic of Slovenia	Ministry responsible for energy				✓				
Long-term Strategy for promoting investments in the energy renovation of buildings, (LTSERB).	2015, Government of the Republic of Slovenia					✓				
Transport										
Transport development strategy in the Republic of Slovenia.	2015, Government of the Republic of Slovenia	Ministry responsible for transportation			✓					
Agriculture and forestry										
Rural Development Programme of the Republic of Slovenia for the period 2014–2020.	2014 (adopted in 2015)	Ministry responsible for agriculture					✓			

Document title	Adoption	Implementation management	Monitoring and reports on implementation	Energy supply	Transport	General use	Industry	Agriculture	LULUCF	Waste
Other/development										
Resolution on the National Housing Programme 2015–2025.	2015, National Assembly	Ministry responsible for spatial planning				✓				
Strategy for smart specialization of Slovenia (S4)	2015, Government of the Republic of Slovenia	Ministry responsible for development					✓			
Framework for transition into green economy with an action plan for implementation and competence activities for 2015–2016.	2015, Government of the Republic of Slovenia	Ministry responsible for environmental protection					✓			

3.2 Regional and local activities in regard to climate change

Administratively, Slovenia is divided into 210 municipalities of which 11 have the status of city municipality[11]. There is no regional level of governance in Slovenia. This is why the majority of programmes and measures are implemented at the national level and all subsidies dedicated for the reduction of GHG emissions are allocated at the national level. However, municipalities have several obligations related to the planning of measures for the reduction of GHG emissions and an important role in the preparation of projects and monitoring their impacts.

A local energy concept is mandatory for all municipalities in accordance with the Energy Act (EZ-1)[12]. On the basis of the local energy concepts (LEC), the use of renewable sources of energy is planned in the territory of a local community. Objectives and measures for achieving these objectives are defined in LECs and they must be compliant with action plans in the area of EE and RES and the national umbrella energy policy[41]. A LEC is an important basis for development planning at the level of a local community as it presents the mandatory expert basis for the preparation of spatial plans of the local community. Bodies of a local community and providers of energy-related activities in the area covered by an individual LEC are obliged to align the respective development programmes and related activities with objectives and measures envisaged in LEC. The local energy concept is a mandatory document which must be prepared by a local community (possibly in cooperation with other communities) at least every ten years. The methodology for the preparation of LEC is regulated, and in accordance with EZ-1, a revised methodology is being prepared. Practically all municipalities have adopted LEC. Important decisions for reducing GHG emission are also adopted by municipalities within the scope of municipal spatial plans.

The environment protection programmes have been adopted by all Slovenian city municipalities; these programmes also include objectives for reducing emissions of substances in the air, for the improvement of the air quality, for reducing GHG emissions and the long-distance transfer of hazardous substances. They also include EE measures for achieving objectives set in the regard to light pollution.

Air quality plans have been adopted by all municipalities with excessive particle pollution (PM10 particles). The EE measures, simultaneously also being measures for reducing GHG emissions, hold an important role. The implementation of measures is promoted by the State by providing additional subsidies financed from the Climate Change Fund.

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11 Municipalities are generally very small, in only two municipalities the population exceeds 100,000 and there are four exceeding 50,000 inhabitants.

12 Official Gazette of the Republic of Slovenia, No. 17/2014, prior Energy Act, Official Gazette RS, No. 27/07 - Official Consolidated Text 70/08, 22/10, 37/11 - Constitutional Court Decision, 10/12 and 94/12–ZDoh-2L

On a voluntary basis, municipalities have joined various international initiatives, such as, for example the Covenant of Mayors Committed to Local Sustainable Energy. These municipalities have set the target of reducing GHG emissions by more than 20% by 2020, which has been defined in their Sustainable Energy Action Plans. In 2014, the said Convention included 28 Slovenian municipalities with the total of 36.5% of all inhabitants of Slovenia; of this number, 11 municipalities have already adopted the Sustainable Energy Action Plans.

As described in detail in the measure regarding the public passenger transport (M-4), integrated transport strategies are being prepared by municipalities, aiming at promoting sustainable modes of transport.

The eight local energy agencies, which have been established by municipalities and supported by the state and European programmes in 20016, take an active part when drafting local energy concepts and when implementing measures for efficient energy use and exploitation of renewable energy resources in municipalities. Every agency unites the founding municipalities in the broader geographical area and functions as a promoter of projects, supporting local communities in the development of projects. Their assistance makes municipalities unite when preparing bids for international calls to tender for technical assistance in the implementation of EE and RES measures. They play an important role in applying new instruments in practice, such as, for example, the Energy Performance Contracting, Energy Management, and other instruments. They are an important player in the cross-border and regional cooperation of municipalities in the area of sustainable energy and mitigation of climate change.

Municipalities also get united in the implementation of climate change mitigation measures, particularly in regard to the construction of infrastructural facilities for waste management (see M-27 measure) and in regard to sustainable mobility, including the infrastructure for the development of public passenger transport, non-motorised transport modes and introducing alternative fuels into transport sector (see measures: M-14, M-17, M-19).

A leading role of public sector is important for implementing measures in the other sectors, Local communities, and particularly schools have taken up a special place in this regard. In the period from 2012 to 2014, the Eco Fund granted financial incentives for low-energy or passive building construction or renovation of community-owned buildings in which educational activities are carried out; in total, 22 projects received the Fund's support in the amount of EUR 4.2 million of grants, with the amount allocated for reducing GHG emissions being estimated to reach EUR 0.7 million. Within the scope of the Operational Programme of Environmental and Transport Infrastructure Development (OP ETID), the priority axis for Sustainable use of energy, there were 308 projects for the energy-saving renovation of buildings owned by local communities that have received grants, stimulating EUR 130 million of investment into measures regarding efficient use of energy and renewable sources of energy with a total reduction of GHG emissions by 10.7 kt/year; the majority of these projects were carried out in 2013–2015 (see M-11 measure). The

promotion of energy-saving renovation of community-owned buildings is anticipated to take place in the period up to 2020. Larger programmes regarding the preparation of projects for energy-saving renovation of buildings is carried out in municipalities, such as, for example, the energy-saving renovation of public buildings in Ljubljana, financed from funds for ELENA technical assistance facility. Several other similar programmes are also being developed.

As described in the presentation of the M-11 measure, the introduction of energy management systems in public sector is mandatory, including community-owned buildings (administration buildings, primary schools, educational institutions, health centres and similar buildings). Energy accounting is an important element of energy management and will enable municipalities to monitor closely and thoroughly the effects of measures for the energy-saving renovation of buildings. The programmes providing financial incentives for measures implemented by state institutions are monitored at the state level.

3.3 Multi sectoral instruments

(M-1) THE GHG EMISSIONS TRADING SYSTEM (EU-ETS)

Sectors affected by the measure implementation: *heat and electricity generation, energy use in industry and construction, industrial processes*

The objective of the GHG emissions trading scheme are as follows: to support commitments for reducing emissions; to enable lower costs for the corporate entities by enabling the reduction of emissions where this is the cheapest; to equalise the costs of the reduction of the GHG emissions in the entire EU area by allowing inter-governmental trading - this will minimise the restriction of competition and discrimination of the position of corporate entities (operators of plants responsible for GHG emissions) in the common internal EU market, and facilitate the reduction of GHG emissions in the future by upgrading innovation regarding the reduction of GHG emissions.

The following changes have been enforced from the last reporting. The scope of EU-ETS for aviation has been modified. Since 2012, this framework only includes emissions from flight from, in and within the European Economic Area (composed by EU-28 Member States and Iceland, Lichtenstein and Norway). Before 2012, all flights, i.e., EU inbound and EU outbound flights were treated equally, whereas by taking the Decision No. 377/2013/EU, the rule has ceased to apply for flights to and from aerodromes in countries outside the Union any more. As a result of passing a decision in Regulation EU No 421/2014, only intra- European Economic Area flights are included in the EU-ETS scheme for the 2013–2016 period and additional exceptions applied for low-emission operators.

In 2015, the legislative proposal regarding the EU-ETS Phase 4, i.e., for the period from 2021 to 2030, was presented for consultation, including the following

amendments: the overall number of emission allowances will decline at an annual rate of 2.2% from 2021 onwards. Support mechanisms for innovation will be increased through income from EU-ETS auctions and the modernisation of the power sector and wider energy systems and boosting energy efficiency in Member States will be enhanced.

Since 2013, in Slovenia there have been 51 operators included in the EU-ETS Phase 3, representing 40.7% of the total GHG emissions. Operators come from the following IPCC sectors: energy supply with majority of operators from this sector being included in the EU-ETS scheme, representing 97% of total emissions from this sector; fuel use in industry and construction, with 63% of emissions of the sector is covered by the EU-ETS scheme; and industrial processes with 60% of GHG emissions included in the EU-ETS scheme.

In the 2005–2012 period, the emissions of the EU ETS sector decreased by 12.7%, in case of transformations by 6.2%, whereas as regards fuel use in industry process emissions by 30.0%. The structure of operators slightly changed in 2013; emissions of operators falling out of the system amount to less than 1% of emissions of this sector. In 2014, the EU ETS emissions decreased significantly, precisely, by 17.2% owing to reduced emissions from fuel use in the energy supply sector (by -25.5%) while the increase of emissions from fuel use from the industry process emissions increased by 9%.

The legally binding target of reducing GHG emissions by 21% until 2020 in regard to the GHG level from 2005 was adopted for EU ETS at the EU-28 level, being a common objective for EU-28 which is not further differentiated by Member States. A political decision was made as regards the period until 2030, i.e., that the target reduction stands at 43%.

The Ministry of the Environment and Spatial Planning (MOP) is responsible for implementing the scheme, with the assignments being mainly oriented towards providing for the implementation of provisions of the Environmental Protection Act which refer to the emission allowances trading. The EU is responsible for designing the system.

(M-2) ENVIRONMENTAL TAX ON AIR POLLUTION DUE TO CO2 EMISSIONS

Sectors affected by the implementation of the measure: *energy use in industry and construction, energy use in households, the service sector, transport and agriculture*

In Slovenia, the environmental tax on air pollution due to CO_2 emissions (the CO_2 environmental tax) was introduced on 1 January 1997, the current legal basis for the tax is provided in the Decree on environmental tax on carbon dioxide emissions [13]

[13] Decree on environmental tax on carbon dioxide emissions (Official Gazette of the Republic of Slovenia, No. 47/2013)

and the Environmental Protection Act [14]. The environmental tax is paid for the fuel use and, since 2008, for the use of fluorinated greenhouse gases. The use of motor gasoline and diesel fuel have been taxed since 2012 which used to be exempt from the tax payment before.

The basis for the calculation of the environmental tax for the pollution of air due to CO2 emissions is the sum of the pollution units of the purchased amount of fuels or pollution units of fluorinated greenhouse gases. The price per unit of pollution is determined by the Government of the Republic of Slovenia and, since 6 January 2015, has amounted to 17.28 €/t CO_2 [15] while amounting to 14.4 €/t CO_2 prior to that price; this is the most important change of this measure recorded since the last reporting.

The use of gaseous fuels, liquid petrol gas (LPG) and kerosene used as a propellant is exempt from the payment of the environmental tax which, however, does not apply for private flights. The exemption also applies to companies that are included in the EU ETS system (holders of permits for the emissions of greenhouse gases) and the de minimis decision. In the past, the environmental tax was supplemented with an exemption scheme on the basis of voluntary agreements which expired in 2010.

The above mentioned instrument has been introduced in order to internalise the external costs of air pollution due to CO_2 emissions and, being an economic instrument, was aimed to reduce CO_2 emission through the fuel price. The CO_2 tax improves the competitiveness of renewable energy sources and of other energy products with lower specific emissions and the competitiveness of energy efficiency measures. The measure has effects simultaneously with other measures for promoting improvements in energy efficiency and fuel substitution in transport and in buildings and measures for reducing F-gases emissions, for this reason impacts of this measure have not been separately assessed.

(M-3) TAXES AND CHARGES

Sectors affected by the implementation of the measure: *energy use in industry and construction, energy use in households, the service sector, transport and agriculture*

The reason for the taxation of energy primarily stems from the nature of the budget. The main goal of the tax system is providing a stable source of fiscal revenue. This goal also takes into account other goals of government policies (social, economic, energy and environmental) but these goals are subordinated to the above mentioned primary goal. As regards the energy taxation, the Government is partially limited

[14] The Environmental Protection Act (ZVO-1) (Official Gazette of the Republic of Slovenia, No- 41/2004, 17/2006, 20/2006, 28/2006 Constitutional Court Decision, 39/2006-OCT1, 49/2006-ZMetD, 66/2006 Constitutional Court Decision, 112/2006 Constitutional Court Decision, 33/2007-ZPNačrt, 57/2008-ZFO-1A, 70/2008, 108/2009, 108/2009-ZPNačrt-A, 48/2012, 57/2012, 97/2012 Constitutional Court Decision, 92/2013, 56/2015,102/2015)

[15] Decision laying down the price per unit of burden on environment with emission from carbon dioxide (Official Gazette of the Republic of Slovenia, No. 96/14)

with requirements for minimal energy products taxation as set in Council Directive 2003/96/EC of 27 October 2003 restructuring the Community framework for the taxation of energy products and electricity[16]. The energy taxation is one of the most important instruments available for the Government for influencing the final price of individual energy products, influencing the price relations among energy products and thus assisting in the fulfilment of the objectives of the environmental and energy policy. In addition to excise duties, the price for energy products is significantly affected by the world market prices, the environmental tax on CO_2 emissions and energy price supplements for support mechanisms for the generation of electricity from RES and CHP installations and for energy efficiency.

A more detailed presentation of the excise duty for energy products in the Republic of Slovenia is presented in the Slovenia's Sixth National Communication and First Biennial Report under the UNFCCC (SI-NC6/BR1). In 2014, the transitional period for the taxation of natural gas as vehicle fuel lapsed; it had been negotiated by Slovenia since the immediate introduction of a minimum excise duty in the prescribed amount could endanger the implementation of the set objective (increased use of natural gas) and the fulfilment of commitments undertaken by Slovenia with the ratification of the Kyoto Protocol. The amount of excise duties for liquid fuels is determined by the Government of the Slovenia by the harmonisation of the prices of oil derivatives with the changes of crude oil prices and the American dollar exchange rate. The results of the excise duty policy for liquid fuels are indicated in the change of the excise duty and the difference between the price of motor gasoline and gas oil and the approximation of the retail prices of motor fuels to the prices in neighbourhood countries.

The excise duty on motor fuels increased in the period since 2000, with excise duty for diesel fuel increasing by 37% and for gasoline by 42% in 2008-2015 period. In 2010, the prices of liquid motor fuels rose above the level of neighbouring countries, with the exception of Italy, while in 2011 and 2012 they were mostly lower than in neighbouring countries, although since 2013, the prices for motor fuels are higher than the prices recorded in neighbouring countries, with the exception of Italy; the same applies for the taxation of motor fuels and this was reflected in the energy use in the transport sector.

In the 2008–2015 period, the excise duties for extra light heating oil increased significantly, specifically, by 750%. The use of this type of energy product for heating has decreased significantly with simultaneous application of other measures (subsidies for RES, calculation of heat consumption in multi-apartment buildings according to the actual use, and similar instruments).

The Slovenian excise duty policy has established certain exemptions and (partial or full) reimbursement of excise duty for certain uses of energy products. In accordance with European legislation (i.e. Directive No. 2003/96/EC on taxation of energy

[16] Council Directive 2003/96/EC of 27 October 2003 restructuring the Community framework for the taxation of energy products and electricity

products[58]), the exemptions of the excise duties mandatory in all EU Member States have been enforced in Slovenia, specifically, for energy products used for electricity generation and for fuel use in diplomatic vehicles.

Some other exemptions have also been enforced which are optional at the EU level, and the reimbursement is calculated as a difference to the regulated minimum excise duty applicable in the EU. The possibility for a partial reimbursement of excise duty paid for gas oil has been introduced since April 2009 if it is demonstrated that it is applied for powering commercial vehicles. A partial reimbursement of excise duty is envisaged for the use of energy products in industrial commercial applications (static working machinery, construction machinery, motor vehicles on rails, cable ways and ski lifts) and in the use of energy products applied in agricultural and forestry machinery. A new measure was adopted within the scope of OP GHG 2020: for progressive reduction of subsidies which is namely contrary to the objectives of reducing GHG emissions. This should not jeopardize the competitiveness of the sector Agriculture and the achievement of the objectives of the agricultural and food policy.

Formation of a new working group for the green budget reform is planned for 2016; the group will be run by the Ministry of Finance. The working group will be established within the scope of the Framework Programme for a transition to a green economy. The purpose of the group is the making of policies, instruments and measures aimed at promoting a simultaneous development of a sustainable and competitive economy. The group will examine the situation regarding environmentally harmful subsidies and develop proposals for their elimination and reduction, it will analyse the suitability of other taxes on environment pollution and exemptions, reimbursements and tax credits in case of conducts with adverse effects on the environment.

OP GHG-2020 plans an audit review of environmental taxes in the field of environmental protection. An integrated analysis of the efficiency of the existing environmental taxes is being developed by MOP, together with the possibility for their adjustment to be the basis for changes of environmental taxes in the area of waste disposal.

(M-4) EDUCATION, TRAINING, AWARENESS RAISING, COMMUNICATION AND PROMOTION

Sectors affected by the implementation of the measure: *energy use in industry and construction, energy use in households, the service sector, transport and agriculture*

Various players in Slovenia (government and non-government sector, media, business sector, professional institutions and other players) have been carrying out activities for education, training, communication and raising of awareness in regard to mitigating climate change. These activities are founded from various sources, specifically, from the state budget, EU funds and various international sources.

Coordination of these activities is still insufficient. In accordance with OP GHG 2020, the targets for the period up to 2020 have been oriented towards education and training for the transition to a competitive low-carbon society, the strengthening of human resources for opening new green job posts and for communicating about the benefits of mitigating climate change and practical aspects of implementing measures.

(M-4A) AWARENESS RAISING, COMMUNICATION AND PROMOTION

Articles 351, 352 and 353 of EZ-1 refer to the programmes for communication and awareness rising of the subject matter. The main change in the established practice is the transfer of the development and implementation phase regarding communication, training and awareness raising programmes for various target groups to Centre for RES/CHP[17]. The functioning of the portal "*Sustainable Energy Portal*" has been provided for by Borzen until now. The provision of information to households continues to be conducted through the network of Energy Consulting Network for Citizens - ENSVET which has been active since 1993. In the 2013–2014 period, 9,800 pieces of advice were sent to interested parties, and the goal is to increase the annual number of pieces of advice to 10,000. In 2015, ENSVET extended its operations to consulting services within the scope of providing assistance to energy renovation of buildings for vulnerable groups of population.

Information on EE measures and exploitation of RES continue to be submitted to consumers by other players in the energy service market, such as energy companies, Eco Fund and local energy agencies. In the 2013–2014 period, the above mentioned activities were pursued within the scope of achieving end-use energy savings – in 2013, 63 contracts were concluded for carrying out communication programmes while no data is yet available for 2014. In accordance with the new Decree on energy savings requirements[18], the implementation of these programmes is not included among measures by way of which users may fulfil their obligation which is why it is anticipated that they will decrease in number in the future.

One of supplementary measures for increasing the efficiency of energy use in public sector and in households is the support provided for education and awareness raising on energy efficiency envisaged within the scope of the priority axes "Sustainable consumption and production of energy and smart grids " within the OP ECP.

A systematic approach in awareness and communication activities is also based on results of the field **Research on energy efficiency in Slovenia – REUS 2015** which provides a comprehensive insight into the actual situation, attitude and energy management as well as the level of awareness and willingness to invest in measures to reduce energy consumption in households.

17 The operational provider of scheme supporting electricity generated from RES and CHP.

18 Official Gazette of the Republic of Slovenia, No. 96/14

(M-4B) EDUCATION

By way of the Action Plan for Energy Efficiency 2020 (AP-EE 2020) and OP GHG 2020, the measure regarding the inclusion of climate contents into a broader education process for sustainable development in Slovenia at all educational levels continues. The contents related to the energy efficiency and exploitation of renewable energy sources are included in various educational programmes (for example, the Energy study programme pursued by the University of Maribor, the programme Eco.school for kindergartens, primary and secondary schools, optional subjects regarding the environmental protection in general secondary schools and primary schools). The Framework Programme for the transition into green economy foresees the establishment of an Expert Working Group for education and training on climate change and sustainable development which will also address the needs for an integrated review of the situation and the planning of the development of the area.

The measure for the preparation and implementation of a targeted education and training for implementing projects related to energy efficiency and exploitation of RES, green energy technologies and other areas for mitigating climate change. Introducing the non-formal and formal education and training of providers of energy-saving renovation of buildings and energy managers and training of SMEs and providers in construction implementing renovation and new construction will be upgraded with the training organised for the staff from the civil sector in regard to the implementation of Green Public Procurement and Energy Contracting.

Some funds have been allocated for the non-formal and formal training of providers of energy-saving renovation of buildings within the scope of the priority axes "Sustainable consumption and production of energy and smart grids" within the OP ECP.

(M-4C) TRAINING

Article 341 of EZ-1 regulates the implementation of training programmes for independent experts carrying out inspections of air-conditioning and heating systems, and for independent experts providing energy performance certificates. While the first two training programmes have not yet started, and neither has the training for RES technology installers as stipulated by Article 359 of EZ-1, the energy performance certificates training , which is composed of 4 days of lectures and a production and presentation of two energy efficiency certificates (calculation and measurement reports), has been in place since 2012. By the end of 2014, 268 licences were issued by the ministry responsible for energy to independent experts, providing energy efficiency certificates[19].

Education activities and training programmes are also conducted within the scope of various projects and programmes, for example, the education for European Energy

[19] http://energetskaizkaznica.si/seznam-izvajalcev/

Manager – EUREM (annually), training for green professions in the construction industry within the project IEE[20] BUILD UP SKILLS Slovenia (2011–2013), training programmes for engineers and architects on sustainable construction, energy efficiency, and green public procurement are held by the Slovenian Chamber of Engineers and Slovenian Chamber of Architecture and Spatial Planning and the Green Building Council Slovenia, training programmes financed by the Climate Fund (training programmes for primary school teachers, chimney sweepers, energy advisers operating within the ENSVET network) and other training programmes.

The Climate Change funds have been planned to be used for the implementation of various future training programmes (for example, training programmes for multi-apartment building managers, training programmes for companies providing building structures cleaning services, for companies participating in the planning, installation and maintenance of small heating boilers, training programmes for public officers and adults on climate change and sustainable development, training programmes for various target groups on energy efficiency). The OP ECP, the "Sustainable consumption and production of energy and smart grids " priority axis, plans have been made to organize training programmes for providers of nearly zero-energy construction and for micro and SMEs in construction industry, and within the "Investing in education, training and lifelong learning" priority axis, activities have been envisaged for enhancing knowledge and skills enabling faster adjustment to changes in the labour market and transfer to low-carbon society (LCS).

(M-5) GREEN ECONOMIC GROWTH

Sectors affected by the implementation of the measure: *energy use in industry and construction, energy use in households, the service sector, transport and agriculture*

One of the objectives of OP GHG 2020 is also to support a transition to an economy with the growth not being based on an increased use of natural resources and energy but on economy which is reducing GHG emissions by way of efficiency and innovation, it is improving competitiveness and promoting higher security of the energy supply. It thus includes measures to increase domestic demand for green solutions and represents a great opportunity for green economic growth, being oriented towards the sectors of buildings, transport, agriculture, waste and industry and supported by incentives for research and technological development and eco-innovation. The OP GHG 2020 is mainly focused on questions related to sustainable consumption and production, on issues supporting innovation and research, on reducing environmentally harmful subsidies and on providing for suitable prices.

There were several development incentives available in Slovenia in the past which, however, were not area-oriented; this changed in the past two years, mainly as a result of the thematic focus of the European Cohesion Policy. The transition to low-carbon economy in all sectors is high priority objective in the 2014–2020 period,

[20] Intelligent Energy Europe Programme

together with the strengthening of research, technological development and innovation. The financial framework for a successful implementation of OP GHG 2020 measures is provided for in the OP ECP and the planned measures will be predominantly financed from the European investment and structural funds.

The Smart Specialisation Strategy of Slovenia (S4) which represents the basis for the drawing of funds from the OP ECP within the first priority axis (International competitiveness of research, innovation and technological development) was adopted by the Government and the European Commission at the end of 2015. The comprehensive vision regarding S4 supports the green economy as it strategically directs investments into sustainable technologies and services for healthy live, and practically all priority areas and areas of the use of S4 are important for the transfer into green economy with low GHG emissions. The adoption of S4 enables the preparation of the first calls to tender for direct incentives for the development of enterprises.

The key measures from OP ECP for the green economic growth are:

- within scope of the first priority axis: "International competitiveness of research, innovation and technological development in line with smart specialisation for enhanced competitiveness and greening of the economy", measures for promoting investments in large corporations in connection with low-carbon economy; research and development infrastructure, processes, technology transfer and cooperation in companies with the attention being given to low-carbon economy;
- within the scope of the third priority axis: "Dynamic and competitive entrepreneurship for green economic growth", measures for energy efficiency and presentation projects in SMEs and supporting measures; support to environmentally-friendly production processes and efficient use of resources in SMEs; development and enhancement of companies specialized for services which contribute to low-carbon economy and resilience to climate change (including the support provided for such services).

The Smart Specialisation Strategy directs its efforts to enhancing cooperation between sectoral ministries and the development of synergies within the scope of the Strategic Development and Innovation Partnerships which are envisaged by S4 as the management model for priority areas, and to developing support measures by the state (public procurement, examination of the scope and effects of the existing tax credits, economic diplomacy and promotion and licensing and elimination of obstacles of legal nature).

The Framework Programme for transition to green economy was adopted by the Government of the Republic of Slovenia in October 2015. The programme aims at providing an active support of responsible players in a transition to green economy and integration of measures and activities pursued by sectoral policies. The main objective of the said programme is to establish an active and permanent dialogue between key players, the integration of existing policies and activities and their improvement; the acceleration of the transfer of knowledge for a faster transition to

green entrepreneurial practices and the development of green job posts, products and knowledge, together with the development of indicators and monitoring the progress of the green economy.

At the same time when the framework programme for the transition to green economy was adopted, the Inter sectoral Working Group - "Partnership for Green Economy" was established, which has been assigned the task to monitor and improve measures from the said programme.

The evaluation of efficiency of individual instruments on the part of the management body will be important for OP GHG 2020, in order to monitor effects of funds allocated for research and innovation for reducing GHG emissions and, on a broader scale, for green economy.

3.4 Energy supply

(M-6) TECHNOLOGICAL MODERNISATION OF THERMAL ENERGY SECTOR

Sectors affected by the measure implementation: *electricity and heat generation*

Due to the expiry of the lifetime and the requirements of the Directive on industrial emissions (integrated pollution prevention and control) (2010/75/EC) or directives prior to this one, the majority of the large power generating units in Slovenia should be replaced by modern and environmentally acceptable units with substantially higher efficiency, the power generation from CHP with high efficiency should be increased and where necessary, a partial change in fuel should be carried out - primarily a partial transition to natural gas [21] and higher use of wood biomass in co-firing. For reducing GHG emissions, the following implemented and planned measures are important:

- Šoštanj Thermal Power Plant (TEŠ): in 2014, the TEŠ Unit 3 was permanently closed down, and the new TEŠ Unit 6 started its trial operation to gradually replace the operation of all other existing units of this power plant. The Contract on the Arrangement of Mutual Relations between the Government of Republic of Slovenia and Šoštanj Thermal Power Plant defines a gradual reduction of GHG emissions, stating an emissions ceiling of annual CO_2 emissions from the existing units and unit 6 for the period 2016–2054. The upper ceiling will be reduced, considering the initial value; it will be lower by 28% until 2030, by 40% until 2035 and by 52% until 2040. From 2027 onwards, only one fossil fuel unit will be operational.
- In 2014, Trbovlje Thermal Power Plant (TET) stopped generating electricity by burning brown coal for economic reasons. In 2012, the commercial

[21] Data source: Indicative development plan for energy sector, data from investors

production of coal was stopped in Trbovlje Hrastnik Mine which used to be the main coal supplier.

- Ljubljana Heat and Power Plant: the investment in the wood biomass co-incineration in unit 3 was realised in 2008 (20% of coal was replaced by wood biomass in this unit). A gradual transition to natural gas is planned.
- Brestanica Thermal Power Plant: units in this power plant are intended for reserve capacities; the replacement of old 1–3 units with a new unit is under way.

By way of implementing the above mentioned measures, by 2030, all existing thermal power plants will: stop their operation (TET), will be substituted by new higher efficiency units (TEŠ; TEB) and will also undergo fuel switching (TE-TOL). The two existing gas power plants for reserve capacities in TEB are an exception.

The main mechanisms for achieving the implementation of the measure are the same as described under SI-NC6/BR1: **trading in GHG emission allowances, requirements of environmental protection permits** (according to a new directive on industrial emissions, Directive 2010/75/EC**, efficient operation of energy markets**, and other mechanisms. The above mentioned contract concluded by and between the Government of the Republic of Slovenia and Šoštanj Thermal Power Plant represents an additional mechanisms. There is a modification in regard to **the support scheme for electricity generated by co-generation of heat and electricity with high efficiency and support scheme for electricity generated from renewable energy sources which, since the modification, has not been relevant for the electricity generation in larger units, as it only applies** for RES installations not exceeding 10 MW of rated capacity and for cogeneration installation with high efficiency not exceeding 20 MW of rated capacity. More about the modifications of the support scheme is presented in the next two chapters.

(M-7) PROMOTION OF HIGH EFFICIENT ELECTRICITY AND HEAT CO-GENERATION

Sectors affected by the implementation of the measure: *heat and electricity generation, energy use in industry and construction, energy use in service sector, public sector, households and agriculture*

The promotion scheme for high efficiency co-generation of electricity and heat (CHP) and renewable energy sources was introduced by Slovenia in 2002. In 2009 some important modifications were introduced in the scheme in order to promote a too slow development in CHP. As it was over time shown that the majority of all new entrants into the scheme is represented by the most expensive technologies, the

amended Energy Act (EZ-1)[22] in 2014 has introduced a full renewal of the support scheme with the goal of managing its costs.

Since the entry into force of EZ-1, the support for high efficiency CHP is limited to installations not exceeding 20 MW of nominal capacity (Article 372), before the amended act, the limit was set on 200 MW. Until now, the support for installation below 1 MW could have been applied as a guaranteed purchase of electricity at a determined fixed price or as financial aid for current operations (hereinafter referred to as: "operational support") whereas the renewal of the scheme provides for a fixed purchase only from installations of up to 500 kW of power, and larger plants may only be granted an operational support. The duration of support for CHP is further limited to 10 years. A modification is that for the installation to enter the scheme, an installation must be selected on the basis of an open public call by the Energy Agency (Article 373), as compared to previous operator's entrance into the scheme on the basis of an application and satisfaction of requirements. The Centre for RES/CHP is responsible for implementing the scheme; the said centre operates within the organisation of the market organiser, Borzen. The Energy Agency, which, in the 2010−2014 period, was responsible for issuing decisions on certificates for generation units, issuing decisions on allocation of support and issuing certificates on the origin of electricity will select projects and decides on approving them or refusing their application for entering the scheme, in accordance with EZ-1.

The co-generation is promoted by EZ-1 also by introducing the mandatory use of RES, CHP and residual heat in the district heating systems (Article 322); specifically, by the end of 2020, distributes of heat must ensure that heat is delivered from at least one of the following sources: (i) at least 50% of heat is generated from RES, (ii) at least 50% from waste heat, (iii) at least 75% of heat from high efficiency CHP or (iv) at least 75% of heat combination generated from the sources referred to in the first three indents. The high efficiency co-generation represents one of potential alternative systems for energy supply for which a feasibility study must be produced when constructing a new building and during greater renovation of a building or its individual part (article 332). An additional support for co-generation is also found in certificate of the origin of energy which are supposed to make the trading of electricity generated from RES and CHP easier; it is defined in detail in Articles 366 and 367 of EZ-1. In addition, energy products for electricity and heat co-generation are exempt from the payment of excise duty, in accordance to the Excise Act[23].

The installation of high efficiency CHP units is also promoted by the Rules on the energy performance of buildings[24], which defines that the energy performance of a building is met if at least 50% of final energy for the heating and cooling of the building and for providing hot water is obtained from such systems.

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22 Official Gazette RS, No. 17/2014, prior Energy Act, Official Gazette RS, Nos. 27/07 - Official Consolidated Text 70/08, 22/10, 37/11 - Constitutional Court Decision, 10/12 and 94/12–ZDoh-2L

23 Official Gazette of the Republic of Slovenia, No.97/10, 48/12, 109/12 and 32/14

24 Official Gazette of the Republic of Slovenia, No. 52/2010

Up to 2014, the installations with 71.4 MW of total electric power installed, generating in total 273 GWh of electricity, were included in the CHP support system. Compared to the previous year, the installed power is increased by 12.5%, especially on the account of smaller units in the service sector. The reduction of GHG emissions due to operation of CHP systems is estimated to 78.1 kt CO_2 eq. Since relevant implementing acts have not yet been adopted, the public tender to enter the scheme in accordance with EZ-1 has not yet been published but it is expected that the volume of new entrances into the scheme will be lower in the future as a result of ensuring the financial sustainability of the system.

In addition to funds from the support system, in the 2012−2014 period, the investment incentives for the installation of cogeneration units could have been obtained from calls to tender published by energy suppliers and some funds were also available in the Cohesion fund within the scope of OP DETI[25] 2007−2013. The new Decree on providing energy savings[26] within energy efficiency obligation scheme, continues to support the installation of efficient cogeneration, and within the scope of OP ECP[27] financial support for efficient cogeneration will also be obtainable within the scope of improving energy efficiency of SMEs, and energy-saving renovation of public and multi-apartment buildings

The installation of CHP units continues to be promoted by Eco Fund, the Slovenian environmental public fund, by providing loans for investments with favourable interest rates.

(M-8) PROMOTION OF ELECTRICITY GENERATION FROM RENEWABLE SOURCES OF ENERGY

Sectors affected by the implementation of the measure: *heat and electricity generation, industry and construction, service sector, public sector, households*

The measure for promoting the generation of electricity in plants using renewable energy sources has been developing simultaneously with the scheme for promoting the generation of electricity using high efficiency CHP which is why it has been described at large under the instrument M-7. Different from CHP systems, since the entry into force of EZ-1, those installations are eligible to receive support that generate electricity from RES not exceeding 10 MW of nominal capacity, (before 125 MW), with the exception of installations using wind power where the limit is set on 50 MW; the duration of support contract for RES is limited to 15 years. Like in the case of CHP systems, the installations using RES with up to 500 kW of nominal capacity are guaranteed the purchase of electricity, while larger installations receive the operational support.

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25 Operational Programme for Development of Environmental and Transport Infrastructure

26 Official Gazette of the Republic of Slovenia, No. 96/2014

27 Operational Programme for Implementing European Cohesion Policy in the 2014-2020 period, Government of the Republic of Slovenia , December 2014

All other support instruments for high efficiency CHP are available also for efficient cogeneration of electricity by RES installations; they are described under instrument M-7. The RES generated electricity is being promoted by certificates of the origin and Rules on Efficient Use of Energy in Buildings, which requires a mandatory 25% share of RES in the total use of final energy in buildings. Other measures associated the utilization of RES are mainly oriented towards the heat generation from RES.

In 2014, the RES support scheme system included RES installations with the total of 324 MW of electric power installed, which generate the total of 633 GWh of electricity, or 10.6% more than a year before. These installations include by far the most solar power plants, with its number having increased dramatically in the 2011−2013 period. In total, in 2014, the RES installations included in the support scheme contributed to the reduction of GHG emissions by 400.9 kt CO_2 eq. Like in the case of co-generation the volume of the entrances into the system is expected to lower in the future as a result of ensuring the financial sustainability of the said scheme.

In addition to funds from the support system, in the period until 2020, some funds are expected to be available for RES generated electricity granted from the Cohesion fund within the scope of OP ECP. These funds will be allocated for the construction of small installations for the RES generated electricity (wind power, solar power, biomass and small hydro-power plants of up to 10MW of power) and are expected to promote the construction of installations with the total electrical power of 50 MW. Some funds to improve the use of local sources of renewable energy have been planned within the scope of improving energy efficiency of SMEs.

Aiming at increasing the RES generated heat and electricity, in the 2015−2020 period, there will be funds available within the scope of the Rural Development Programme[28], specifically, within the scope of the support instruments for investments into agricultural holdings (sub-measure 4.1), support for investments into processing, marketing and/or development of agricultural products (sub-measure 4.2) and support for investments into the establishment and development of non-agricultural activities (sub-measure 6.5). Support under the sub-measures 4.1 and 4.2 will be dedicated to the production of electricity and heat from renewable sources for the purpose of production, processing or marketing of agricultural products, support under the sub-measure 6.4 will be destined for the production of electricity and heat from renewable sources for the purpose of sale.

Furthermore, in Slovenia, the construction of hydroelectric power plants (HPP) is being continued on the lower branch of the Sava River; specifically, HPP Brežice, with the forecasted annual production of 161 GWh of electricity is expected to be completed by 2017, and the construction of HPP Mokrice has been planned. Additionally, the procedure for the preparation of the spatial plan of national importance for three hydroelectric power plants on the middle branch of the Sava River is under way: HPP Suhadol, HPP Trbovlje and HPP Renke. Their construction

[28] Rural development programme of the Republic of Slovenia 2014–2020, (13/2/2015)

is also being dealt with by the Draft of Renewed Action Plan for RES for 2010−2020 period which also include the projections regarding the utilization of RES until 2030. The anticipated average annual production of electricity generated by the above mentioned three HPPs amounts to 383 GWh; the proposals aim at their construction in the period of up to 2030. An initiative for preparation of the spatial plan of national importance for the area which has been designated for energy use in the Litija and Ljubljana branch of the middle Sava River has also been given. The spatial plan of national importance for HPPs in the Mura River is being developed. Since this area holds the *Natura* nature protection status, the procedure for the overriding public interest to climate protection and RES exploitation in regard to the public interest to nature protection will have to be conducted in the further decision-making processes. However, the outcome of this process is rather precarious and it is therefore possible that the energy potential in this area may only be utilised in a limited scale.

3.5 Residential and commercial/institutional sector

(M-9) PROMOTION OF ENERGY PERFORMANCE AND USE OF RENEWABLE SOURCES OF ENERGY IN BUILDINGS IN GENERAL

Sectors affected by the implementation of the measure: *energy use in households, commercial and institutional sector*

Two important documents were adopted in 2015 for the promotion of energy efficiency and use of renewable energy resources in buildings. In accordance with Article 331 of EZ-1, the Action Plan for nearly-zero buildings for the period up to 2020 (AP nZEB)[29] was adopted in April 2015 which includes targets in regard to nearly-zero construction of new buildings, renovation and programmes and measures for achieving these targets. By the end of 2018, all new buildings owned and used by public institutions must be nearly-zero energy buildings, and by the end of 2020, this rule will apply to all new buildings; both of these rules are compliant to Article 9 of Directive No. 2010/31/EU on energy performance of buildings (EPBD)[30]. In accordance with Article 348 of EZ-1, the Long-term Strategy for promoting investment into energy renovation of buildings (LTSERB)[31] was adopted in October 2015 by way of which Slovenia has set a goal to significantly improve the energy efficiency of buildings. The Strategy's basic scenario anticipates the level of an integrated energy-renovation of residential buildings to be set at 2% and in the public sector at 3% which is compliant to Article 5 of Directive No. 2012/27/EU on energy

[29] Action Plan for nearly-zero buildings for the period up to 2020 (AP nZEB), Government of the Republic of Slovenia, April 2015

[30] Directive 2010/31/EU of the European Parliament and of the Council of 19 May 2010 on the energy performance of buildings (recast), EU Official Journal, No. L 153

[31] Long-term Strategy for promoting investment into energy renovation of buildings (LTSERB) Government of the Republic of Slovenia , October 2015.

efficiency [32] (EED), and sets its strategic goal to achieve nearly zero-carbon buildings by 2050.

In May 2015, the Action Plan for energy efficiency for the 2014–2020 period (AP-EE 2020)[33] was adopted in which measures for more efficient use of energy in residential and public buildings are defined; the same applies for the Operational Programme of measures for reducing GHG emissions by 2020 (OP GHG 2020) which was adopted in December 2014. Likewise, in December 2014, the OP ECP programme was approved which under the fourth priority axis "Sustainable use, energy generation and smart grids" supports the energy efficiency and exploitation of RES in public buildings and in the residential sector (details are available under instruments M-11 and M-10). A renewal of the Rules on Efficient Use of Energy in Buildings[34] is planned for the future, together with the accompanying technical guidelines. See SI-NC6/BR1 for details.

In addition to the above mentioned statutory measures and programme documents supporting energy efficiency and renewable energy sources, the following measures are also important for buildings in general. At least partially, these measures are already being implemented:

- taking into account energy efficiency and exploitation of RES in integrated planning of buildings, residential quarters and settlements within the scope of spatial planning;
- mandatory preparation of feasibility study regarding alternative energy supply systems (decentralised systems on the basis of RES, high efficiency co-generation, district or collective heating and cooling, heat pumps) when constructing a new building and a larger renovation of an old building or its individual part;
- promoting energy performance contracting for the implementation of energy renovation projects of public and multi-apartment buildings (see details under the instrument M-11);
- coordinated awareness raising, communication and promotion in regard to energy efficiency, exploitation of RES and energy services (see details under the instrument M-4);
- non-formal and formal education and training programmes for players acting in the field of energy renovation of buildings, nearly-zero energy new buildings and renovations and projects regarding energy contracting (see details under the instrument M-4);
- the excise duty policy which provides for the competitiveness of the biomass and biofuels as compared to fossil fuels used for heating.

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32 Directive 2012/27/EU 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, EU Official Journal, No. L 315

33 Action Plan for energy efficiency for the 2014 – 2020 period (AP-EE 2020), overnment of the Republic of Slovenia, May 2015.

34 Official Gazette of the Republic of Slovenia, No.96/14

The setting up of a scheme supporting RES-generated heat supply is envisaged. Together with the development of criteria for renovation, the implementation of demonstration projects and similar instruments are planned within the scope of the support scheme for the renovation of architectural cultural heritage and other special groups of buildings.

Measures which are specific for promoting EE and RES in households and in the public sector are described under instruments M-10 and M-11. The anticipated total reduction of GHG emissions due to measures being implemented in households, public sector and buildings in general is estimated to amount to 509 kt CO_2 eq. per year in 2020.

(M-10) PROMOTION OF ENERGY EFFICIENCY AND USE OF RENEWABLE SOURCES OF ENERGY IN HOUSEHOLDS

Sectors affected by the implementation of the measure: *energy use in households*

The main measure for promoting energy efficiency and use of renewable sources of energy in households continue to remain financial grants allocated by the Eco Fund, the Slovenian Public Environmental Fund, for such investments in one-apartment and two-apartment buildings since 2008, and since 2009 for multi-apartment buildings. In the 2013–2014 period, there were four public calls to tender published[35] and the set of measures differ in regard to the year and the invitation to tender. Funds for grants are collected by means of a contribution paid per energy use in order to increase energy efficiency, and from 2014 onwards, funds from the Climate Fund are also made available by the Eco Fund in the said tenders.

In addition, favourable loans were made available by the Eco Fund in the 2013–2014 period for implementing measures related to EE and RES, while households could obtain public funds with the same designation within the programmes under obligation scheme for large energy suppliers[36] by way of which district heat suppliers of heat from the distribution system supplying at least 75 GWh of heat per annum and suppliers of electricity, gas and liquefied fuels used for heating supplying at least 300 GWh of energy per annum had to achieve at least 1% of energy saving per year in regard to the energy supplied to end users in a previous year. By the new scheme for mandatory final energy savings for companies selling energy, which has been established by virtue of Article 318 of EZ-1 in accordance with Article 7 of EED and a new directive[37], the framework for these programmes has been slightly modified; specifically, in 2015, all suppliers of electricity, gas and liquefied fuels and solid fuels to final users became liable to achieve energy savings, and the amount of

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35 In case of one-apartment and two-apartment buildings and apartments in three and multi-apartment buildings, the public invitation to tender Nos. 18SUB-OB13 and 24SUB-OB14, and for multi-apartment buildings, the public calls to tender Nos. 19SUB-OB13 and 25SUB-OB14.

36 Decree on Energy Savings at End-Users (Official Gazette of the Republic of Slovenia, No.114/09, 22/10- EZ-D,, 57/11 and 17/14- EZ-1)

37 Decree on Energy Savings at End-Users (Official Gazette of the Republic of Slovenia, No.96/14)

savings to be achieved by them has also changed. The method for financing measures applied by companies to ensure savings has not been determined in the new scheme.

Grants for investments into RES were available to households also within the scope of the Rural Development Programme which draws funds from the European Agricultural Fund for Rural Development (EAFRD).

In the 2013–2014 period, by means of EUR 42.7 million of grants allocated by the Eco Fund, the investments in households with the value totalling EUR 252.9 million were supported, thus reaching the annual reduction of the final energy consumption by 326.3 GWh, and CO_2 emissions by 47.1 kt. Investments, which had received favourable loans granted by the Eco Fund, achieved additional 16.9 GWh of final energy savings at the annual level, CO_2 emissions were reduced by 2 kt, while within the scope of the programme involving large energy suppliers [38] the final energy consumption was reduced by 10 GWh, and CO_2 emissions by 3 kt. In total, in the 2013–2014 period, a solid 353 GWh/a of savings in final energy consumption was achieved by households, and 52 kt/a of savings in CO_2 emissions.

All of the above mentioned measures will continue to be implemented in the period leading to 2020; additionally, some funds for increasing energy efficiency in households have been planned within the scope of OP ECP, specifically, funds intended for energy-saving restoration of multi-apartment buildings, special measures for energy restoration of households faced with energy poverty issue and implementation of demonstration projects for integrated energy renovation of multi-apartment buildings following the criteria of nearly-zero energy renovation. By the end of 2023, the annual energy savings should increase by a solid 100 GWh, as a result of these measures.

Other important measures for promoting EE and RES in residential buildings which are being implemented include as follows: financial aid scheme for energy renovation projects for vulnerable groups of population, mandatory distribution and calculation of costs for heat in multi-apartment and other buildings charged according to the actual energy use and the energy consulting network for citizens (ENSVET; see details under measure M-4). By way of AP-EE 2020 and LTSERB, some other legislative measures have been envisaged aiming at facilitating the energy renovation of buildings with multiple owners and/or tenants by enabling loans based on the Reserve Fund of a multi-apartment building.

The anticipated total reduction of GHG emissions achieved by households, public sector and buildings in general is stated under the instrument M-9.

[38] The 2014 data on the implementation of programme for large operators were not included as these were not available during the development of this report.

(M-11) PROMOTION OF ENERGY EFFICIENCY AND USE OF RENEWABLE SOURCES OF ENERGY IN PUBLIC SECTOR

Sectors affected by the implementation of the measure: *energy use in public sector*

In the 2013–2014 period, EE and RES utilisation in public sector was promoted mostly by grants for energy renovation of buildings provided from the Cohesion Fund within the scope of the OP ETDP 2007−2013. In the period of two years, the total of EUR 114 million of grants were allocated within the scope of various calls to tender to 244 projects achieving the reduction of final energy consumption by poor 112 GWh per annum, and in regard to CO_2 emissions reduction, a solid amount of 31 kt was reached. In 2013, funds from OP ETID contributed to the implementation of the majority of projects promoted within the scope of the public call for financing operations for energy efficient renovation of public lighting system for the 2011−2013 period, as a matter of fact, 20 projects received EUR 2.5 million of grants, thus reaching the reduction of electricity consumption by 10.7 GWh, and CO_2 emissions by 5.3 kt.

Some grants for low-energy or passive construction or the renovation of community-owned buildings in which educational activities are carried out were allocated from the Eco Fund,, within the scope of its 2012 invitation to tender. In the 2013–2014 period, EUR 3.2 million were allocated to support 8 projects, saving 2.6 GWh of final energy, and 0.6 kt of CO_2 emissions. In total, the 2013–2014 period saw the public sector reaching a reduction of 125 GWh/a in final energy consumption, and 37 kt/a of savings in CO_2 emissions. Favourable loans granted by the Eco Fund could have been obtained by the public sector for investments in energy efficiency and RES; within large energy suppliers obligation scheme programmes and the programmes provided by the European Regional Development Fund (ERDF); no data on the effects of these programmes are available.

In the period up until 2020, favourable loans granted by the Eco Fund will continue to be available to the public sector, together with grants available within the scope of the scheme for mandatory final energy savings for companies selling energy, and programmes provided by the European Regional Development Fund. Increasing energy efficiency in public sector is also envisaged within the scope of OP ECP, specifically, funds intended for energy-saving renovation of public buildings owned and used by direct and indirect budget users and local communities, funds for projects regarding energy renovation of public buildings which will be implemented within the scope of energy performance contracting, and the implementation of demonstration projects for integrated energy renovation of various types of public buildings following the criteria of nearly-zero energy renovation. As a result of the measures envisaged in the OP ECP and owing to the renovation of 1.8 million m^2 of surface area, the annual energy consumption on the part of the public sector is expected to reduce by 240 GWh by 2023. In order to achieve this goal, in the 2016−2023 period, the annual volume of investment activities amounting to EUR from 51 to 53 million will have to be provided for, totalling to EUR 415 million of funds for the said period. As a result of an increase of RES in the final energy

consumption, funds from OP ECP have been planned to be granted for wood biomass fuelled boilers in the public sector, service sector and industry.

For achieving greater effect of public funds invested in energy renovation of public buildings, in the period leading to 2020, an important measure will be promoting energy performance contracting, ensuring the distribution of risks and a suitable leverage in the financing of such projects. As mentioned, the scheme will be based on a combination of grants from OP ECT, with up to EUR 50 million of funds being invested into the scheme from this fund, and other public and private funds. LTSERB complements these support instruments and plans to establish a broader supporting environment for the development of energy contracting which, in the long-term, will ensure a stable and foreseeable flow of projects suitable for energy contracting. For assuring the quality of public sector projects, financial support is expected to be made available for the preparation of investment projects; the Project Office will play an important role in the preparation and implementation of projects related to the energy renovation of Governmental buildings. In December 2014, the Guidelines for implementing measures aiming at energy efficiency of public sector buildings following the principle of energy performance contracting were published by the Ministry of Infrastructure[39].

In accordance with EED and AP- EE 2020, it is mandatory to renovate 3% of total floor surface of buildings owned and used by the core Government Offices. The potential for energy renovation at the level of nearly-zero energy building in case of public buildings was assessed to 6.857 million m^2 in 2015, representing 66% of total surface area of public buildings.

In addition, energy management and green public procurement are two important measures for reducing energy consumption in the public sector. The energy management system is mandatory in public buildings by Article 324 of EZ-1.The supplementary legislation is planned to be prepared. Green contracting is governed by Decree on green procurement[40] which was supplemented by environmental requirements for public procurement of drying machines, vacuum cleaners and electricity lamps in the 2013–2014 period; its renewal is currently being envisaged.

The anticipated total reduction of GHG emissions achieved by households, public sector and buildings in general is stated under the instrument M-9.

(M-12) ENERGY LABELLING AND MINIMUM STANDARDS FOR PRODUCTS AND DEVICES

Sectors affected by the implementation of the measure: *energy use in the public sector, the service sector and household, energy use in transport*

[39] Guidelines for implementing measures aiming at energy efficiency of public sector buildings following the principle of energy contracting, the Ministry of Infrastructure, December 2013.

[40] Official Gazette RS, Nos. 102/11, 18/12, 24/12, 64/12, 2/13 and89/14

Ecodesign requirements for energy related products are defined in Article 327, while requirements for energy labelling of products in Article 328 of EZ-1; they come from Directive No. 2009/125/EC establishing a framework for the setting of ecodesign requirements for energy-related products[41] and Directive No. 2010/30/EU of 19 May 2010 on the indication by labelling and standard product information of the consumption of energy and other resources by energy-related products[42], including smaller changes compliant to EED.

Ecodesign requirements for energy related products are transposed into Slovenian legal order directly with Commission Regulations. In 2013, the set of products with ecodesign requirements was extended to computers and computer servers, vacuum cleaners, water heaters and hot-water storage appliances, and space heaters and combined heaters; ecodesign requirements were amended for the power consumption of standby mode and off mode of electrical and electronic household and office equipment and TV sets. A year later, ecodesign requirements were added for ovens, cooking ranges and range hoods, for small, middle-sized and large transformers and ventilation devices. Ecodesign requirements have been developed for 31 products.

Likewise, directly by the delegated Commission Regulations, requirements for energy-related labelling of products have been transposed to the Slovenian legislation. In the 2013–2014 period, requirements were thus added in regard to the energy label of water heaters, hot-water storage appliances and sets combining water heaters and solar application, the energy label of space heaters, combined heaters and sets of heater and combined heater, devices for temperature regulation and solar applications and vacuum cleaners, kitchen ovens and range hoods and residential ventilation devices. By way of a delegated regulation, the energy label for internet products was regulated in 2014.

According to the data by GfK Slovenia, 177,238 new household appliances were bought in 2013, of which 61.4% were washing machines and refrigerators, with the remaining amount including freezers, washing and drying machines. The reduction of electricity consumption due to the use of new household appliances was assessed to 12.8 GWh/a with CO_2 emissions reduction to 6.5 kt/ a whereas the data for 2014 are not available yet. The sale of household appliances of A+++ energy class has been increasing since 2011, when they entered the market.

Favourable loans granted by the Eco Fund are available to purchase large energy efficient household appliances, specifically, for stoves, refrigerators, freezers or their combinations, for washing machines, drying machines and dishwashers classified

41 Directive 2009/125/EU of the European Parliament and of the Council of 21 October 2009 establishing a framework for the setting of ecodesign requirements for energy-related products (recast), EU Official Journal, No. L 285 – of 31 October 2009

42 Directive 2010/30/EU of the European Parliament and of the Council of 19 May 2010 on the indication by labelling and standard product information of the consumption of energy and other resources by energy-related products (recast), EU Official Journal, No. L 153

into A+ energy class or higher in terms of energy consumption. There were 63 household appliances bought in the 2013–2014 period by using the Eco Fund loans.

The anticipated reduction of GHG emissions achieved by households as a result of purchases of energy efficient household appliances has been included in the figure regarding GHG emission reductions in households under the instrument M-10.

3.6 Industrial emissions from fuel use

(M-13) PROMOTION OF ENERGY EFFICIENCY AND USE OF RENEWABLE SOURCES OF ENERGY IN INDUSTRY

Sectors affected by the implementation of the measure: *energy use in industry and households*

In the 2013–2014 period, EE and RES utilisation in industry was promoted mostly by grants provided from the Cohesion Fund within the scope of the OP ETDP 2007−2013, programmes under obligation scheme for large energy suppliers, ERDF programmes and favourable loans from the Eco Fund.

Companies could obtained funds from the Cohesion Fund within the scope of public invitations to tender aimed at co-financing operations for enhancement of efficient use of electricity in companies, for co-financing individual heating systems powered by wood biomass (WBB) and for co-financing wood biomass-based district heating systems (WBDH). In 2013, there were 4 projects from the industry sector that were supported by a solid EUR 300,000 grant which contributed to a decrease in electricity use by 2.7 GWh per year, and 27 WBB projects and 1 WBDH project which were awarded grants in the sum of EUR 3 million in the 2013–2014 period, thus jointly contributing to a decrease in final energy use by 17.8 GWh per year. Total CO_2 emission decrease has been estimated to amount to 17.7 kt per year.

In the 2013–2014 period, a decrease in final energy use by 5.5 GWh/a was achieved with projects having received favourable loans provided by the Eco Fund, and within the scope of programmes of large energy suppliers, savings achieved in industry have been assessed to amount to 12.9 GWh/a as a more accurate sectoral distribution of recipients of funds is not available. In total, a decrease in final energy use by 38.9 GWh and of CO_2 emissions by 22 kt per year was achieved in the 2013–2014 period[43]. No data about effectiveness of ERDF programmes are available.

In the period up until 2020, support will be available for the industry sector for EE-related investments and utilisation of RES within the scheme for mandatory final energy savings for companies selling energy, together with ERDF programmes and favourable loans provided by the Eco Fund. The OP ECP has planned the funds to be

[43] Without the data on the implementation of the programme for large operators for 2014 and data on favourable loans provided by the Eco Fund.

allocated for improving energy and material efficiency in small and mid-size enterprises (SMEs) within the scope of the primary axis - »dynamic and competitive entrepreneurship for green economic growth«, and for companies in general, within the scope of the primary axis - »sustainable use, energy production and smart grids« with the goal to increase the RES share in the final energy use. The development and production of new sustainable products and services in the field of EE and use of RES are important areas for the industry; the OP ECP has foreseen funds for these two areas within the scope of the »international competitiveness of research, innovations and technological development according to smart specialization for higher competitiveness and making the economy green« priority axis. The area mentioned is importantly linked to the smart specialisation strategy (S4)[44], which was endorsed in September 2015 as one of the basis for the drawing of European funds from the new financial perspective and it is strategically oriented towards sustainable technologies and services for a healthy life.

In accordance with the AP EE 2020, within the scope of mandatory attainment of final energy savings for companies selling energy, incentives have been made available for companies for implementing energy audits and introducing energy management systems; in accordance with Article 354 of EZ-1, it is obligatory to conduct energy audits in large companies every 4 years. The development of expert basis has been envisaged for examining the usefulness of introducing voluntary agreements with industry, aiming at reaching commitments for attaining achieving of energy savings. All measures stated in the chapter on multi-sectoral instruments (Chapter 3.3) are certainly important for industry sector.

3.7 Transport

(M-14) PROMOTION OF PUBLIC PASSENGER TRANSPORT

Sectors affected by the implementation of the measure: *transport*

In 2005, passenger kilometres in public passenger transport were estimated to amount to 1,697 million and, by 2014, the volume decreased to 1,432 million, i.e., by 15.6%. In this regard, the proportion of railway transport is 51%. In the field of public transport, the OP GHG 2020 has set indicative goals target for increasing passenger kilometres. The effect of the set of measures for promoting public passenger transport on the reduction of GHG emissions is estimated to amount to 155 kt of CO2 eq. by 2020 in regard to the situation recorded in 2005, making it thus the third most important measure in the transport sector.

The field of public passenger transport is regulated by the Road Transport Act[45] and Railway Transport Act[46]. In 2013, amendments regarding the co-financing of

[44] Slovene Smart Specialization Strategy (S4), the Government of the Republic of Slovenia, September 2015
[45] Official Gazette RS, Nos. 131/2006, 5/2007, 123/2008, 28/2010, 49/2011 and 57/2012

transportation of university students and secondary-school students entered into force, together with related regulations, which resulted in significant positive consequences, passenger kilometres increased in interurban bus transport in 2014, and this measurement unit increased in urban public passenger transport as early as in 2013. In addition to the aforementioned changes in the method of co-financing university student and secondary-school student transportation, the increase in passenger kilometres is also the result of more exact transport monitoring. Last amendments to legislation governing passenger transport were put in force in 2015 and they relate to the extension of concessions granted for rendering economic public service of public passenger transport not later than by 2.12.2019. These amendments are also concern the increase in efficiency and provision of proper control over rendering concession-held services and other modes of transport, such as, for example, subsidies special regular services, permanent occasional services and occasional services.

In 2015, the Ministry of Transport concluded the Contract for Establishing Integrated Public Passenger System (IPPS) with a goal to connect different modes of public transport. The project's progress has been gradual and it includes the introduction of a single electronic ticket, the adjustment of timetables, the improvement of PPT services and the establishment of an PPT manager. The IPPS portal is in the test operation mode (http://test.jpp.si), and the project will be completed in full by October 2016. The Act Amending the Road Transport Act of 2015 has introduced two terms, i.e., an integrated line and on-call transport; it also regulates legal bases for electronic connectivity of records and registers kept by the ministry responsible for transport and of legal entities included in the integrated services financing system. Additional activities in the field of integrating and optimising transport and financial sources will be necessary.

Within the scope of the Operational Programme for environment and traffic infrastructure development for the 2007–2013 period, an invitation to tender for the construction of park-and-ride parking lots at the personal vehicle-public transport transfer points was indented to encourage municipalities to establish efficient public passenger transport system and promote its use. Its main aim is to reduce the need for personal vehicle use, to accelerate the development of public passenger transport and to create synergies by means of the integrated public passenger transport project which has introduced the single ticket system, also co-financed from the Cohesion Fund. A total of 7,405.290 EUR of funds were awarded for 12 projects.

In 2014 and in 2015, a series of programme documents was adopted: the Operational programme for Implementation of European Cohesion Policy in the period 2014–2020 (OP ECP) (November 2014), Operational programme for Reducing GHG Emissions by 2020 (OP GHG 2020) (December 2014), Action Plan for Energy Efficiency for the period 2014–2020 (AN-EE 2020) (May 2015) and the Transport

[46] Railway Transport Act (Official Gazette of the Republic of Slovenia Nos. 92/1999, 11/2001, 33/2001, 110/2002, 56/2003, 86/2004, 29/2005, 15/2007, 58/2009, 106/2010, 63/2013, 84/2015, 99/2015– official consolidated text)

Development Strategy in the Republic of Slovenia (July 2015), as presented in Chapter 3.1.

The national vision for the transport policy presented in the Transport Development Strategy in the Republic of Slovenia by 2030 includes a development plan and investment programme by 2020 with a vision by 2030. The Strategy's general emphasis is placed on environment friendly transport modes and sustainable mobility, in accordance with national policies, the EU policies the legislation in this field. Individual general measures which enable the attainment of individual objectives are defined on the bases of Strategy's objectives. The general measures which are also intended for reducing energy use and environmental loads in transport are as follows: the modernization of the existing transport infrastructure, the building of new optimum transport infrastructure, the introduction of modern means of transport, the implementation of measures promoting sustainable mobility.

As regards the increasing of the share of public passenger transport, the following measures have been foreseen by the Strategy: the increase in passenger kilometres; the introduction of yellow lanes; the increase in the frequency of public transport trips (during peak hours and at other times and during weekends); the provision of a comfortable and simple transfer between means of public transport; a restrictive parking policy regarding public parking lots in larger cities and the introduction of the park-and-ride system (P+R); the arrangement of comfortable and safe bicycle lanes and walkways; the limiting and slowing down of the motor traffic in sensitive populated areas; the rearrangement of the existing public transport so as to make the railway the main transportation mode; the reorganisation of bus services in railway corridors so as to turn them into feeder services, whereas in other areas the buses still operate as independent regular service; the timetable synchronisation and the introduction of the single ticket.

The Operational Programme For Implementation of European Cohesion Policy for the period 2014–2020 is the basis for financing measures from the European structural and investment funds. In this period, the following measures which are important for the development of public passenger transport will be financed within the scope of the investment priority - "Promotion of low-carbon strategies for all areas, especially for urban areas":

- the elaboration of comprehensive transport strategies (In 2015, the responsible ministry published a public call to tender to develop Comprehensive Transport Strategies (CTS). By June 2017, the selected municipalities will develop from 40 to 50 CTSes);
- the organisation of infrastructure networks for sustainable mobility in cities (for example, safe accesses to PPT stations and stops, the organisation of stands and sheltering roofs for bicycle parking, P+R system, PPT stops, pavements, bicycle lanes. Investment into these projects has been foreseen to take place on a smaller scale as compared to projects supplementing gaps in the existing infrastructure);

- measures for sustainable parking policy which represent a comprehensive approach to parking areas in a city, which means that the quantity of traffic in cities is managed by way of the following: posing limitations to parking in city centres, pursuing financial politics of a more expensive parking in centres and a cheaper parking in suburbs, and the P+R system;
- the elaboration of mobility plans for institutions
- measures for traffic limitation in city centres for personal transport;
- use of modern technologies for effective mobility management;
- education and awareness raising activities.

EUR 49.0 million is available for the aforementioned measures within the scope of this programme, which also includes green logistics measures, promotion of cycling and filling infrastructure for electric vehicles. The first invitations to tenders in regard to comprehensive transport strategies of municipalities have already been published, whereas calls to tender for individual measures are foreseen to take place in the second half of 2017.

The measure for the improvement of public railway infrastructure will also affect the improvement of the public passenger transport, mostly by shortening of travel times, for which EUR 153 million is available in this programme. The OP ECP document also explicitly highlights that the OP GHG 2020 commitments will be followed in regard to measures for sustainable mobility. In addition to the measures mentioned above, the aforementioned OP GHG 2020 plans to promote the sustainable transport choice within the scope of the calculation of transport expenses. In regard to the previous document, the planning period has been expanded by 4 years by AP-EE 2020., and as regards public transport, the said plan is fully based on the OP ECP programme and the Transport Development Strategy.

A project unit for sustainable mobility will be established at the Ministry of Transport for monitoring the implementation of measures and of procedures in connection with cohesion funds (the assignments of this project group are described in detail in the Transport Development Strategy).

Since n regard to the impact on reducing GHG emissions, the measure for promoting PPT is categorised among the more important measures of the OP GHG 2020, and the number of passenger kilometres in public transport is in decline (regardless of some less significant positive changes) which makes the 2020 target increasingly more distant, the strengthening of activities in this field is recommended in the 2016 Report on the implementation of OP GHG 2020.

(M-15) SUSTAINABLE FREIGHT TRANSPORT

Sectors affected by the implementation of the measure: *transport*

The proportion of railway transport in total freight transport increased significantly, thus in 2014 exceeding the indicative target value for 2020 as referred to in OP GHG

2020. This, in fact, is the only indicator in the transport sector that shows impacts compliant with set goals. The number of tonne kilometre travelled in road transport decreased from 2011 to 2014, with the exception of the last year. In 2014, the volume was 2% lower than in 2011, while the volume increased by 10% in railway transport. It is necessary to provide for the continuation of these positive trends along with an increased economic activity, which will have an impact on larger volume of freight transport. These data only include travels carried out by domestic road haulage operators whereas a large proportion of freight transport is of transitional nature.

In regard to sustainable freight transport, the emphasis is placed on co-modality, for which the construction and modernization of the existing transport infrastructure (especially, the railway) is of essential importance. The measure is additionally supported by the Transport Development Strategy in the Republic of Slovenia by 2030 by means of goals to establish an efficient railway transport (the electrification of the whole Slovene railway network, modernization, upgrades and newly-build facilities) and efficient road goods transport (the introduction of electronic tolling for cargo vehicles, the introduction of IT for higher capacity utilisation of existing roads).

Measures are being implemented within the scope of OP ECP in connection with the modernization of railway infrastructure and with the promotion of sustainable mobility; the development of comprehensive, high-quality and inter operational railway system, in accordance with the Transport Development Strategy in RS. The following cohesion projects are in their final phase: the reconstruction, electrification and upgrade of Pragersko–Hodoš railway track and modernisations of level crossings and constructions of underpasses at railway stations, modernisation of the existing Divača – Koper track (phase II), the establishment of the GSM-R digital radio communication system, the upgrade of Slovenska Bistrica–Pragersko railway track section, the upgrade of Dolga gora – Poljčane track. Projects for the development of European Rail Traffic Management System and European Train Control System (ERTMS/ETCS) are in progress, the Zidani Most-Celje Railway Line Project, the project for the new Divača-Koper railway track, projects for the Pragersko railway hub and the Maribor-Šentilj track. By 2030, all sections of the TEN-T network will be modernised, upgraded and constructed by way of measures for the electrification of the whole Slovenian railway network, by way of the introduction of ERTMS (ETCS Level 2) on the entire TENT network, by way of the modernisations, upgrade and newly build facilities on the regional network. After the electrification of Pragersko–Hodoš track, a total of 50% of all railway tracks in Slovenia will be electrified, and of these, all railways lines on the Trans-European Transport (TEN-T) Network.

The following measures for shifting the transit cargo from roads to railway were accepted by the Transport Development Strategy in RS: the inclusion of external costs into tolls and other taxes for freight transport, the promotion of the use of intermodal transport units, the modernisation of intermodal terminals, the modernisation of the railway network and elimination of bottlenecks. The following measures for the improvement of road transport efficiency have been envisaged by the AN-EE 2020: the introduction of electronic tolling for cargo vehicles, the

introduction of intelligent transport systems for better use of existing roads and the development of traffic telematics and dynamic traffic signal control system.

Slovenia is highly exposed to transit transport due to its position at the crossroads between the V. and X. European corridor which, for the main part, represents a section the TEN-T core network and corridors of the core network. Since, in addition, Slovenia is small, with an attractive price offer for oil derivatives in Slovenia as compared to neighbouring countries, the increase in transit transport has a significant impact on the sale of liquid motor fuels in the Republic of Slovenia and, thus, on the GHG emissions. A long-term solution of the problem is possible by means of redirecting road freight transport to railways for which is a modern and reliable railway infrastructure is an absolute necessity; the construction of such railway infrastructure has started. In 2008, when energy use in transport reached its peak, the portion of fuels sold to transit transport amounted to 22% of the total volume of fuels sold. This was followed by a decrease in the portion due to economic crisis and changes in price ratios. This was followed by a decrease in the portion due to economic crisis and changes in price ratio. It dropped to 17% in 2013. The relations regarding fuel prices in Slovenia and in neighbouring countries have a significant impact on the movements in energy use. This results in significant uncertainties in the energy balance and GHG emissions, which is particularly noticeable due to the smallness of Slovenia. The use of transit transport varies greatly. The greatest change in energy use in transport was noticed in 2008 when it increased by 18%, which is a record annual increase; one important factor for the increase was due to differences in fuel prices charged by Slovenia and neighbouring countries. It is estimated that the portion of transit transport in the sale of motor fuels in the territory of Slovenia represents a solid 20%.

(M-16) REDUCING EMISSIONS FROM MOTOR VEHICLES

Sectors affected by the implementation of the measure: *transport*

(M-16A) PASSENGER VEHICLES

The measure is based on three pillars:

- the obligation of the automotive industry for improving fuel consumption efficiency,
- awareness raising regarding fuel consumption and vehicle emissions and
- promotion of the fuel consumption efficiency of vehicles through tax measures.

In 2009, the European Commission adopted mandatory targets regarding emissions from new cars. In accordance with Regulation 443/2009[47], the average emissions of new passenger vehicles after 2015[48] will not be allowed to exceed 130g of CO2/km, while an additional reduction in emissions of 10g of CO2/km will be achieved by improving tyres and the use of biofuels. Specific CO2 emissions of new vehicles from 2010 until 2014 fall almost linearly and were in 2014 with the value of 121.3 g of CO2/km 16% lower than in 2010. The target for 2015 was reached already in 2013 with 126g of CO_2/km[49]. The decrease in specific emissions from new vehicles is also affected by the difference between factory data about energy use and specific CO2 emissions and the actual energy use and actual specific CO2 emissions. The ICCT Study[50] shows that this difference was 8% in 2011 but it increased to 40% by 2014. The average emissions from all vehicles are decreasing but slower than it would be necessary to reach the indicative targets from the OP GHG 2020.

Measures for communication, awareness raising and public procurement are described under SI-NC6/BR1.

The third pillar concerns tax measures. Since 2010 progressive tax rates for motor vehicles with regard to CO2 emissions have been enforced, which is presented under SI-NC6/BR1 [51,52].

The OP GHG-2020 includes a measure for fuel efficient driving; a programme for the promotion and encouragement of fuel efficient driving is planned, primarily through safe driving instructors, exam centres and other measure multipliers.

(M-16B) CARGO VEHICLES

Since 2011, mandatory targets which apply to light goods vehicles regarding emission reductions have applied in the EU. The objective is that the average emissions of new light goods vehicles introduced on the market will not exceed 175g of CO2/km in 2017, and will not amount to more than 147g of CO2/km in 2020.

The OP GHG 2020 includes a new measure for fuel efficient driving. The OP GHG 2020 includes a new measure for fuel efficient driving. The training of drivers and

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47 Regulation (EC) No 443/2009 settling emissions performance standards for new passenger vehicles as part of the Community's integrated approach to reduce CO2 emissions from light goods vehicles.

48 The portion of new vehicles which must reach this target will gradually increase by 2015. In 2012 the portion amounted to 65 %, in 2013 to 75 %, in 2014 to 80 % and in 2015 to 100 %. In case of failing to reach targets, vehicle manufacturers must pay a fine.

49 Expert basis for the preparation of the first Annual Report on the implementation of OP GHG 2020, the Final Project Report, IJS-DP-11978, the Jozef Stefan Institute, Energy Efficiency Centre, November 2014

50 From laboratory to road A 2015 update of official and "real-world" fuel consumption and CO2 values for passenger cars in Europe, OCCT, 2015.

51 New tax rates started to apply with the coming into force of the Act, with the exception of personal motor vehicles with CO2 emissions between 150 and 210 grams per kilometre, for which a transitional period was in force until 1.1.2011. An additional tax was imposed on diesel engine vehicles with solid particle emissions exceeding 0.005 g/km and motor vehicles with a lower emissions level than Euro 4, and since 1 January 2010, a lower emissions level than Euro 5.

52 The taxation applies to vehicles designed principally for the transport of people (up to 10 persons).

goods vehicles fleet managers is in progress which includes the aspect of fuel efficient driving and logistics; it is carried out through authorized contractors in accordance with the Directive 2003/59/EC (drivers training) and Regulation 1071/2009/EC (education of transport managers). The areas in regard to fuel efficient driving and certain parts of logistics from the aspect of freight transport are included in these training programmes

Other measures for goods vehicles, green public procurement regarding light and heavy goods vehicles are presented under SI-NC6/BR1.

(M-16C) BUSES

The Eco Fund awards grants for the purchase of buses driven by compressed natural gas and biogas. In 2014 grants totalling EUR 0.18 million were given.

The green public procurement measure is presented under SI-NC6/BR1.

(M-17)PROMOTION OF NON-MOTORISED TRANSPORT

Sectors affected by the implementation of the measure: *transport*

Furthermore measures for the promotion of cycling are also important; in this regard, financial incentives for the construction of bicycle lanes and supporting facilities have been envisaged by the AP-EE 2020, and for the removal of obstacles to taking bicycles onto trains/buses and for the financing of promotional and educational activities. In the 2007–2013 period, a total of 38 km of bicycle lanes was constructed by means of European funds.

Projects for implementing the national bicycle connections have been implemented within the framework of the budgetary funds allocated by the Republic of Slovenia to the Slovenian Roads Agency. Funds earmarked for carrying out cycling projects have been continually increasing since 2008. Six projects concerning the construction of the national cycle network were co-financed from the EU funds in the 2007–2013 financial perspective, and the total of 38 km of bicycle lanes was constructed. A new strategic plan for the organisation of national bicycle lanes is envisaged in the Transport Development Strategy in the Republic of Slovenia, specifically, for the needs of daily commuting, tourism and for the incorporation into the European Bicycle network. The basic routes of the national bicycle connections were determined as early as in 1995, and were prepared by the Slovenian Infrastructure Agency.

In the 2007–2013 period, local communities were able to build bicycle route by means of co-financing provided by European funds within the scope of the Operational Plan for Strengthening Regional Development Potentials between 2007–2013. Funds for bicycle infrastructure sector are also foreseen in the 2014–2030 period (OP ECP), specifically, for urban settlements in total value of EUR 11 million. The first invitation

to tenders for bicycle infrastructure are planned to be held in the second half of 2017, after comprehensive transport strategies are prepared by municipalities.

In 2011, the bicycle rental system called BicikeLJ was introduced in Ljubljana, the capital of Slovenia. It is possible to rent 360 bicycle from the system and the system has 63,000 users.

(M-18)PROMOTION OF USE OF BIOFUELS

Sectors affected by the implementation of the measure: *transport*

In 2014, the portion of RES in transport, which in addition to biofuels also takes into account the use of renewable electricity, was reduced to amount to only 2.6%. Therefore, it was thus significantly lower than the annual target set and it represents a backlog on the way towards the 2020 target. It was thus significantly lower than the annual target set and it represents a backlog on the way towards the 2020 target. Throughout the entire period, the portion of biofuels has been below the target values referred to in the Decree on the promotion of the use of biofuels and other renewable fuels for the propulsion of motor vehicle[53], and lagging behind the annual target set is increasing.

In the total energy volume of motor fuels provided to the market a mandatory portion of biofuels for motor vehicles has been determined for distributors of these fuels for each individual calendar year in the Republic of Slovenia. If target portion in an individual year is not achieved by a distributor, the difference is transferred to the following year. The amount of biofuels placed on the market must be reported by distributors to the Slovenian Environment Agency by the end of March of each year. The Decree on the promotion of the use of biofuels and other renewable fuels for the propulsion of motor vehicles is presented under SI-NC6/BR1. In 2014, the second of the key measures was abolished, specifically, the exemption of the payment of excise duty for fossil fuels with added biofuels. Slovenia does not have a developed biofuel market or any biofuel production capacities; fuels for propulsion of motor vehicles are imported with biofuel having already been added.

In 2015, a modification of the Directive 98/70/ES on quality of fuels and the Directive 2009/28/EC on promotion of renewable energy sources was adopted on the EU level for the purpose of aligning their objectives with the objectives aiming at food safety; the said modification limits the contribution of the first generation biofuels to maximum 7%, while at the same time, an enhanced promotion of the development of the second and third generation of biofuels from non-food raw materials was proposed.

[53] Official Gazette of the Republic of Slovenia, No.103/07, 92/10, NPB1 and 74/11

The legal regulation for monitoring the implementation of sustainable measures for solid and liquid biofuels has been provided for on the basis of the Energy Law (EZ-1)[54].

The projection with measures assumes that the RES target share in transport will be achieved in 2020 by means of the first generation biofuels, which is why the expected portion of biofuels in road transport fuels amounts to 9.8% for 2020.

In order to achieve the 2020 target, additional measures, which are mentioned in the National Action Plan for Renewable Energy Sources, will have to be carried out

(M-19) PROMOTION OF USE OF OTHER LOW-CARBON ENERGY SOURCES IN TRANSPORT

Sectors affected by the implementation of the measure: *transport*

In addition of objectives set on the EU level in regard to specific GHG emissions for personal vehicles and light goods vehicles which are mentioned under the measure (M-17) and which also promote the use of low-carbon sources in transport, the following measures have been adopted:

The purchase of personal vehicles, motorcycles, mopeds and bicycles with electric or hybrid propulsion is promoted by the Eco Fund through favourable loans granted to companies, sole traders and citizens. In addition, the purchase of battery-powered electric vehicles by citizens and companies is co-financed by the Eco fund, specifically, for vehicles with the maximum of 50 g/km of CO2 emissions in the combined driving cycle according to manufacturer's data. In the 2013–2014 period, grants totalling in EUR 0.32 million were awarded. In 2015, significantly more funds were available for the purchase of vehicle than the year before (EUR 2 million as opposed to EUR 0.5 million in 2014), although the funds were not fully used. Favourable loans are also available for the purchase of gas-powered personal vehicles.

The Eco Fund gives financial incentives for the purchase of buses running on compressed natural gas or biogas. In 2014 a total of EUR 0.18 million of EUR subsidies was available.

The financing of the construction of public infrastructure for alternative fuels and smart filling stations (public and private) for an accelerated introduction of electro mobility implementation is also planned in the OP ECP.

In 2015, an inter-sectoral working group was established by the Government in order to prepare a strategy in regard to market development for the organisation of suitable infrastructure in connection with alternative fuels; the measures which have

[54] Official Gazette of the Republic of Slovenia, No. 17/2014

to be prepared by the said group must include the promotion of the use of alternative fuel vehicles and the organisation of infrastructure for the use of alternative fuel vehicles, by taking in consideration the Directive 2014/94/EU; the deadline for the strategy production is the end of 2016.

The promotion of the use of electric and hybrid plug-in vehicles, including the promotion of the construction of filling infrastructure or filling equipment for electric plug-in vehicles is one of measures of the Transport Development Strategy in the Republic of Slovenia adopted in 2015.

In regard to 2012, the impact of the measure is assessed to amount to 84 kt CO_2 eq.

3.8 Industrial processes

(M-20) REDUCTION IN EMISSIONS OF F-GASES FROM STATIONARY EQUIPMENT

Sectors affected by the implementation of the measure: *industrial processes*

The implementation of the provisions of the new Regulation (EU) No. 517/2014 relating to fluorinated greenhouse gases from 2014 affects the reduction of F-gases emissions from the stationary equipment and it represents a more intense reduction in F-gas emissions than achieved in the past. The new regulation preserves all good quality elements of the former regulation[55], and it improves them. The regulation's impact will mainly be achieved through limiting the placement of F-gas onto the EU market by means of a quantity cap and by limiting the use of F-gas with high greenhouse potential. Further detailed information about the regulation is presented in Chapter 3.5.1 EU-BR2.

In Slovenia, the implementation is regulated by way of the Decree on the implementation of the Regulation (EC) on certain fluorinated greenhouse gases (32/2007) and by way of the Decree on the use of ozone depleting substances and fluorinated greenhouse gases (41/2010) and by way of the Rules on the professional training of personnel regarding equipment containing ozone depleting substances or fluorinated greenhouse gases (17/2009).

In Slovenia, a very important measure is the environmental tax for air pollution due to carbon dioxide emissions, which is being also paid for the use of fluorinated greenhouse gases (see the presentation of the measure under M-2).

Projections show that by 2020 the quantity in EU will decrease by 37% as compared to 2015. The evaluation of impacts generated by the measure at a national level is slightly more conservative, as it was developed before all elements for the new Regulation were known

[55] Regulation (EC) No 842/2006 of the European Parliament and of the Council on certain fluorinated greenhouse gases (UL L No. 161 as of 14 June 2006).

(M-21) Reduction in Emissions of F-Gases from Mobile Air-Conditioning Systems

Sectors affected by the implementation of the measure: *industrial processes*

In this area, clear objectives and measures have been set: on the EU level by way of a Directive 2006/40/EC of the European Parliament and the Council relating to emissions from air-conditioning systems in motor vehicles and amending Council Directive 70/156/EEC (UL L No. 161 of 14 June 2006); in Slovenia, by way of the Technical Specification TSV – 161 (Edition 01) on emissions from air-conditioning systems in motor vehicles of category M1 and N1 (passenger motor vehicles and goods vehicles of up to the total mass of 3.5 t) After 1 January 2017, the said Specification prohibits the registration of all vehicles with installed air-conditioning systems which contains fluorinated greenhouse gases with a global heating potential over 150. See EU-BR2 and SI-NC6/BR1 for details.

(M-22) Management of Waste Electric and Electronic Equipment

Sectors affected by the implementation of the measure: *industrial processes*

This field is regulated by the Environment Protection Act and the Directive on waste electric and electronic equipment (Official Gazette of RS, No. 55/2015), by way of which the Directive on waste electric and electronic equipment from 2004 was replaced in 2015. The directive transposes the provisions of the Directive No. 2012/19/EU on waste electric and electronic equipment (WEEE) into the Slovenian legal order. It is about the promotion and steering of manufacturers towards having the electric and electronic equipment designed and manufactured so as to provide for simpler recycling and re-use. In regard to the environmental objective, key novelties include a more ambitious target of separate WEEE collection so that from an uniform target of 4 kg of collected WEEE from households per year per person it has changed into the target which is determined according to the quantity of WEEE introduced on the market in past years. In the years from 2016 to 2021, Member states (MS) must gradually collect an annual quantity of WEE which amounts to from 45% to 65% of EEE put on market in the last three years. The prescribed portions regarding re-use, recycling and remaking for individual classes of EEE have been increased by 5%.

The impact on F-gases emissions is small. In 2013, without the implementation of this measure, the GHG emissions would be 4.8 kt of CO2 eq. higher.

(M-23) USE OF BEST AVAILABLE TECHNOLOGIES IN PRODUCTION

Sectors affected by the implementation of the measure: *industrial processes, use of fuels in industry*

The Directive 2010/75/EU on industrial emissions is the key instrument regulating the emissions of harmful substances, while the most important instrument in regard to emissions from fuel use or for the promotion of energy efficiency and substitution of fuels in industry is the emissions trading, EU-ETS (measure M-1), with the Directive 2010/75/EU merely complimenting it. The aim of the directive is the introduction and the promotion of the best available technologies (BAT) through environmental permits for installations and devices and their control. In this manner, the selection of new equipment is influenced and the replacement of existing equipment is encourages so that the equipment must meet the conditions and provisions from the directive or standards from referential documents. The directive is of key importance for emission reduction (CH4, N2O, F-gases) in next sectors: industry, energy supply, agriculture and waste management. For details see EU-BR2. For details see EU-BR2.

In Slovenia, this instrument contributed to the key reduction of GHG gases emissions in industrial processes which was achieved in 2007, when the old electrolysis unit was stopped since it did failed to meet the standards of the best available technologies. Consequently, the PFC emissions were reduced by approximately 85%. See detailed presentation of the instrument under SI-NC6/BR1.

3.9 Agriculture

In 2011, the National Assembly adopted the Resolution on Strategic Guidelines for the Slovenian Agriculture and Food Technology by 2020 – "Let's Secure Food for Tomorrow" with the following strategic goals: food security through stable food production and the provision of good quality and affordable food to consumers, the sustainable use of production potentials and the provision of public goods related to agriculture. Activities from the Operational Programme of Measures for Reducing GHG Emissions by 2020 were aligned with these guidelines. The objective of the programme is to control and manage GHG emissions while simultaneously increase food self-supply in Slovenia. This means reduction in emissions per unit of produced food. The attainment of this objective is primarily based on the more efficient transfer of knowledge into practice and on faster implementation of modern farming procedures generating low GHG emissions.

(M-24)INCREASING EFFICIENCY IN ANIMAL PRODUCTION

Sectors affected by the implementation of the measure: *agriculture*

By improving the efficiency of animal production, the amount of methane and nitrogen excreted per unit of milk and meat produced can be reduced significantly. Since methane and nitrous oxide emissions represent a loss in energy and nitrogen, animal producers have a direct economic interest in the reduction of emissions. There is still quite a large area for improvement in this sector, and these possibilities can only be used by training producers about the ways for improving the efficiency of animal production. Due to a specific structure of Slovenian agriculture (high number of small farms), this is a special challenge for agricultural policy. The agricultural policy contributes to the reduction of emissions in this regard through measures provided for by the Rural Development Programme (mostly through investments in physical assets), by financing breeding programmes for breeds of cattle and small ruminants, by financing public advisory services for farmers in regard to forage production, animal nutrition and general cattle production. The maintenance of the existing "Govedo" (*Cattle*) Information System is ensured within the scope of breeding programmes; the said system provides support to dairy cow breeders in making decisions that lead to a reduction in GHG emissions, and it provides information on emissions status at their farms.

(M-25) INCREASING IN PROPORTION OF GRAZED ANIMALS

Sectors affected by the implementation of the measure: *agriculture*

By grazing, methane emissions generated by the manure storage, are avoided. Grazing also contributes to the reduction in emissions due to fossil fuel use in the harvesting and transport of foodstuffs for animals which are kept indoors. Due to the dispersion of agricultural plots of land, due to traditional siting of farms in closely-settled villages and due to indoor housing tradition, the animal grazing is very rarely used in Slovenia. The Ministry of Agriculture, Forestry and Food has contributed to an increase in the grazing management by financing the public agricultural advisory service. The "Planinska paša" (*Mountain Grazing*) operation has been implemented within the scope of Agri-Environment-Climate Payments (AECP) which directly promotes the highest standards in forms of summer grazing in mountain pastures. From the aspect of reducing GHG emissions, the suitable tackling of the issue in regard to large carnivores spreading to areas suitable for grazing is also important. This is why, the measure entitled the Livestock rearing in area of the occurrence of large carnivores is implemented within the framework of the AECP.

Goals in regard to the increase in grazed animals on the account of the reduction of housed animals are very ambitious. By way of the first proposal of the first modification of the Rural development Programme 2014–2020, the Ministry of Agriculture, Forestry and Food has decided to promote cattle and small ruminant

grazing throughout the entire grazing season, specifically, within the scope of the measure "Animal Welfare".

(M-26)RATIONAL FERTILISATION OF AGRICULTURAL PLANTS WITH NITROGEN

Sectors affected by the implementation of the measure: *agriculture*

Efforts in this area are directed into more efficient use of mineral and animal fertilizers. In this manner, with a reduced use of nitrogen, the quantity of agricultural production is maintained or even increased, and the direct nitrous oxide emissions from agricultural land and indirect nitrous oxide emissions are reduced. The agricultural policy contributes to reducing emissions in this area through measures provided by the Rural Development Programme (Investments in Physical Assets, Agri-Environment-Climate Payments (AECP), Organic Farming etc.) and through financing public advisory services for farmers. All farms entering the AECP must have a programme of activities, which includes record-keeping on the use of mineral and animal fertilizers. If mineral fertilisers are used they must make fertilization plans based on soil analyses. In addition to general conditions, specific requirements which are implemented within the scope of individual AECP operations contribute to the more efficient use of fertilizers. These are requirements about crop rotation, fertilization based on analysis of mineral nitrogen in the soil , low-emission fertilization, greening of arable land and other similar requirements.

Climate change mitigation and adaptation to climate change represents a significant horizontal objective of the Rural Development Programme (RDP 2014-2020), as the process of adaptation to climate change and mitigation of these associated with structural changes in rural areas and agriculture, precisely because of this reason this content (in addition to already mentioned measures) are also involved in measure Cooperaton and LEADER.

3.10 Waste Management

(M-27) REDUCTION IN DEPOSITED BIODEGRADABLE WASTE

Sectors affected by the implementation of the measure: *waste management*

In 2013, the quantity of deposited biodegradable waste in Slovenia was 85% smaller than in 2005 and it stands well under the linear path towards the indicative target of the OP GHG 2020 set for 2020. Until 2020, the amount of deposited biodegradable waste will have to be reduced by additional 43%. The two main measures for reducing the quantities of deposited biodegradable waste are waste separation and mechanically-biological treatment of mixed municipal waste. The achievement of the target will mostly depend on the implementation of these measures within the scope

of the Operational Programme for Municipal Waste Management of March 2013. The measure is presented in detail under SI-NC6//BR1.

At the beginning of March 2016, the public consultation in regard to the new waste management programme will be concluded; this new programme will apply for the whole country and will incorporate all waste flows (not only municipal ones), and will also comprise the waste prevention programme. Two scenarios have been presented in the programme: the first provides for the achievement of applicable environmental targets, while the second one is more ambitious and presents a scenario according to which the Republic of Slovenia would reach the targets which have been proposed in the package on circular economy (the amended legislative proposal on waste: 65% recycling of municipal waste to be ensured by 2030, together with a 75% waste packaging recycling, and maximum 10% disposal of all waste in regard the quantity reached).

he legislation providing for the implementation of measures has been revised

1. Decree on Waste Landfill (Official Gazette RS, Nos. 10/06 and 54/15),
2. Decree on Environmental Tax on Pollution for Landfilling of Waste (Official Gazette RS, No. 14/14);
3. Decree on Biodegradable Kitchen Waste and Garden Waste Management (Official Gazette RS No. No. 39/2010.
4. Decree on Recycling of Biodegradable Waste and Use of Compost or Digestate (Official Gazette RS, Nos. 99/06 and 56/15),
5. Decree on Waste (Official Gazette RS, Nos. 37/06 and 69/15).

A series of EU level instruments has been adopted in the field of waste management and they are presented in detail under EU-BR2: Directive 1999/31/EC on waste disposal on landfills, Directive 2008/98/EC on waste and annulment of some directives, Directive 2012/19/EU on waste electric and electronic equipment, Directive 94/62/EC on packaging and waste packaging.

Within the scope of the Operational Programme for Environmental and Transport Infrastructure Development, 5 centres for waste management (CERO Celje, Puconci, Slovenska Bistrica, Koroška, Zasavje and Ljubljana) were constructed by means of the Cohesion Fund, specifically, within the priority axis in regard to municipal waste management. The projects were completed in 2015 with the exception of one which was completed in 2013. The Slovenia's needs in the field of municipal waste management are satisfied by way of their capacities; therefore, new investments have not been envisaged within the scope of OP ECP for the period from 2014 to 2020.

As presented under M-3, an analysis of environmental taxes in the field of environment protection has been designed as an OP GHG 2020 measure and it will be the basis for the audit of environment tax in regard to waste disposal.

It is estimated that, as a result of the measure, by 2020, the GHG emissions will decrease by 198 kt CO2 eq. as compared to the 2012 level.

(M-28) LANDFILL GAS CAPTURE

Sectors affected by the implementation of the measure: *waste management*

An important measure for reducing waste emissions is the landfill gas capture which had to be organised by all landfill operators by the end of 2005. The measure is presented under SI-NC6/BR1 and in EU-BR2.

It is estimated that, as a result of the measure, by 2020, the GHG emissions will decrease by 113 kt CO2 eq. as compared in a situation without having taken the measure.

(M-29) DRAINAGE AND WASTE WATER TREATMENT

Sectors affected by the implementation of the measure: *waste management*

For the purpose of regulating municipal wastewater drainage and its treatment, an Operational Programme on Municipal Wastewater Drainage and Treatment for the Period from 2005 until 2017 has been adopted by the Republic of Slovenia. In the document, the type of utility infrastructure to be constructed in an individual area and by what time is precisely defined for all populated areas in Slovenia.

Within the scope of priority axis for wastewater drainage and treatment, 43 treatment plants and 672 km of sewage network were constructed or reconstructed and they were mainly completed in 2014 and 2015. Additional investments have been foreseen with OP ECP for the period by 2020, with the target that 97% of the entire load from populated areas with more than 2000 PU will be connected to the public infrastructure for collection and suitable treatment of municipal wastewater.

3.11 Sustainable forest management and CO2 emissions sinks

(M-30) SUSTAINABLE FOREST MANAGEMENT AND CO2 EMISSIONS SINKS

Sectors affected by the implementation of the measure: *LULUCF, forestry*

Slovenia has decided to also report about the LULUCF sector due to transparency and consistency, although the LULUCF sector is not included in the EU target for 2020.

Slovenia has been conducting an active policy in the field of sustainable forest management and insurance of carbon dioxide emission sinks. The accumulation of wood supply in the previous period is a result of the long-term planned work of the Slovenian Forest Service based on the principles of sustainability, environmental friendliness and multi-functionality. The uses of wood or acquired wood products (HWP) also contribute to CO2 emission sinks.

In 2007, the Resolution on the National Forest Programme (ReNFP) was adopted, and one of the fundamental objectives in the said Resolution was sustainable forest development as an ecosystem within the meaning of its biodiversity and all its ecological, economic and social functions. In 2012, the Action Plan for increasing the competitiveness of the forest-wood chain in Slovenia by 2020[56]was adopted which stipulated measures to promote the felling of trees in accordance with the forest management in force. The Slovenian Forest Service plays an important role in the management and restriction of the felling of trees in forests; specifically, it prepares forest management plans and issues decisions on the felling of trees and authorisations for other interventions in forests. The Slovenian Forest Service directs the management of all forests in Slovenia – irrespective of ownership The largest permitted felling of trees in Slovenia is defined in the Forest Management Plans for Forest Management Areas, with a validity of 10 years (the recent plans are valid for the period 2011–2020). According to these plans and in order to follow sustainable and environment friendly forest management, which has been carried out in Slovenia for more than 50 years, 6.5 million m3 of wood may be felled (75% forest growth per year), without endangering the stability of the forests and their habitats[57,].

The development and testing of methodology for monitoring and calculation of LULUCF and emissions sources in the sector, establishment of information system, demonstration sampling and preparation of basis for the climate targets and measures integration in the policies of land use and forest and agricultural land are envisaged.

3.12 Use of Units from Market Mechanisms and Land Use, Changes of Land Use and Forest Management

Slovenia currently does not plan to use Kyoto mechanisms and plans to fulfil all of its commitments by 2020 by implementing domestic measures. Recent projection on GHG emissions shows that Slovenia will meet its obligation to achieve the objective in according with the Directive 2009/406/EC without using Kyoto mechanisms.

The LULUCF sector has not been included in the EU target for 2020.

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[56] Action Plan for Increasing Competitiveness of Forest-Wood Chain in Slovenia by 2020, adopted by the Government of the Republic of Slovenia, July 2012

[57] Forest-management and game-management plans for the period 2011–2020, Summary for Slovenia prepared by the Slovenian Forest Service, adopted by the Government of the Republic of Slovenia, August 20

3.13 Domestic institutional arrangements

Information on changes in Slovenia's domestic institutional arrangements, including institutional, legal, administrative and procedural arrangements used for domestic compliance, monitoring, reporting, archiving of information and evaluation of the progress towards its economy-wide emission reduction target are described below. In addition, arrangements established for the process of the self-assessment of compliance with emission reductions in comparison with emission reduction commitments are explained, including information on the progress made in the establishment of national rules for taking local action against domestic non-compliance with emission reduction targets.

According to Article 12 of Regulation (EU) No 525/2013 of the European Parliament and the Council on a mechanism for monitoring and reporting greenhouse gas emissions and for reporting other information at national and Union level relevant to climate change.

Slovenia is developing its national system for policies and measures and projections, using the experiences with the national inventory system and with previous reporting to EU and UNFCCC on projections and policies. The main responsible authority for the national system is Ministry responsible for environment. This system will contain the same main elements as the National System for GHG emissions, which is already in place under the Kyoto Protocol.

The basics of the system are already in place, though some of the arrangements have yet to be formalized and better documented. Slovenia will aim to finalize the system during 2016.

Present reporting on PAMs and projections is based on the arrangements in place since Slovenia first adopted the Operational programme for limiting greenhouse gas emissions in 2006. In the years that followed annually reports were prepared. Those reports describe policies in place and planned, and the achieved and projected progress in the field of energy production, renewable energy, energy consumption and energy savings in Slovenia as well as details for the various sectors of society. It also describes the realized and projected greenhouse gas emissions. Almost all elements required for the biennial submissions to the EU under Regulation 525/2013 articles 13 and 14 are included in the annual progress report.

In 2014 on the proposal of the Ministry of the Environment and Spatial Planning, the Government of the Republic of Slovenia adopted the Operational programme for limiting greenhouse gas emissions until 2020.

The program clearly defines the activities for the reduction of GHG emissions by sector and assigns the implementation of PaMs to relevant ministries and agencies. For each sector, indicative targets are set, and for sets of measures, the expected effect is estimated.

Most of the measures are already approved in the sectorial programmes, for these measures the OP GHG-2020 aims only to monitor the effects on GHG emission reduction and the implementation measures. The measures have already basis in the national legislation and most of them have legal basis as well in the EU directives transposed to national legislation. The financial construction of OP GHG-2020 of resources needed for implementation of measures is as well a part of the programme and summarises the resources devoted to sectorial programmes.

The programme includes special chapter dedicated to monitoring of implementation where structure of the yearly evaluation report is defined. The Ministry of the Environment and Spatial Planning prepares the report and informs Government with outcomes. The self-assessment of compliance with emission reductions in comparison with emission reduction commitments is included in the yearly report. If the evaluation shows that implementation of the Programme is not sufficient additional actions need to be proposed in the evaluation report. In 2015 first report on implementation of measures from OP TGP-2020 has been prepared. It assesses implementation of individual measures and also effect of measures on different indicators and overall non-ETS emissions.

The Ministry of the Environment and Spatial Planning, Slovenian Environment Agency, Statistical Office of the Republic of Slovenia and the external contractor are separately involved, and in different fields, in the whole process for policies and measures and projections. Each entity has its own responsibility and an independent evaluative view.

The description given above provides information on the present processes. As mentioned a full and more final description will be possible after finalizing the national system in the course of 2016.

The annual report for monitoring OP GHG -2020 implementation surveys all relevant sectorial programmes and/or specific measures, and checks implementation of measures, including their effects. Monitoring of implemented measures is also embedded in the sectorial programmes with outcomes included in reports prepared by ministries or agencies tasked with implementing the PaMs.

The description given above provides information on the present processes. As mentioned a full and more final description is possible after finalizing the national system in the course of 2016.

The programme coordinates compliance with requirements under the Convention, and assigns the implementation of PaMs to relevant ministries and agencies.

3.14 The economic and social consequences of response measures

Under Article 3.1 of the Kyoto Protocol and UNFCCC Decision 31/CMP.1, Annex I Parties shall report on how they are striving to implement the commitments, together minimizing adverse social, environmental and economic impacts on developing country Parties. And according to the BR reporting guidelines (2/CP.17) Annex I party is encouraged to provide, to the extent possible, information on the assessment of the economic and social consequences of response measures.

Annex I countries, including Slovenia, implement measures in the framework of the Kyoto Protocol, aimed at substantially reducing greenhouse gas emissions and contributing to climate change mitigation. The implementation of increasingly stringent environmental legislation and other measures aimed at fulfilling this obligation might be associated with a range of side effects. It is not excluded that potentially associated adverse economic effects could affect some developing and least developed countries having less capacity for adequate remedial response measures. The magnitude of these potential impacts is conditioned by the selection of the policy measures, their stringency, the size of the economy implementing the measures, as well as the characteristics of the possibly affected developing countries.

As a Member State of the European Union, Slovenia, designs and implements most of its policies in the framework of EU directives, regulations, decisions and recommendations. To ensure that all relevant possible impacts are taken into account, the EU has established processes that assess the economic and social consequences of climate policy measures. For the development of new policy initiatives through legislative proposals by the European Commission, an impact assessment system have been established in which all proposals are examined before any legislation is passed. It is based on an integrated approach which analyses both benefits and costs, and addresses all significant economic, social and environmental impacts of possible new initiatives.

When adopting national measure Slovenia is mindful of the principle that its policies and measures to reduce greenhouse gas emissions are designed in a way to have no, or minimum, adverse impacts on developing countries, particularly on the least developed ones. One of the examples in this regard is the possibility of carbon leakage which would entail higher greenhouse gas emissions in countries which have lower environmental standards. Slovenia is promoting the implementation of measures that ensure that carbon leakage would not take place. As regards fiscal policy instruments, no significant impact on third countries is expected from the already implemented fiscal policies and therefore no specific policies to offset any negative effects have been considered. Negative effects are also potentially linked with the increased promotion of biofuels, as increased demand and subsequent production of biofuels may be linked to rising commodity prices and potentially induced land use change, however taking into account the low quantities of biofuels in use in Slovenia, we do not expect any negative effects neither on forests destruction nor contribution to the rising world prices of agricultural commodities.

4 Greenhouse Gas Emissions Projections

Emissions projections have been made in 2015, taking 2012 as a base year except for waste and industrial processes sectors in which case 2013 has been used as a base year. The new IPCC methodology has been applied in projections which has an impact on emission factors and affects new calculation values of carbon dioxide equivalent (GWP values). Projections were made for 2015, 2020, 2025 and 2030.

4.1 Definition of Scenario

Projections were calculated for a scenario with measures. The table below presents sector's strategic documents used as a basis to develop emissions projections and elements used in the activity projections.

Table 4: Number of scenarios by sectors and the source of sector projections which have been applied

Sector	Sectoral projections that are foundation for projections	Strategic or programme documents
Energy use	Projection REF of energy use in long-term energy balances from 2013	Long-term energy balances of Slovenia until 2030 and expert bases for setting national energy targets, Energy Efficiency Action Plan for the period 2014–2020, Operational Programme for the Implementation of the EU Cohesion policy in the period 2014–2020
Industrial processes	Projection of economic development until 2030 from long-term energy balances from 2013	Operational Programme for Reducing GHG Emissions until 2020
Agriculture	Projection of Institute of Agriculture with consideration of directions of Strategy for implementation of resolution on strategic directions of Slovenian agriculture and food industry until 2020	Rural Development Programme 2014–2020, Strategy for implementation of resolution on strategic directions of Slovenian agriculture and food industry until 2020
Waste	Projections of waste flows in the operational programme for municipal waste management from 2013	Operational programme for municipal waste management

Emissions projections in the sector energy use is based on projections developed by the Ministry of Infrastructure within the scope of the project: Long-term Energy Balances of Slovenia by 2030, and on expert bases for setting national energy targets prepared in 2013. Long-term balances were made for two scenarios; a reference scenario and an intensive scenario. The reference scenario ensures the attainment of all energy targets in 2020 while options to be fulfilled with a more ambitious implementation of energy policy measures are analysed in the intensive scenario. The projection for reference (REF) energy use was applied in projection with measures, taking into account all measures presented in the previous Chapter, with the exception of Green Growth and Sustainable Forest Management (also see Table CTF). Measures are presented in the table below.

Table 5: Set of measures taken into account in the projection with measures

Short description of the measure	Scenario in which the measure is considered
MULTI-SECTORIAL MEASURES	
Implementation of European trading scheme (EU-ETS) in Slovenia	With measures (WM)
Payment of tax for fossil fuel use proportionally to formed CO2 emissions. Also tax for F-gases use	WEM
Energy use taxes	WEM
Planning, development and financial incentives for education for transition into low-carbon society, activities for integration of contents about climate changes into school curricula, raising awareness and informing, education of different target groups	WEM
ENERGY SUPPLY	
Blocks 3-4 of TE Šoštanj will be shut down and replaced by unit 6. Emission reduction in line with the contract with Government of the Republic of Slovenia is assumed. Coal fired SPTE units in Ljubljana will be replaced by a gas one.	WEM
Support scheme for SPTE in all sectors	WEM
Support scheme electricity production from RES in all sectors. Building of large HE	WEM
HOUSEHOLD AND COMMERCIAL/INSTITUTIONAL SECTOR	
Improvement of standards for efficient energy use in buildings (PURES), Demonstration projects, Sustainable spatial planning, Energy efficiency in cultural heritage buildings	WEM
Financial incentives (subsidies and credits) for RES and EE measures, scheme for low-income households, payment based on actual consumption	WEM
Financial incentives (subsidies and loans) for RES and EE measures, obligation scheme for large suppliers, energy performance contracting, energy management, green public procurement	WEM
EU legislation implementation in Slovenia	WEM
INDUSTRIAL EMISSIONS FROM ENERGY USE	
Financial incentives (subsidies and credits) for RES and EE measures, obligation scheme for large suppliers, demonstration projects	WEM
TRANSPORT	
Integrated public passenger traffic: unified ticket, adjusted timetables, increased accessibility: punctuality, frequency, promotion. Subsidies for public passenger traffic. Coordinated local planning of public passenger traffic	WEM
Building of railway infrastructure	WEM

Short description of the measure	Scenario in which the measure is considered
Taxation of road vehicles proportionally to CO2 emissions, EU legislation on CO2 emissions for road vehicles, vehicle and tyre labelling, green public procurement, financial incentives for cleaner vehicles and promotional activities, differentiation of tolls according to EURO class	WEM
Financial incentives for bicycle infrastructure and other measures	WEM
Obligations regarding biofuel use for distributors: minimum shares of biofuels in liquid engine fuels sold	WEM
Subsidies for low-emission vehicles, development of filling infrastructure	WEM
INDUSTRIAL PROCESSES	
Collection of gases and proper disposal of equipment with F-gases, education and certification of service personnel and companies managing the devices, tagging of F-gases equipment, quota system on EU level at F-gases use	WEM
From June 21st 2009 a new vehicle cannot be registered, if the air-condition device contains gas with GWP >150 and has an annual discharge level >40g or >60g (one or two evaporators). From 2011 on the use of gases with GWP >150 prohibited for all new vehicle types and from 2017 on for all newly registered vehicles.	WEM
Reduction of F-gases emissions at disposal of smaller devices with F-gases	WEM
Through environmental permits companies are encouraged to use the best available technologies	
WASTE MANAGEMENT	WEM
Reduction of biodegradable waste, mainly by higher level of separate collection of waste and also establishment of regional centres. Decrease of landfilled waste is also promoted through tax on the landfilling of waste.	WEM
Waste landfills are obliged to establish collection and flaring or energy use of landfill gas	WEM
AGRICULTURE	WEM
Fostering programmes with intention of better energy use and proteins in cattle, fostering optimisation with feeding optimisation	
Methane emissions due to manure treatment will decrease with increase of grazing animals	WEM
Encouragement of efficient nitrogen use in mineral and organic fertilizers with measures of Rural Development Programme and public advisory service	

4.2 Projection Results

According to the projection with measures, emissions will increase so as to amount to 18,198 kt CO_2 eq. by 2020 but they will decrease to amount to 17,002 kt CO_2 eq. by 2030. Compared to 2013, emissions are higher by 0.5% in 2020 and lower by 6.1% in 2030. Compared to 2005, emissions are lower by 11.0% in 2020 and by 16.8% in 2030.

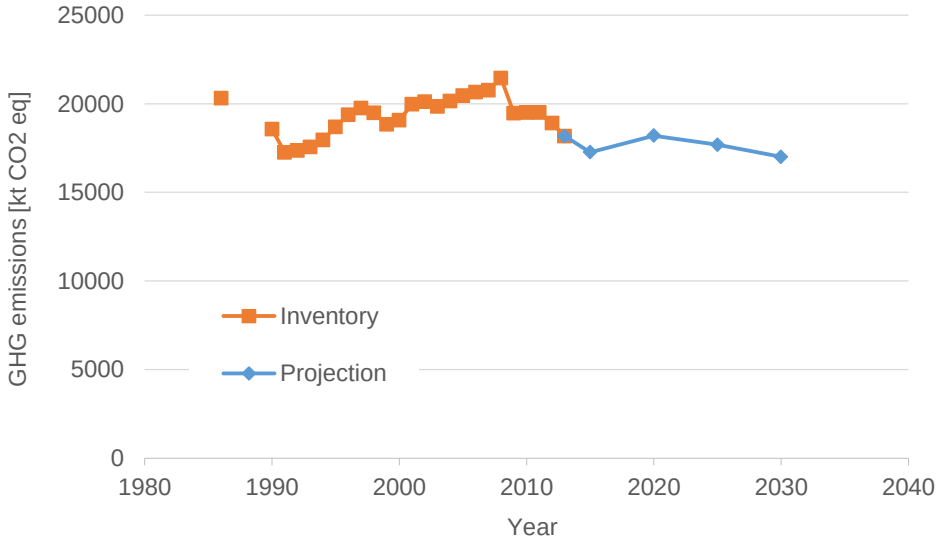

Figure 5: Emissions trend in the period up to 2013 and emissions trend according to projections with measures from 2015 to 2030 (source: ARSO, IJS-CEU, KIS).

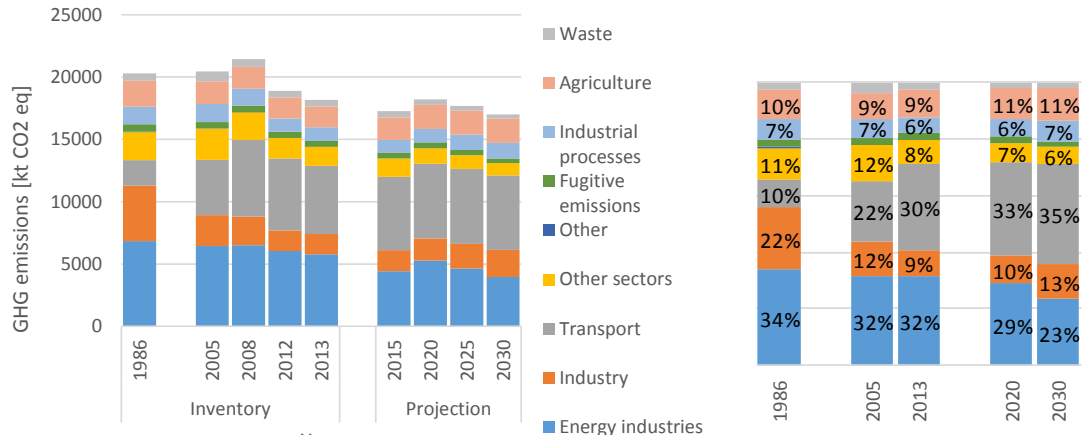

Figure 6: Sectoral GHG emission structures in selected years and projections with measures for 2015, 2020, 2025 and 2030 (source: ARSO, IJS-CEU, KIS).

Up until 2013 (inclusive), the most important source of GHG emissions was the generation of electricity and heat - transformation. In 1986, these sectors were followed by industry and other sectors, transport and agriculture and industrial processes. Up until 2013, emissions from transport increased significantly which is why in 2013 transport was positioned on the second place having a slightly lower share (30%) than transformation sector (32%). The reduction of industry emissions resulted in a significant decrease of the share taken up by industry so that in 2013 it was equal to the share taken up by agriculture. From 2015 onwards, the most important sector is projected to be transport (holding a one-third share). The most important reason for the change in the most important sector is a reduction of emissions from transformation as a result of the closures of the Trbovlje Thermal Power Plant and Šoštanj Thermal Power Plant, Unit 3, and further reduction in coal-based electricity production (the closure of TE-TOL; reducing production in TEŠ).

Emissions from the generation of heat and electricity are significantly lower in 2015 as compared to 2013 and 2020 owing to an assumption in regard to the launch of Unit 6 of Šoštanj Thermal Power Plant which is also supposed to affect the operation of the other units of the same plant in this year. According to the significance in projections, the sector is followed by agriculture, representing 11% share in 2020 and 2030, and industry whose share is projected to increase from 10% to 13%. Industrial processes with an 8% share are positioned on the 5th place in 2015, and reach 6% in 2030; a similar share is held by households. The remaining share of emissions is taken up by waste and fugitive emissions, both sectors have a 2% share.

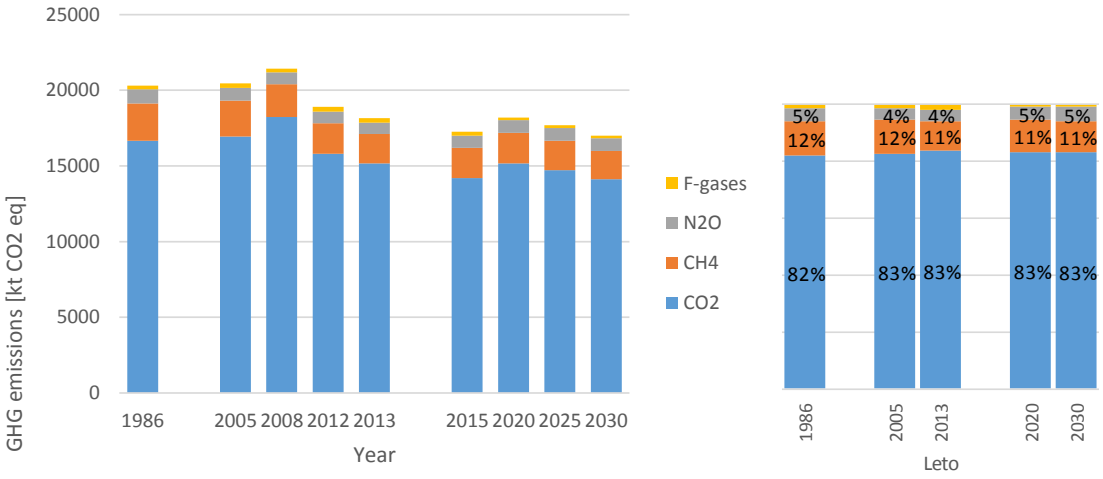

Figure 7: GHG emission structures by gases in selected years and projections with measures for 2015, 2020, 2025 and 2030 (source: ARSO, IJS-CEU, KIS).

Emission structure by gases practically does not change. Carbon dioxide strongly dominates the structure by achieving solid 80%. It is followed by CH4 with solid 10%. N2O represent approximately 5% while F-gases take up from 1% to 2%.

4.2.1 Projections by gases

Carbon dioxide (CO2)

According to the projection with measures for a period of up to 2020, following a decrease in 2015, CO2 emissions rise to the same level as in 2013. They are reduced by 2030 to amount to 14,115 Gg CO2 eq., which is 6.9% less than in 2013.

The main source of CO2 emissions is the combustion of fuels, reaching 93% in 2020 and 91% in 2030 respectively; the most important source of emissions within this sector is transport reaching 39% of total emissions in 2020 and 42% in 2030. The second most important source is transformation, holding 35% and 28%. The remaining CO2 emissions are mostly the result of industrial processes, and a small share is contributed for by fugitive emissions. The reduction in transformation by 1.8 Mt CO2 and in other sectors by 0.6 Mt CO2 contributes the most to emission

reduction, although emissions increase in industry (0.5 Mt), transport (0.5 Mt) and industrial processes (0.3 Mt).

Methane (CH4)

Compared to 2013, methane emissions increase by 3.6% by 2020. From 2020 onwards, emissions decrease so as to amount to 74.76 kt CH4 in 2030, which is 4.0% less than in 2013.

The main source of methane emissions is agriculture and its share is increasing. It amounts to 59% in 2013, 65% in 2020 and 71% in 2030. The agriculture sector is followed by waste whose share is decreasing fast, and fugitive emissions. Waste emissions decrease by 8.1 kt by 2030 as compared to 2013, and fugitive emissions decrease by 1.8 kt, whereas agriculture emissions increase by 7.2 kt.

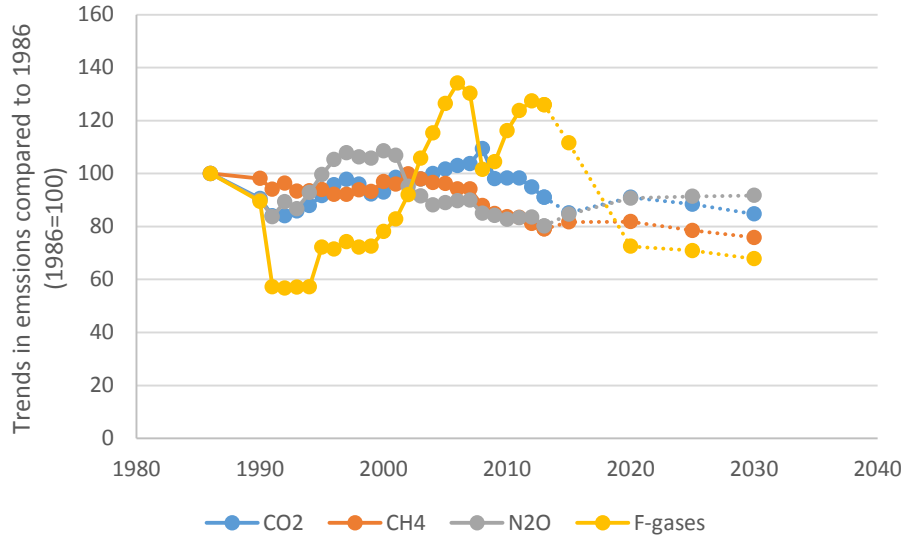

Figure 8: GHG emissions trend by gases in the period up to 2013 and emissions trend according to projections with measures up to 2030 in regard to 1986

Nitrous oxide

N_2O emissions are the only emissions which are increasing in the entire period, according to projections. As compared to 2013, they increase by 13.2% by 2020, and by additional 1.1% by 2030 in regard to 2020.

The main source of N2O emissions is agriculture where 71% of emissions are generated. At the same time, this source is the most responsible source for an increase in emissions. Other sources include combustion of fuels (18%), with the most emissions being generated in transport, waste (7% in 2020, 6% in 2030) and industrial processes.

F-gases

According to projections, F-gases emissions decrease significantly (by 42.4% as compared to 2013), although the decrease slows down after 2013. In 2030, amounting to 164.8 kt CO2 eq., emissions are lower by 46.2% as compared to 2013.

The highest share of emissions is due to HFC. It amounted to 91% in 2013, but it will be reduced to 84% in 2030. In 2013, PFC emissions represent 5% of emissions, but their share increases to 11% by 2030. SF6 emissions represent 4% of emissions in 2013 and 5% in 2030. The reduction of F-gases emissions is mostly the result of the reduction of HFC emissions which is due to implementing EU legislation which limits the emissions of HFC from mobile air-conditioning systems and HFC emissions from stationary cooling systems.

4.2.2 By Sectors

Transformation and Fugitive Emissions

Transformation (energy industries) mostly includes emissions from the production of electricity and heat where the greatest share of emissions is generated from coal-based thermal power plants. Emissions are also generated by gas-powered units and production of district heat by district heating systems. The emissions trend in the future is mostly characterized by the reduction in the electricity production generated by coal-based units and their replacement by gas-powered units (partially also by small CHPs), and an increase in the use of renewable energy sources. The share of RES is also increased in the district heating systems. Emissions generated from coal-based units decrease by 2.2 Mt CO2 eq. by 2030 as compared to 2013, whereas emissions generated by the combustion of gas increase by 0.3 Mt CO2 eq. Emissions due to the combustion of RES increase only by 0.003 Gg CO2 eq., as it is considered that CO2 are neutral.

Fugitive emissions include emissions generated by the distribution of gas, coal mining and flue gas desulphurisation. By way of reducing the need for coal use, the fugitive emissions from coal mining and desulphurisation decrease.

Since 2008 onwards, GHG emissions are decreasing so that in 2030 they only amount to 62% of the 2008 emission value. There is a swing in the trend in 2015, resulting from the launch of the new coal-based unit in Šoštanj Thermal Power Plant which represent a disruption in the operation of Šoštanj Thermal Power Plant as a whole, thus resulting in a lower annual volume of electricity production. As a matter of fact, the disruption was less significant and, in addition, the hydrology was relatively unfavourable in 2015 so that the production volume generated by TEŠ in 2015 was comparable to the volume produced in 2013.

The greatest share of emissions in the sector is due to ETS (Figure 9). The share is slightly decreasing, amounting to 91% in 2013, 90% in 2020 and 89% in 2030.

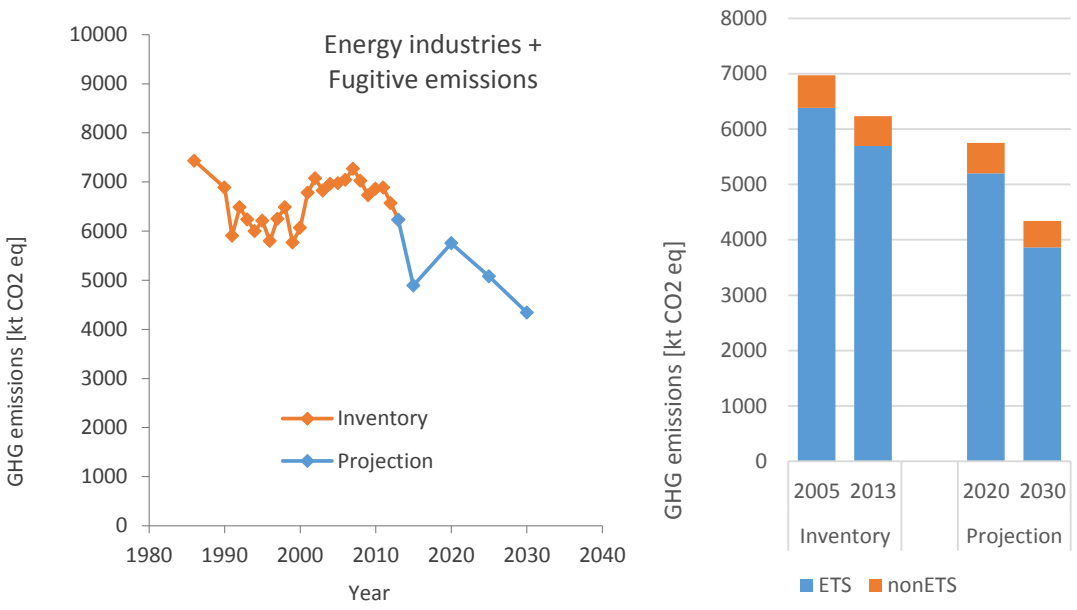

Figure 9: GHG emissions in the transformation (energy industries) and fugitive emissions sectors – emissions trend in 1986-2013 period and projection with measures by 2030 (left), including the distribution of emissions into ETS and non-ETS (right).

Industry and Construction

The emissions due to the combustion of fuels in industry and construction will increase by 2030 but they will not exceed the value achieved in 2008, in spite of the fact that the added value achieved in 2030 will be by 29% higher than the value achieved in 2008. The increase in emissions is a result of economic growth although owing to the increase in energy efficiency and greater share of the use of RES, the emissions growth index is lower than the added value growth index. By 2020, the added value will increase by 11% and by 44% by 2030 as compared to 2012, while GHG emissions will increase by 8% by 2020 and by 31% by 2030.

ETS emissions are predominant in industry and transformation although they are less pronounced than in transformation. In 2005, ETS emissions represent 56% of emissions in 2005, 63% in 2013 and their share increases to 67% by 2030.

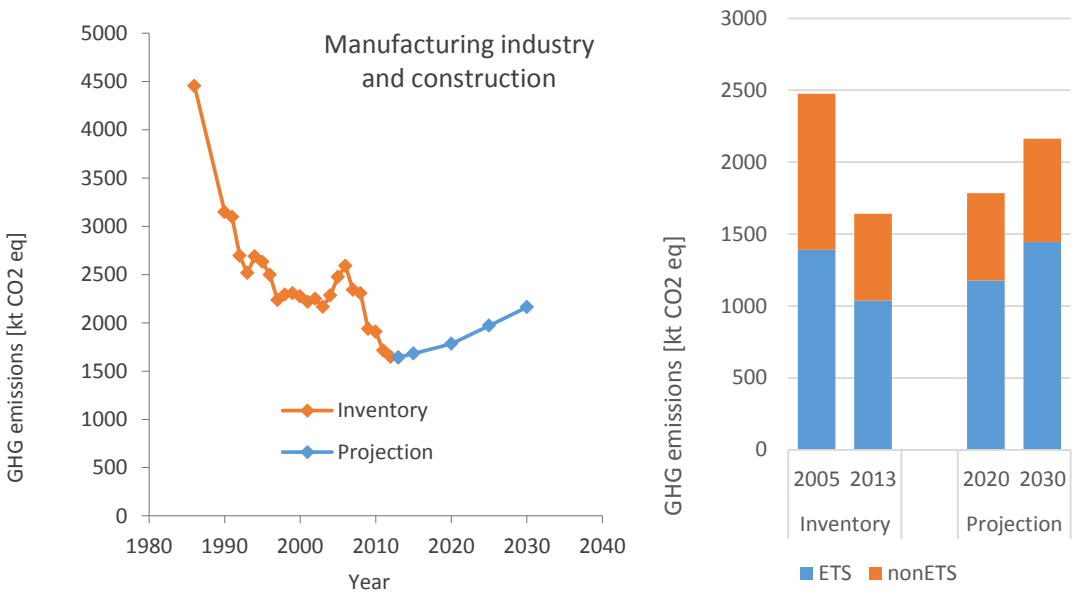

Figure 10: GHG emissions from the fuel combustion in industry and construction – emissions trend in 1986–2013 period and projection with measures by 2030 (left), and the distribution of emissions into ETS and non-ETS (right).

Transport

In 2015, emissions generated by transport took over the long-lasting top position held by emissions from transformation sector, which therefore made transport the largest source of GHG emissions in Slovenia. Transport is a sector in which the highest growth of emissions was recorded in the past, for example, 18% in 2008. Regardless of an intense past, less intensive growth figures are expected in the future.

Further growth of transport on Slovenian roads is expected by 2030. The projections show an increase in passenger transport by 28% in the 2012–2030 period, and by 53% in regard to road freight transport. By promoting the shift of freight to railway transport, the share of railways in freight transport increases from 8% to 14% in the 2012–2030 period. Promoting public passenger transport affects the increase in the share of railways in passenger transport, rising from 2% to 3%, and in case of buses, rising from 5% to 6%. The energy use due to significant improvement in vehicle efficiency, and partially due to changes in behaviour and transport mode, increases significantly less than the transport work. The energy use in passenger transport is lower by 4% in 2030 as compared to 2012, while the energy use in freight transport is higher by 41%. The use of biofuels additionally contributes to lower emission values with their share of 2.9% in 2012 increasing to 10.0% in 2020 and to 10.8% in 2030.

The implementation of measures described above maintains the transport emissions under the emissions levels recorded in 2008, according to the projection with measures. In 2008, emissions amounted to 6,157 kt CO2 eq., while according to the projection with measures, the highest emissions levels emissions are achieved in 2025, amounting to 6,025 kt CO2 eq. Emissions are supposed to be higher by 28% in

2020 and by 35% in 2030, as compared to 2005 (Figure 11 – left). The increase in emissions between 2013 and 2015 is the result of the increase in the share of transit vehicles buying fuel in Slovenia since this share was lower in 2013 than it has been assumed for the period from 2015 and onwards, due to a higher price of fuel in Slovenia as compared to neighbouring countries. All emissions from transport are included in non-ETS emissions.

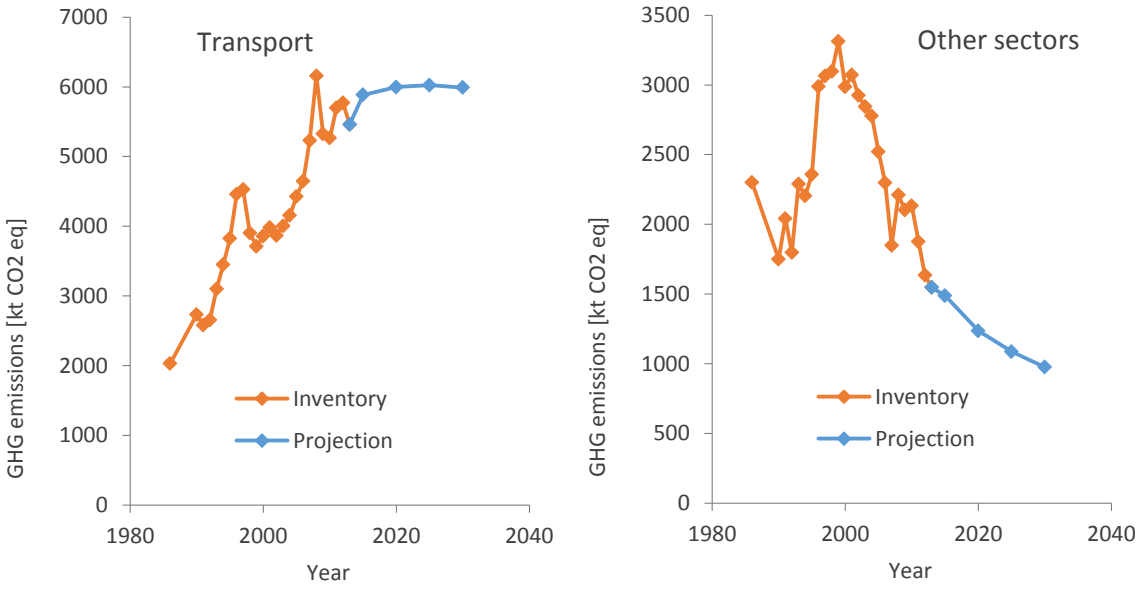

Figure 11: GHG emissions due to transport (left) and for the other sector which includes households, services and energy use in agriculture (right) in 1986−2013 period and according to the projection with measures by 2030.

Other sectors

GHG emissions generated in other sectors which include energy use in households, services and agriculture decrease significantly (Figure 11 – right). In fact, the projection anticipates very ambitious implementation of measures in these areas, specifically, phasing-out of fuel oil-powered boilers, the great share of boilers using wood biomass and heat pumps in newly purchased boilers, a significant increase of solar collectors installed and high level of energy renovation of residential and non-residential buildings turning them into energy efficient buildings. In spite of an increase in the surface of residential buildings (by 14% in the 2012−2030 period) and non-residential buildings (by 19% in the 2012−2030 period), these measures have an effect on the reduction of emissions.

Compared to 2013, emissions are thus lower by 20% in 2020, and they decrease additionally by 2030, being thus lower by 37% as compared to 2013. Compared to 2005, emissions are lower by 51% in 2020.

Industrial process

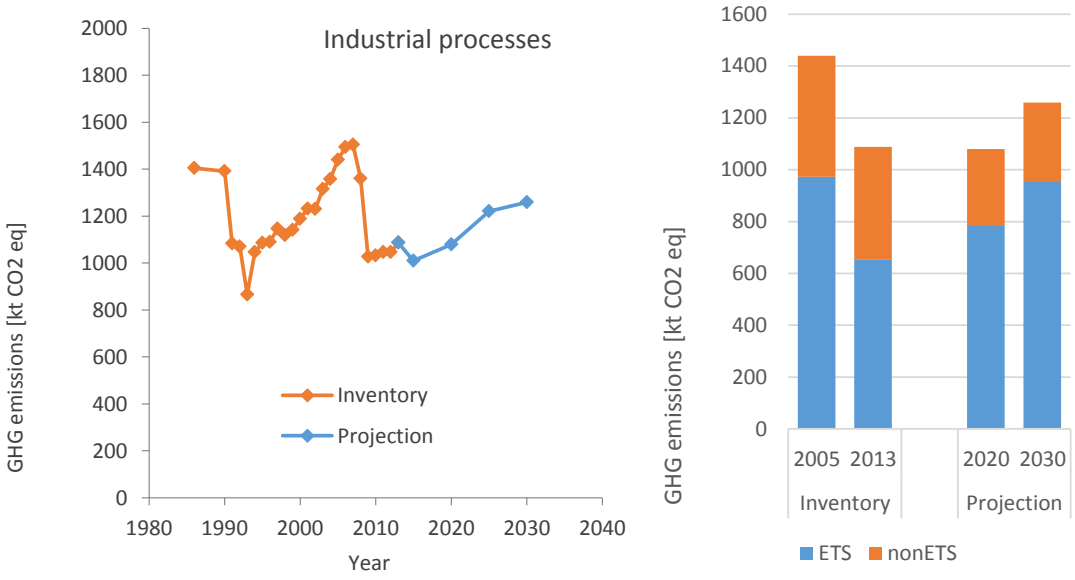

Figure 12: GHG emissions due to industrial processes – emissions trend in 1986–2013 period and projection with measures by 2030 (left), including the distribution of emissions into ETS and non-ETS (right).

Emissions generated in industrial processes have decreased significantly after 2008 which was partially due to economic crisis, partially due to the closure of some plants for the failure of satisfying requirements from environmental permits. Additional reduction in emissions in 2015 is a result of smaller operation of one of large companies due to the failure of satisfying other environmental standards. It is anticipated that by 2020, the cement production which is the main source of emissions in this sector will reach the level of emissions obtained in 2009, and by 2025, the level achieved in 2007. The production growth is also anticipated in other processes which is why emissions are on the increase. An important segment in industrial processes is represented by HFC emissions which will be at least halved by 2030 as compared to 2013 owing to the implementation of the directive on emissions from mobile air-conditioning systems (replacement of refrigerants) and the regulation of F-gases (reduction of leakages from the equipment, replacement of refrigerants).

Compared to 2013, emissions are lower by 1% in 2020 but they are higher by 16% in 2030. In the total emissions due to industrial processes, HFC emissions represented 26% in 2013, 14% in 2020 and 11% in 2030.

The greatest share of emissions in the industrial process sector is included in ETS.

Agriculture

As compared to 2013, agriculture emissions increase by 15% by 2020, whereas a minimum growth of emissions is projected for the period between 2020 and 2030 so that, compared to 2013, by 2030, emissions are higher by 16% (Figure 13 – left). The increase in emissions is the result of an increase in livestock units (in case of pigs, by 69% as compared with 2012) and minimum increase in fertilisation. The following measures have been planned for reducing emissions from agriculture: increase of the efficiency of farm animal breeding, introducing rearing methods by way of which GHG emissions are decreased and more efficient nitrogen cycles in agriculture.

Waste

Emissions from waste and waste waters have been decreasing fast since 2004 (Figure 13 – right), amounting to 424 kt CO2 eq. in 2020, which is 19% less than in 2013, and to 328 kt in 2030 which is lower by 38%. The reduction is the result of the reduction in landfilled biodegradable waste which will decrease further by 78% in the 2012–2030 period. This figure will be achieved by reducing waste at source (separate collection of waste and packaging) and sorting and processing in collection centres.

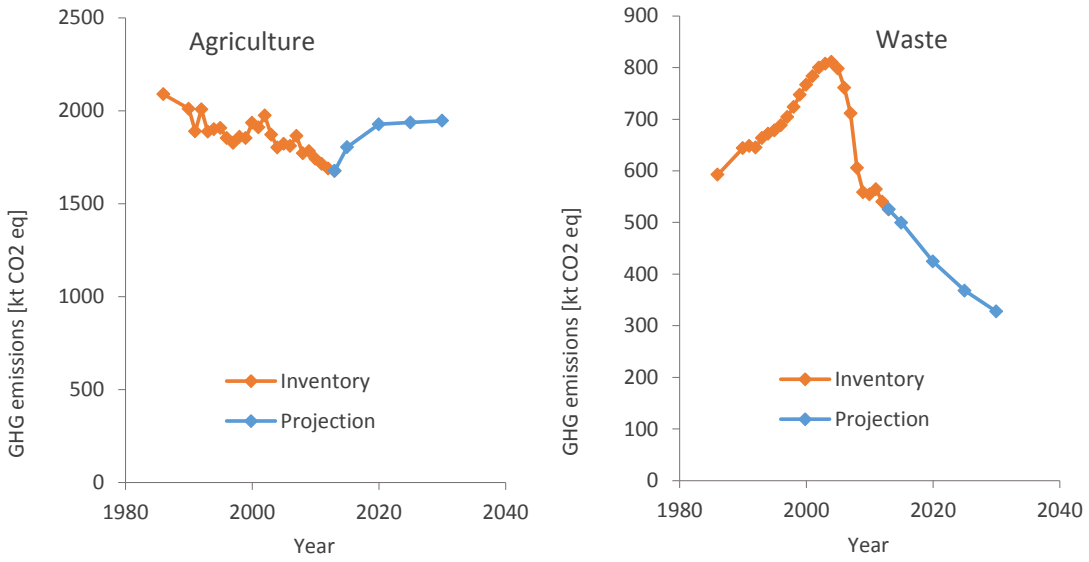

Figure 13: GHG emissions from agriculture (left) and from waste (right) in the 1986–2013 period and according to the projection with measures by 2030.

Table 6: Actual GHG emission in 1986, 2005, 2008, 2010, 2012 and 2013, and projections with measures by sectors for 2015, 2020, 2025 and 2030 (source: ARSO, IJS-CEU, KIS).

GHG [Gg CO_2 eq.] Sector \ Year	Actual emissions						Projection with actions					
1. Energy	**16,214**	**16,397**	**17,698**	**16,166**	**15,622**	**14,878**	**13,947**	**14,767**	**14,158**	**13,469**	**-10%**	**-18%**
A. Fuel combustion	15,624	15,872	17,172	15,646	15,106	14,421	13,475	14,285	13,726	13,089	-10%	-18%
1. Transformations	6,841	6,448	6,499	6,340	6,053	5,774	4,420	5,270	4,643	3,962	-18%	-39%
2. Manufacturing industries and construction	4,455	2,475	2,306	1,910	1,646	1,641	1,682	1,784	1,972	2,163	-28%	-13%
3. Transport	2,028	4,427	6,157	5,265	5,772	5,459	5,885	5,996	6,025	5,990	35%	35%
4. Other sectors	2,258	2,518	2,207	2,129	1,632	1,544	1,488	1,235	1,087	975	-51%	-61%
5. Other	41	3	4	3	3	3	0	0	0	0	-100%	-100%
B. Fugitive emissions from fuels	590	524	525	520	516	457	473	482	432	380	-8%	-28%
1. Solid fuels	548	472	476	472	477	420	432	431	377	323	-9%	-32%
2. Oil and natural gas	42	53	49	48	39	37	40	51	55	57	-2%	9%
C. CO2 transport and storage	0	0	0	0	0	0	0	0	0	0		
2. Industrial processes and product use	**1,405**	**1,440**	**1,360**	**1,032**	**1,047**	**1,087**	**1,010**	**1,079**	**1,221**	**1,259**	**-25%**	**-13%**
A. Mineral products	756	647	765	489	417	477	424	584	722	754	-10%	17%
B. Chemical industry	81	119	80	75	36	45	51	51	51	56	-57%	-53%
C. Metal production	469	445	230	147	224	223	232	235	241	247	-47%	-44%
D. Non-energetic fuel products and solvent use	11	22	26	19	20	16	15	15	16	16	-32%	-28%
F. Use of HFC products	0	147	216	257	277	278	241	150	146	139	2%	-6%
G. Production and use of other products	89	60	42	45	73	49	48	44	46	48	-27%	-20%
3. Agriculture	**2,089**	**1,821**	**1,771**	**1,741**	**1,689**	**1,675**	**1,804**	**1,927**	**1,937**	**1,946**	**6%**	**7%**
A. Enteric fermentation	982	914	929	901	898	889	959	1,031	1,041	1,050	13%	15%
B. Manure management	595	430	401	387	360	359	385	395	394	394	-8%	-8%
D. Agricultural soils	459	445	423	436	420	416	447	490	490	490	10%	10%
G. Liming	44	20	11	6	1	1	1	1	1	1	-97%	-97%
H. Urea use	9	12	7	11	11	10	11	11	11	11	-4%	-4%
5. Waste	**592**	**798**	**606**	**555**	**540**	**525**	**500**	**424**	**368**	**328**	**-47%**	**-59%**
A. Solid waste disposal	372	605	461	401	393	366	327	247	189	148	-59%	-76%
B. Biological treatment of solid waste	0	3	3	5	9	9	10	13	13	13	343%	343%
C. Thermal handling and incineration	1	2	4	5	5	12	12	13	14	16	447%	599%
D. Waste-water handling	219	188	138	143	133	138	151	152	152	151	-19%	-20%
TOTAL (LULUCF excluded)	**20,300**	**20,456**	**21,434**	**19,494**	**18,898**	**18,166**	**17,261**	**18,198**	**17,684**	**17,002**	**-11%**	**-17%**

4.2.3 EU ETS in Projections

Emissions projections for operators included in the EU-ETS system have been determined by applying the following assumptions: in the production of electricity and heat sector, all central-supply companies have been included in ETS (TEŠ, TE-TOL, TEB)[58], while in regard to companies providing local supply of electricity and heat (district heating), the ETS share has been determined for each fuel separately for the units of co-generated electricity and heat and for boilers on the basis of shares from 2013. For the combustion of fuels sector, the ETS share has also been determined on the basis of ETS share per individual fuel in 2013 while the ETS share in industrial processes has been determined according to processes.

In 2013, the ETS volume changed in according with EU legislation - quite a few of companies have fallen out of the system but, on the other hand, aluminium production has fully entered the system. To allow for the comparability of results, the same ETS volume has been anticipated for the period prior to 2013 and for the period after 2013. Differences are shown in emissions due to industry (both from the combustion of fuels and from industrial processes).

Table 7: Actual ETS emission in 2005, 2008, 2012 and 2013, and projections with measures by 2030. For comparison reasons the ETS sector structure as after 2012 is assumed also for the period 2005–2012.(source: ARSO, MKO, IJS-CEU).

		2005	2008	2012	2013	2020	2025	2030
		Actual emissions (ETS structure as after 2012)				Projection with measures		
1. Energy	[kt]	7,766	7,856	7,003	6,735	6,378	5,873	5,307
A. Fuel combustion	[kt]	7,684	7,768	6,893	6,656	6,295	5,800	5,244
1. Transformations	[kt]	6,292	6,397	5,894	5,617	5,117	4,491	3,799
2. Industry and construction	[kt]	1,392	1,371	1,000	1,039	1,178	1,309	1,445
B. Fugitive emissions	[kt]	82	88	109	79	83	73	63
2. Industrial processes and product use	[kt]	973	889	571	655	786	924	957
TOTAL	**[kt]**	**8,740**	**8,745**	**7,574**	**7,390**	**7,164**	**6,797**	**6,263**

After significantly lower emissions projected in 2015 due to the inclusion of TEŠ Unit 6 into the system and decrease of production in the other TEŠ units, by 2020, ETS emissions will rise so as to amount to 3% lower emissions than recorded in 2013. In 2020, ETS emissions from transformation are 9% lower than in 2013, while emissions generated by other sources are higher. By 2030, ETS emissions from transformation will additionally decline and will be lower by 32% as compared to 2013. Fugitive emissions will similarly decline while emissions from industrial sources will increase; specifically by 39% in case of the combustion of fuels and by 46% in regard to processes. By 2030, total ETS emissions will decrease by 15% as compared to 2013, and by 28% in regard to 2005.

[58] TET has not been in operation since 2014.

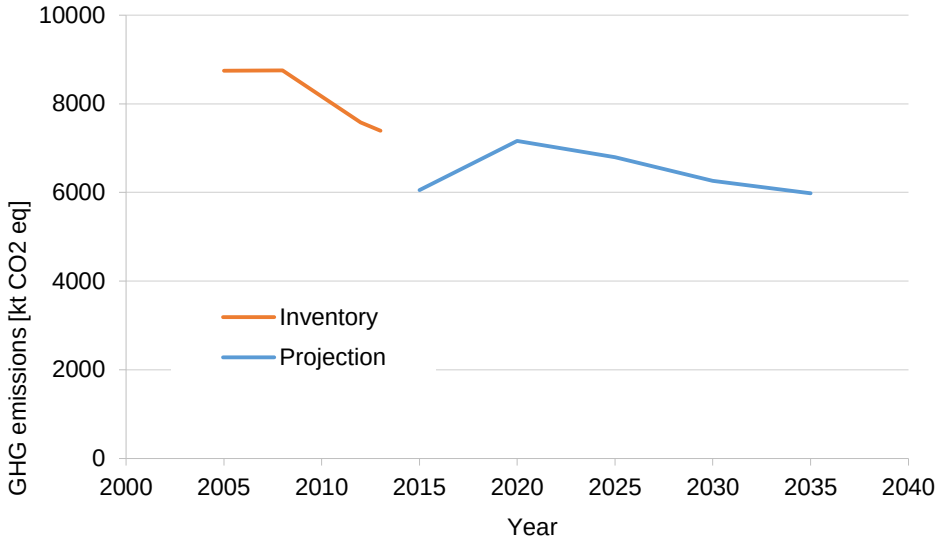

Figure 14: Actual ETS emission and projections with measures by 2030

Table 8: Share of ETS emissions in total GHG emissions

		2005	2008	2012	2013	2020	2025	2030
		Actual emissions (ETS structure as after 2012)				Projection with measures		
1.A.1. Transformations	[kt]	98%	98%	97%	97%	97%	97%	96%
1.A.2. Industry and construction	**[kt]**	56%	59%	61%	63%	66%	66%	67%
1.B. Fugitive emissions	[kt]	16%	17%	21%	17%	17%	17%	16%
2. Industrial processes and product use	[kt]	68%	65%	55%	60%	73%	76%	76%
TOTAL	**[kt]**	43%	41%	40%	41%	39%	38%	37%

The share of emissions from sources included in the ETS scheme varies by sector which is clearly shown in the presentation of emission trends in the sector in the figures: (Figure 9, Figure 10 and Figure 12). The total emissions from the transformation sector are included in the ETS system, and the share is slightly reduced due to the reduction in emissions from electricity generation. In 2005, emissions from ETS sources represent 56% in industry and construction sectors and they increase to two-thirds by 2020 and remain at the same level after 2020. The increase is the result of a greater increase of emissions from sources which are included in ETS than from other industrial sources. It must be noted that, for the sake of ensuring the comparability of results, the same ETS structure has been anticipated for the 2005–2012[59]period and for the period after 2012. If the actual volume in this period is considered, the ETS share would be lower. In regard to fugitive emissions, ETS emissions include emissions from desulphurisation which account for 16% or 17%. The share of ETS emissions also increases industrial processes sector, especially due to the increase in the cement production projected for 2020 and 2025. Likewise, the same ETS structure has been anticipated for the entire period as it has been

[59] Emission form all installations that fulfil criteria to be included in the ETS sector after 2012 are shown in this projection for the entire period 2005-2030.

anticipated for the period after 2012. In 2012 and 2013, a low share of ETS emissions is the result of low cement production. In regard to total emissions, ETS sources represent approximately 40%, but the trend is declining.

4.2.4 Non-ETS in Projections

Within the scope of the EU objective for reducing GHG emissions by 20% by 2020, the target set by Slovenia for the non-ETS sector allows for an increase in emissions by 4% as compared to 2005. In addition to the 2020 target, the Commission has also set interim yearly targets (for 2013–2019) which follow a linear trajectory from 2009 to 2020. The linear trajectory was set in the Commission Decision No. 2013/162/EU of 26 March 2013 on determining Member States' annual emission allocations for the period from 2013 to 2020 pursuant to Decision No. 406/2009/ES. On 31 October, the Commission adopted the Commission Implementing Decision of 31 October 2013 on the adjustments to Member States' annual emission allocations for the period from 2013 to 2020 (2013/634/EU), by way of which the adjustment has been determined for the target trajectory referred to in the Decision No. 2013/162/EU in accordance with the quantity of rights as a result of the inclusion of additional installations in the EU ETS system in the 2008–2012 period and after 2012, and due to the exclusion of installations from the EU ETS system from 2013 onwards. Considering both Decisions, the target emissions for Slovenia are as follows (by applying GWP from the fourth report: IPCC – 4AR):

Table 9: Target trajectories for non-ETS emissions in the 2013–2020 period (source: EC)

		2013	2014	2015	2016	2017	2018	2019	2020
Slovenia	[kt CO_2 eq.]	12,324	12,354	12,384	12,413	12,443	12,473	12,503	12,533

Emissions projections for sources which are not included in the ETS system have been calculated by deducting ETS emissions from total emissions.

According to the projection with measures, from 2013 when non-ETS emissions amount to 10,776 kt CO2 eq., non-ETS emissions rise to 11,208 kt CO2 eq. by 2015 but decline to 11,033 kt CO_2 eq. by 2020. Emissions projected for these years are significantly lower than the target trajectory which is clearly shown on Figure 15. In 2013, emissions are lower by 13%, in 2015 they are lower by 9% and in 2020, by 12%. This is mostly the result of the complexity of attaining the target share of RES in the gross final energy use in 2020. After 2020 when emissions are lower by 6% as compared to 2005, emissions decrease so that by 2030, they are lower by 8% as compared to 2005.

Far the greatest share of emissions in non-ETS sector is generated by transport which represented 51% of all non-ETS emissions in 2013 while its share amounted to 38% in 2005. According to the projection, the transport emissions become stabilised but, due

to the reduction in total emissions, the share of non-ETS emissions increases to 56% by 2030. In terms of significance, the sector is followed by agriculture sector and other energy use sector, or better, other sectors. As compared to 2013, emissions from agriculture will increase which is why their share will also increase, specifically, from 16% to 18% by 2030. It is completely opposite in case of other sectors where the share decreases significantly, in fact, it is more than halved as compared to 2005. In 2030, 7% is contributed to non-ETS emissions by industry and construction, transformation and fugitive emissions represent 4% and industrial processes and waste sectors take up 3% each.

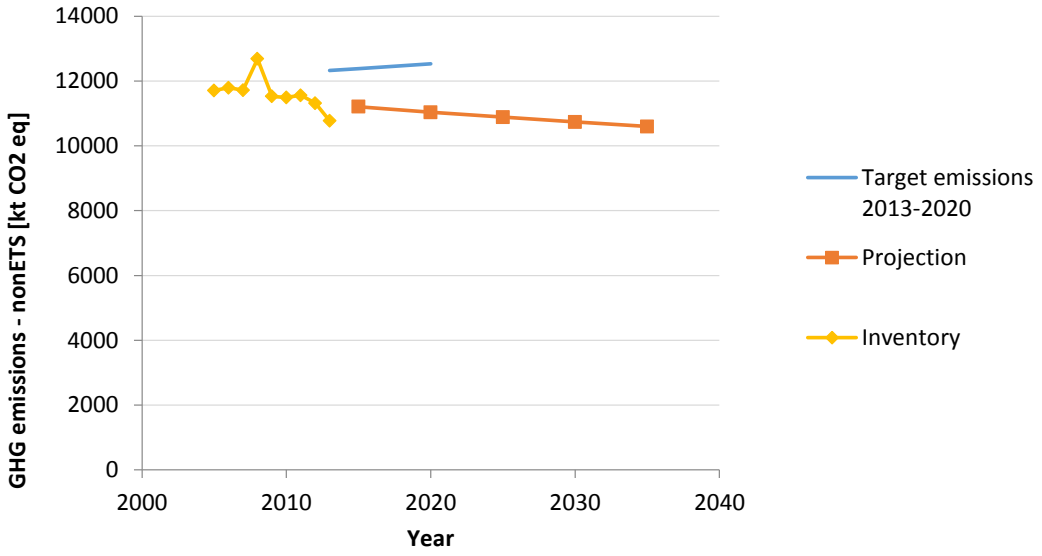

Figure 15: Non-ETS emissions trend in the 2005–2013 period and emissions trend according to the projections with measures up to 2030 as compared to target trajectory 2013–2020 (source: IJS-CEU, KIS).

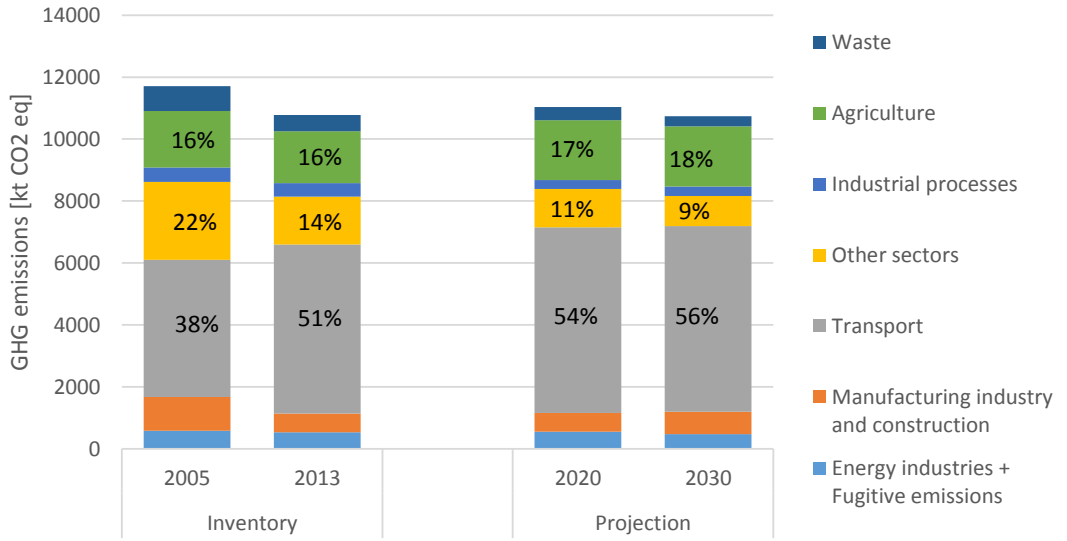

Figure 16: Non-ETS emission structure in 2005 and 2013 and according to the projection for 2020 and 2030 (source: IJS-CEU, KIS).

Table 10: Emissions from sources which are not included in EU ETS (non-ETS) in 2005, 2008, 2012 and 2013 and the projection by 2030.

GHG [Gg CO2 eq.]					Projection with measures					
Sector \year	**2005**	**2008**	**2012**	**2013**	**2015**	**2020**	**2025**	**2030**	**2020/2005**	**2030/2005**
Prod. of el. en and heat and fugitive emissions	598	538	565	534	549	552	511	481	-6%	-18%
Industry and construction	1,084	936	646	603	597	606	663	718	-44%	-34%
Transport	4,427	6,157	5,772	5,459	5,885	5,996	6,025	5,990	35%	35%
Other sectors	2,521	2,210	1,636	1,547	1,488	1,235	1,087	975	-51%	-61%
Industrial processes	467	471	475	433	385	293	297	303	-37%	-35%
Agriculture	1,821	1,771	1,689	1,675	1,804	1,927	1,937	1,946	6%	7%
Waste	798	606	540	525	500	424	368	328	-47%	-59%
TOTAL	11,716	12,689	11,324	10,776	11,208	11,033	10,887	10,739	-6%	-8%
Target trajectory and TARGET 2020				12,324	12,384	12,533				
Distance to the TARGET (emissions/target)				-13%	-9%	-12%				

4.2.5 International Transport

Fuels for maritime transport and aviation transport have not been included in projections. In 2013, emissions from fuels from international bunkers represented 1.6% of emissions of the Republic of Slovenia. The emissions from the international aviation transport, for which projections have been made, represented 0.4%, or better, 74 kt CO2 eq.,while emissions from international maritime transport amounted to 1.2%, or better, 221 kt CO2 eq. Projections for international aviation transport are presented in the table below.

Table 11: Projections for emissions from the sale of fuels to international aviation

		2012	2013	2015	2020	2025	2030
International aviation	[Gg CO2 eq.]	67.0	73.6	75.9	87.8	105.7	122.6

4.3 Total Impact of Measures

The total impact of measures has been determined as the sum of impacts of an individual measure. Impacts of individual measures have been determined by means of models which are used for projections by way of which it has been ensured that no double counting of impacts may occur. In regard to implemented and adopted measures, the impact has been calculated according to the scenario without measures. The impact of measures has been calculated in regard to the base year of 2012.

The total effect of measures in 2020 amount to 3,515 kt CO2 eq. and to 6,777 kt CO2 eq. for 2030. By far the greatest impact is accounted for by CO2 emissions. The greatest impact of measures has been calculated in transformation and transport sectors, as it has been expected, given the fact that these two sectors generate the highest emissions. In terms of significance, they are followed by the following sectors: other areas, industry, waste, industrial processes, fugitive emissions and agriculture.

Table 12: The total impact of measures by sectors for the scenario with measures.

	The impact of the implemented and adopted measures		2015	2020	2025	2030
1.A.1	Transformation	[kt CO2 eq.]	1,700	851	1,479	2,161
1.A.2	Industry	[kt CO2 eq.]	373	438	506	648
1.A.3	Transport	[kt CO2 eq.]	262	1,011	1,510	2,093
1.A.4	Other areas	[kt CO2 eq.]	458	743	921	1,073
1.B	Fugitive Emissions	[kt CO2 eq.]	43	34	84	136
2.	Industrial process	[kt CO2 eq.]	78	193	223	237
3.	Agriculture	[kt CO2 eq.]	18	47	72	96
5.	Waste	[kt CO2 eq.]	87	198	277	333
	TOTAL	**[kt CO2 eq.]**	**3,020**	**3,515**	**5,072**	**6,777**

4.4 Uncertainty in Projections

Uncertainty in projections stems from the following: uncertainty in statistical data applied as the basis for projections (statistical data, emission factors); models applied in projections

which represent a simplified image of real-life developments; uncertainty in scenarios regarding the implementation of policies and measures as these change in time, and in addition, it is hard to anticipate an actual impact of measures since they are subject to numerous factors that affect them; and uncertainty in the future economic development, technological development and social development which includes uncertainty in energy prices; the growth in energy supply and demand; the behaviour of main players on the market and other factors.

The results of emission projections for energy industry is mostly subject to the implementation of measures considered in regard to renewable sources of energy and energy efficiency which will mostly depend on the funds available in which regard a gap between plans and realisation has been recorded in the past, but is decreasing the recent years. Uncertainties in this sector are substantial because the long-term strategy about the growth of the energy sector has not yet been developed although these uncertainties do not affect the Slovenia's attainment of the target for 2020 since this sector is included in the EU ETS system.

A source of uncertainty is also found in scenarios about the future development of gross domestic product which significantly affect the energy use and therefore emissions in industry. The scenario applied in projections was developed in 2013 and it is highly conservative for the purpose of planning the budget in short-term projections. This is also shown by the comparison of an average growth in 2013–2014 period arising from projections and the average growth of actual development on the basis of statistical data. The average growth of economic activity in projections is estimated -1.3%, while the average actual growth was +0.8%, which represents a significant difference. It may be concluded that the projection underestimates the economic recovery of Slovenia although, on this basis, it is hard to conclude that this implies higher emissions since, as a result of higher economic growth, there are more investment activities and, therefore more EE and RES measures

For Slovenia, the transport sector represents the highest uncertainty in making projections. High uncertainty in projections regarding transport accounts for transit transport, firstly, because modelling its volume is difficult, and secondly, because the purchase of fuel for transit transport is a highly variable category which mostly depends on the ratio between the prices for motor fuels in Slovenia and in neighbouring countries. Transit transport has a significant impact on the Slovenian energy balance due to the smallness of Slovenia. It is assessed that in 2008, when the sale of fuel to transit transport reached its peak, the sale of motor fuel to transit transport represented a solid 20%. The uncertainty regarding transport is also the result of the uncertainty regarding the implementation of measures in connection with the transport policy in which regard little was done in the past for the promotion of public transport and for the development of railway transport, in spite of plans, since the main development axis was the construction of road network.

Uncertainties regarding agriculture emissions have been assessed according to IPCC (2000), which have been assessed by individual sources of emissions while the aggregated uncertainty has been calculated according to the A Rule in case of additive quantities and according to the B Rule when the assessments have been the product of the data on activity

and on emission coefficient (IPCC, 2000). The Manual EMEP/CORINAIR (2002) has also been used in assessing uncertainty regarding base data and emission factors. In regard to methane emissions, the uncertainty has been assessed to amount to 19% while in regard to nitric oxide to 230%. The uncertainty in regard to emissions of both gases generated in agriculture has been assessed to amount to 135%.

4.5 Sensitivity Analysis of Projections

Given the fact that the transport sector faces the most uncertain development in Slovenia while it represents the most important source of emissions in the non-ETS sector, the sensitivity analysis has been made for the transport sector. The sensitivity analysis for projections has been made in regard to the impact of transit transport, and the scenario regarding the implementation of transport and environmental policies in the transport sectors have been compared.

Table 13: Sensitivity analysis for GHG emissions projections in the transport sector in regard to the assumptions about transit transport, the implementation of measures for sustainable transport policy and the structure of vehicles.

[%]	2013	2015	2020	2025	2030
Projections with measures	100	108	110	110	110
Projection with additional measures in transport	100	102	103	101	96
Projection with measures while taking into account higher volume of transit transport	100	108	115	119	120
Projection with additional measures while taking into account smaller volume of vehicles in transit transport which buy fuel in Slovenia	100	92	92	89	84

The range between the highest and the lowest projection regarding GHG emissions in transport presented in the table above amounts to 36%. The implementation of the current transport policy favouring road network has been assumed for in the projection with measures. This scenario includes measures since the new transport strategy has not yet been developed at the time of making the projections. A reference scenario regarding the penetration of new technologies has been anticipated in regard to the fleet, and it is anticipated in regard to the share of biofuels that the target share will be achieved in 2020. In regard to the purchase of fuels on the part of transit transport in Slovenia, it is assumed that the price of motor fuels in Slovenia will be lower than in neighbouring countries which mean that the majority of vehicles in transit will buy fuel in Slovenia. Projection with additional measures in transport assumes that the transport strategy giving greater emphasis to public transport and railway infrastructure will be implemented. In addition, it is assumed that the relation between the price per fuels in Slovenia and neighbouring countries will be the same as in 2012 when Slovenia reimbursed the difference to the minimum excise duty amount payable to heavy good vehicles and the lowest retail price was recorded in Austria. The upper limit of projections sensitivity has been calculated on the basis of the projection with measures except that the higher volume of transit transport through Slovenia has been assumed for. The lower limit of projections sensitivity has been calculated on the basis of the

projection with additional measures, and assumption that the retail price in Slovenia is higher than in neighbouring countries with no possibility to apply for the reimbursement of the sum difference to the minimum excise duty amount.

The sensitivity analysis of total emissions in regard to the transport scenarios presented above has shown that the emission trend in transport has a significant impact to total emissions. Emissions in 2020 in the scenario which represent the upper sensitivity limit amount to 18.5 Mt CO2 eq. which is by 2% more emissions than in the projections with measures. However, emissions according to the scenario which represent the lower sensitivity limit, amount to 17.2 Mt CO2 eq. in 2020 which are lower by 13% than in the projections with measures.

Table 14: Sensitivity analysis for total GHG emissions projections in regard to the assumptions about transit transport, the implementation of measures for sustainable transport policy.

[%]	2013	2015	2020	2025	2030
Projections with measures	100	95	100	97	94
Projection with additional measures in transport	100	93	98	94	90
Projection with measures while taking into account higher volume of transit transport	100	95	102	100	97
Projection with additional measures while taking into account smaller volume of vehicles in transit transport which buy fuel in Slovenia	100	90	95	91	86

An even greater impact is recorded by the sensitivity analysis regarding transport emissions in case of non-ETS emissions since transport represents more than 50% of these emissions. In the sensitivity analysis, the share of transport in non-ETS emissions ranges from 58% in 2030 in the scenario applied for the upper sensitivity limit to 49% in the scenario applied for the lower sensitivity level.

Table 15: Sensitivity analysis for GHG emissions projections of non-ETS in regard to the assumptions about transit transport, the implementation of measures for sustainable transport policy.

[%]	2013	2015	2020	2025	2030
Projections with measures	100	104	102	101	100
Projection with additional measures	100	101	99	96	93
Projection with measures while taking into account higher volume of transit transport	100	104	105	106	105
Projection with additional measures while taking into account smaller volume of vehicles in transit transport which buy fuel in Slovenia	100	96	93	90	87

4.6 Modification of projections methodology

The emissions projections for the Biennial Report differ in terms of methodology from the projections applied in the SI-6NC/BR1 in regard to the following items:

1. the change in the methodology for the calculation of GHG emissions (application of emission factors from the inventory guidelines from 2006, the use of new models for the calculations of emissions – waste, agriculture – in order to make them consistent with calculations from records);

2. the use of new GWP values (from the fourth IPCC – 4AR report instead of the values from the second report - SAR);

3. corrections of activity projections due to the adoption and development of new strategic and programme documents. The calibration of the model to the year (2012 and 2013).

5 Provision of financial, technological and capacity-building support to developing countries

Under the International Development Co-operation of the Republic of Slovenia Act (Ur. l. RS, 70/06), efforts in the area of official development aid in Slovenia are coordinated and monitored by the Ministry of Foreign Affairs, which collects data on relevant financing from the budget users, including official development aid funds earmarked for the mitigation of and adaptation to climate change in developing countries. Slovenia reports on the provision of financial support to developing country Parties resources in years 2013 and 2014 and provides this information in CTF table 7.

In 2013 Slovenia provided financial support of 403,560 EUR through multilateral financial institutions and 1,556,965 EUR through bilateral agreements. The corresponding figures for 2014 were 533,510 EUR and EUR 1,603,350, respectively. The financial support provided through multilateral channels was given to the Global Environment Facility and the World Bank as grants for cross-cutting activities. Bilateral support was provided in the form of grants mainly to Bosnia and Herzegovina, Montenegro, Serbia, and the western Balkans as development assistance for mitigation and adaptation.

Since Slovenia is not a Party included in Annex II to the Convention and is therefore not obliged to report on the provision of financial, technological and capacity-building support to developing country Parties, this chapter is not elaborated in details.

6 Other issues

6.1 Self-assessment of compliance with emission reduction commitments

Information on arrangements established for the process of the self-assessment of compliance with emission reductions in comparison with emission reduction commitments are explained in chapter 3.14.

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List of Abbreviations

4AR	IPCC Fourth Assessment Report
AEA	Annual emission allocation
AP nZEB	Action plan for near-zero emission buildings for the period by2020
AP-EE 2020	Action plan for energy efficiency for the period 2014–2020
ARSO	Slovenian Environment Agency
BAT	Best Available Technology
BR2	UNFCCC second biennial report
CERO	Centre for waste treatment
CEU	Energy efficiency Centre
CHP	Cogeneration of heat and electric energy
CORINAIR	CORe INventory of AIR emissions
CP	Conference of parties
CTF	Common tabular format for UNFCCC biennial reporting
CTRLAP	Convention on Long-range Transboundary Air Pollution
CTS	Comprehensive transport strategy
DSM	Demand Side Management
EAFRD	European agricultural fund for rural development
EE	Efficient energy use
EEA	The European Environment Agency
EED	Energy Efficiency Directive
EEE	Electrical and electronic equipment
ELENA	European Local ENergy Assistance (technical help from the European investment bank in the field of energy efficiency)
EMEP	Co-operative programme for monitoring and evaluation of the long range transmission of air pollutants in Europe
ENSVET	Energy consulting network for citizens
EPBD	Energy Performance of Buildings Directive
ERTMS	The European Railway Traffic Management System
ESD	Decision No 406/2009/EC on the effort of Member States to reduce their greenhouse gas emissions to meet the Community's greenhouse gas emission reduction commitments up to 2020
ESRD	European regional development fund
ETCS	European Train Control System
EU	European Union
EU-28	EU member states (28 states)
EU-BR2	Second Biennial Report of the European Union under the UN Framework Convention on Climate Change
EU-ETS	EU Emission Trading Scheme
EUREM	European energy manager training
EZ-1	Energy Act
FCCC	Framework Convention on Climate Change
GBC	Green Building Council
GDP	Gross Domestic Product
GfK	A company performing market research
GHG	Greenhouse gas

GWP	Global-warming potential
HFC	Hydrofluorocarbons
HPP	Hydroelectric power plant
HWP	Harvested wood products
ICCT	The international council on clean transport
IDR	In-depth review
IJS	Institute Jožef Stefan
IPCC	Intergovernmental Panel on Climate Change
IPPT	Integrated public passenger transport
KIS	The Agricultural Institute of Slovenia
KOPOP	Agro-environment and agro-climate payments
LCS	Low-carbon society
LDC	Least Developed Countries
LEC	Local energy concept
LTSERB	Long-term Strategy for promotion of investments energy renovation of buildings
LULUCF	Land Use, Land Use Change and Forestry
MMR	Monitoring Mechanism Regulation (for GHG emission monitoring)
MOP	Ministry of the environment and spatial planning
non-ETS	Installations, emissions or sectors not included in the EU-ETS scheme
OP DETI	Operational programme for environment and transport infrastructure development 2007–2013
OP ECP	Operational programme for European cohesion policy in the period 2014−2020
OP GHG-2020	Operational programme of measures for reducing greenhouse gas emissions until 2020
P+R	Park and ride
PDCA	PDCA-cycle: Plan – Do – Check – Act
PFC	Perfluorocarbons
PPT	Public passenger transport
PU	Population unit
REF	Referential strategy, projection, scenario
ReNGP	Resolution on the national forest programme
RES	Renewable energy sources
S4	Smart specialisation of Slovenia strategy
SAR	Second Assessment Report
SI-BR2	Second biennial Slovenia's report to the UNFCCC
SIDS	Small Island Developing States
SI-NC6/BR1	Slovenia's Sixth National communication and second biennial report under the UNFCCC
SME	Small and medium enterprises
SORS	Statistical Office of the Republic of Slovenia
TEŠ	Termoelektrarna Šoštanj - Šoštanj thermo power plant
TET	Termoelektrarna Trbovlje - Trbovlje thermo power plant
TE-TOL	Termoelektrarna toplarna Ljubljana - Ljubljana heat and power plant
UN	United Nations
UNFCCC	United Nations Framework Convention on Climate Change
WBB	Boilers fuelled by wood biomass
WBDH	Wood biomass district heating systems
WEEE	Waste electrical and electronic equipment
WEM	(scenario) with existing measures