

Deliverable C4.1, Vol. 3

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# The Third Climate Action Mirror and Accompanying Reports

English summary

**LIFE ClimatePath2050 (LIFE16 GIC/SI/000043)**

The English summary of *The Third Climate Action Mirror and Accompanying Reports* was prepared within the project LIFE ClimatePath2050 “*The Slovenian Path Towards the Mid-Century Climate Target*” (LIFE Podnebna pot 2050, Slovenska podnebna pot do sredine stoletja, LIFE16 GIC/SI/000043). The project is being carried out by a consortium led by the Jožef Stefan Institute (JSI), with partners: ELEK, the Building and Civil Engineering Institute ZRMK (GI ZRMK), the Institute for Economic Research (IER), the Agricultural Institute of Slovenia (AIS), PNZ, the Slovenian Forestry Institute (SFI), and external contractors.

#### REPORT No.:

IJS-DP-13425

#### DATE:

15 January 2021

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#### REPORT TITLE / NASLOV POROČILA:

**Deliverable C4.1 Vol.3:** The Third Climate Action Mirror and Accompanying Reports, English summary

**Poročilo projekta št. C4.1, volumen 3:** Podnebno ogledalo 2020, povzetek v angleškem jeziku

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# 1 The aim and process of preparing the *Climate Action Mirrors*

## 1.1 What is the aim of the *Climate Action Mirrors*?

The *Climate Action Mirrors* are reports in which the main findings of monitoring the implementation of the measures for the reduction of greenhouse gas (GHG) emissions are presented. After *The First Climate Action Mirror* was published in April 2018, *The Second Climate Action Mirror* was published on 12 June 2019. In June 2020 these two reports were followed by *The Third Climate Action Mirror*, presenting the state of the implementation of climate actions in 2019. All reports were prepared within the project LIFE ClimatePath2050. The main aim of these reports is to improve the current monitoring reporting system and enhance its use for the implementation of climate actions by:

- ensuring the coherent, transparent, and high-quality information for tracking the progress of climate mitigation actions in Slovenia,
- improving access to the information to be used in decision-making and thus implementing a continuous improvement cycle (plan-do-check-act) for short-term corrective actions and also providing specific guidelines for the mid- and long-term planning tasks,
- reducing the administrative burden by providing information for various reporting purposes,
- streamlining climate-related monitoring and reporting in one system, which is also in line with the *National Energy and Climate Plans* (NECPs) for the period 2021 to 2030. The NECPs had to be prepared by EU Member States under the regulation on the Governance of the Energy Union and Climate Action (EU)2018/1999. Slovenia adopted its NECP in February 2020.

## 1.2 The involvement of stakeholders is an essential part of preparing the *Climate Action Mirrors*

***Altogether, 227 participants attended events within the coordination process for the preparation of the Climate Action Mirrors. The participation of stakeholders, especially from the public sector, is essential for reinforcing access to information and improving analytical skills for use of the results from the reports and thus enhancing institutional and human capacities and supporting a “monitoring-reporting-response” process.***

To fulfil the aim of the *Climate Action Mirrors*, which at the same time also include all the elements needed for the preparation of the annual reports on the implementation of the *Operational Programme for Reducing GHG Emissions until 2020* (OP GHG) presented to the Government by the Ministry of the Environment and Spatial Planning, it is essential to enable and encourage the participation of stakeholders, especially from the public sector, in their preparation processes.

The process for *The First Climate Action Mirror* started with the introductory workshop in September 2017. The main aim of the workshop was to present to the public sector stakeholders the main ideas behind the preparation of the *Climate Action Mirrors*. While preparing the report, working meetings were held with representatives from the ministries responsible for the implementation of the OP GHG. In March 2018 the draft version of *The First Climate Action Mirror* was presented and discussed with the relevant stakeholders at the workshop. While the final version of the *Mirror* was made publicly available at the presentation event on 17 April 2018, together with the first highlight report with the title *How We Reduced Greenhouse Gas Emissions in 2016*, the process itself continued in April and May with three workshops dedicated to the measures that were put in focus within *The First Climate Action Mirror*.

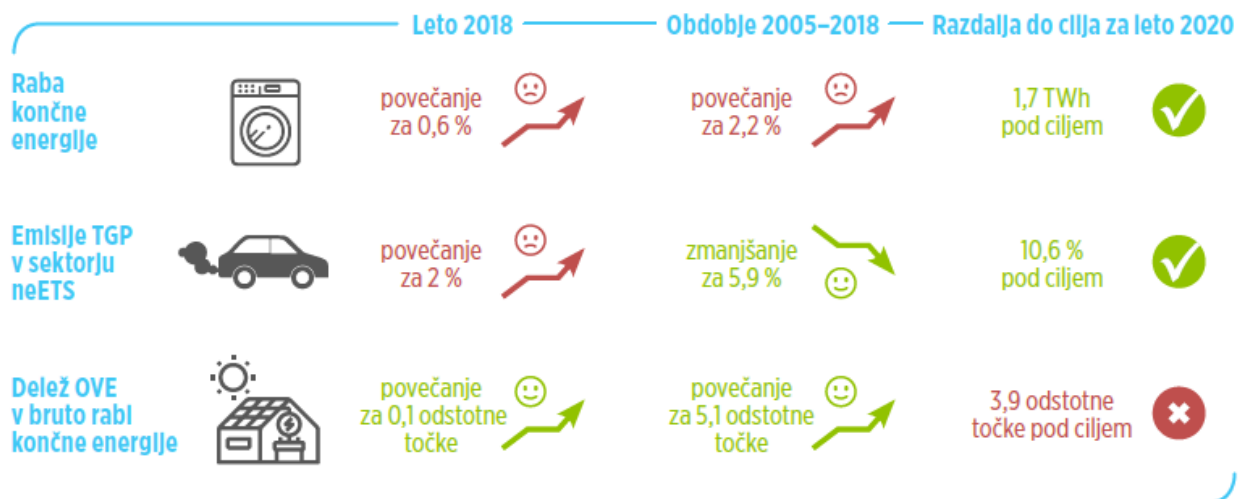


**Figure 1:** More than 100 participants took part in *The Second Climate Action Mirror* presentation event, which was held in June 2019 at Fužine Castle (photo by Marjan Verč).

To conclude the preparation process for *The First Climate Action Mirror* and start the process for the preparation of *The Second Climate Action Mirror*, a working meeting with the relevant stakeholders was organized in November 2018. Within the report preparation process, working meetings with representatives from the ministries responsible for implementation of the OP GHG were again held, this time with the aim of discussing and coordinating the main recommendations for decision-makers. The presentation workshop of the draft version of the *Mirror* to the stakeholders was organized at the end of April 2019. During the preparation of the report's final version in May and at the beginning of June 2019 also three workshops dedicated to the measures in focus were organized. The presentation event upon the release of *The*



*Second Climate Action Mirror* was held on 12 June 2019 (Figure 1). To emphasise the importance of cooperation between the national and local levels in the field of climate actions, the event was joined with the second local scoreboard event for municipalities. At the same time, also the second highlight report entitled *Greenhouse Gas Emissions Decreased in 2017* was published. The recommendations from this report were also considered in the preparation of the Slovenian NECP, which was then adopted in February 2020.



**Figure 2:** Achievement of targets from the 2020 highlight report entitled *The 2020 Targets Are the First Milestone on the Way to a Climate-Neutral Society*.

The preparation of *The Third Climate Action Mirror* was to a great extent influenced by the coronavirus pandemic. The exchange of information with representatives from the ministries responsible for the implementation of the OP GHG was mainly based on bilateral cooperation via E-mail, telephone calls, or video calls. The workshop for the presentation of the draft to the relevant stakeholders was replaced by consultation with the stakeholders via a web-based questionnaire. After the draft version of the report was published on the project's website on 14 May 2020, the relevant stakeholders were invited to submit their comments on the recommendations, catalogue of measures, and other parts of the report via the mentioned questionnaire. Altogether 82 comments were collected, most of them, 56%, were in the field of transport. The presentation event was cancelled as well and partially compensated for by more intensive promotion of the results. The final version of *The Third Climate Action Mirror* was published on 23 June 2020, accompanied by a highlight report entitled *The 2020 Targets Are the First Milestone on the Way to a Climate-Neutral Society* (Figure 2), a press release, and promotion by the Ministry of the Environment and Spatial Planning (MESP), which also included statements by Stane Merše from the Jožef Stefan Institute, Tanja Bolte from MESP, and Gregor Pretnar from PNZ, resulting in significant media coverage of the event. The parts with the measures in focus in *The Third Climate Action Mirror* were only published subsequently, in January 2021.

### 1.3 The *Climate Action Mirrors* encourage corrective actions

*Within the preparation process of the Climate Action Mirrors, special attention is devoted to discussion and coordination of the main recommendations for decision-makers with representatives from the ministries responsible for OP GHG implementation. **Within the second and third reports, a total of 145 recommendations for short-term corrective actions were prepared (transport 34, buildings 32, agriculture 7, other sectors 38, multisectoral measures 34), with some of the 2019 recommendations repeated in 2020.***

Based on the plans of the LIFE ClimatePath2050 project and the feedback and needs of the relevant stakeholders, some changes in the preparation process and the reports themselves were introduced each year. The most important changes introduced with *The Second Climate Action Mirror* were the following:

- More attention is now devoted to discussion and coordination of the main recommendations for decision-makers with representatives from the ministries responsible for implementation of the OP GHG.
- The report was restructured in such a way so that now its parts are sector orientated. In addition to the other sectors, a new sector was included – land use, land-use change, and forestry (LULUCF).
- Indicators are now included in the relevant sectoral parts of the report, while in *The First Climate Action Mirror* they were published together in *Part 2*. Contrary to most of the environmental indicators usually used, which within the DPSIR framework (driving forces – pressures – states – impacts – responses) of the European Environment Agency (EEA) are categorized under states, pressures, or impacts, the majority of the *Climate Action Mirror* indicators belong to the policy response category.
- A web version of the indicators has now been prepared. To enable the publication of the indicators on the website of the Slovenian Environment Agency, their structure was changed and the key messages and charts are also prepared in English. The Slovenian version of the indicators is available at <http://kazalci.arso.gov.si/sl/themes/climate-mirror> and the English version at <http://kazalci.arso.gov.si/en/themes/climate-mirror>.
- All measures are now presented in catalogue form (Figure 3), covering all relevant information needed about an individual measure. Also included are some measures from the *National Energy Efficiency Action Plan* and *National Renewable Energy Action Plan*, which is in line with the integration of plans within the *NECP*. The catalogues are also available on the website of the project LIFE ClimatePath2050 – the catalogues of multisectoral measures and measures in the EU-ETS sector on the main website of the *Climate Action Mirrors*, and the catalogues of measures in other sectors on the sectoral subpages.

Some further changes were also introduced in the process of preparing *The Third Climate Action Mirror*.

- For the LULUCF sector, four indicators were developed and published.
- Achievement of the targets in accordance with Articles 3 (energy efficiency targets), 5 (the exemplary role of public bodies' buildings) and 7 (the energy efficiency obligation scheme) of the Energy Efficiency Directive is now included in *Part 1: Assessment of Target Achievement*, which is in line with the integrated reporting planned in the NECP. For the targets on the level of primary and final energy consumption within Article 3, the existing indicators (EN16, EN10) on the website of the Slovenian Environment Agency were also updated.
- Part of *Part 1: Assessment of Target Achievement* now also features achievement of the total and sectoral renewable energy sources (RES) target shares, again in line with the integrated reporting planned in the NECP. At the same time, the existing indicator on the share of RES (EN24) on the website of the Slovenian Environment Agency was updated.
- *Part 0: Summary for Decision-Making* was updated to better respond to the needs of the preparation of the annual reports on the implementation of the OP GHG. Information on achievement of the energy efficiency and RES targets is now included as well.

PRENOVA STAVB KULTURNE DEDIŠČINE IN DRUGIH POSEBNIH SKUPIN STAVB	
<b>SPLOŠEN OPIS</b>	
OZNAKA INSTRUMENTA	OP TGP: NS-6 AN URE: J.6 OP EKP: prednostna os 4, prednostna naložba 4.1
UČINEK V SEKTORJU	stavbe – splošno
VPLIV NA SEKTOR ETS ALI NEETS	neETS <input checked="" type="checkbox"/> ETS <input type="checkbox"/>
TGP NA KATERE VPLIVA INSTRUMENT	ogljikov dioksid (CO <sub>2</sub> )
VRSTA INSTRUMENTA	sklop instrumentov
ODGOVORNOST ZA IZVAJANJE	Mzi DE
NA KATERE CILJE VPLIVA INSTRUMENT	zmanjšanje rabe energije <input checked="" type="checkbox"/> zmanjšanje emisij TGP <input checked="" type="checkbox"/> povečanje rabe OVE <input type="checkbox"/> drugo: <input type="checkbox"/>
KRATEK OPIS	V okviru ukrepa bodo pripravljena merila za prenavo stavbne kulturne dediščine in drugih posebnih skupin stavb. Predvidena je izvedba demonstracijskih projektov, razvoj in uvajanje primernih tehnologij, vzpostavitev sheme finančne podpore in zagotovitev finančnih sredstev za obdobje 2014–2020.
<b>PRAVNE IN STRATEŠKE PODLAGE</b>	
EU ZAKONODAJA	/
NACIONALNE PRAVNE PODLAGE	/
NACIONALNE STRATEŠKE PODLAGE	Operativni program ukrepov zmanjšanja emisij toplogrednih plinov do leta 2020 (OP TGP) Aktijski načrt za energetske učinkovitost za obdobje 2017–2020 (AN URE) Dolgoročna strategija za spodbujanje naložb energetske prenovne stavb (DSEPS) Operativni program za izvajanje evropske kohezijske politike v obdobju 2014–2020 (OP EKP)
<b>IZVAJANJE INSTRUMENTA V LETU 2018</b>	
POTEK IZVAJANJA	Instrument se še naprej izvaja samo delno. Smernice za energetske prenovne stavb kulturne dediščine sta Mzi in MK izdala že leta 2016, leta 2017 pa je bil potrjen pilotni projekt energetske prenovne petih stavb Ministrstva za kulturo, s skupno turistično površino skoraj 55.500 m <sup>2</sup> , po modelu energetskega pogodbenišva. V letu 2018 je bil objavljen javni razpis za podelitev koncesije za izvedbo tega projekta, ki je trenutno v drugi fazi konkurenčnega dialoga.  V okviru razpisov za energetske prenovne stavb javnega sektorja se za stavbe kulturne dediščine upoštevajo specifična merila za ocenjevanje, in sicer se lahko v izračunu upoštevata tudi prihranki tistih ukrepov, ki jih zaradi varovanja kulturne dediščine ni mogoče izvesti v celoti ali delno. V skladu z <i>Dopolnitvijo DSEPS</i> so bila omenjena merila januarja 2019 v okviru prenovne
<p>Navodil za delo posredniških organov in upravičencev pri ukrepu energetske prenovne stavb javnega sektorja še nekoliko nadgrajena.</p> <p>V <i>Dopolnitvi DSEPS</i> je za stavbe kulturne dediščine predvidena tudi prilagoditev višine dodeljenih sredstev glede na zahtevnost in obseg posegov, ki zaenkrat še ni bila vzpostavljena, enako pa velja tudi za shemo finančnih podpor za projekte energetske prenovne stavb kulturne dediščine. Takšna shema bi bila zaradi velikega deleža javnih stavb, ki so v celoti ali delno spomeniško zaščitene, nujna, za njeno delovanje pa bo potrebno zagotoviti ustrezne finančne spodbude.</p>	
DOSEŽENI UČINKI	Spremljanje učinkov je predvideno samo za pilotni projekt, ki pa leta 2018 še ni bil izveden.
<b>PREDVIDENO IZVAJANJE INSTRUMENTA V OBDOBJU 2019–2020</b>	
PREDVIDENO IZVAJANJE	Predvideno je izvajanje pilotnega projekta.
PREDVIDENI UČINKI	V okviru pilotnega projekta je predvideno: <ul style="list-style-type: none"> <li>• zmanjšanje rabe energije: 3,5 GWh/leto</li> <li>• povečanje proizvodnje energije iz OVE: 81 MWh/leto</li> <li>• zmanjšanje emisije CO<sub>2</sub>: 0,7 kt/leto</li> </ul>
<b>PRIPOROČILA ZA ODLOČANJE</b>	
Za večji obseg energetske prenovne stavb kulturne dediščine in drugih posebnih skupin stavb je nujno, da Mzi DE čim hitreje vzpostavi izvajanje ukrepa v celotnem obsegu iz <i>Dopolnitve DSEPS</i> in zagotovi sofinanciranje, prilagojeno tem ciljnim skupinam (npr. tudi v ločenih razpisih oz. pozivih).	
<b>VIRI PODATKOV</b>	
<ul style="list-style-type: none"> <li>• Mzi DE, Projektna pisama za energetske prenovne</li> <li>• Mzi, Portal energetika, Projektna pisama za energetske prenovne (<a href="http://www.energetika-portal.si/podrocja/energetika/energetska-prenova-javnih-stavb/projektna-pisama/">http://www.energetika-portal.si/podrocja/energetika/energetska-prenova-javnih-stavb/projektna-pisama/</a>)</li> </ul>	
<b>DATUM PRIPRAVE</b>	
22. marec 2019	

Figure 3: An example of a presentation of a measure in catalogue form.



## 1.4 The *Climate Action Mirrors* improve access to information on GHG emissions reduction measures

*The Climate Action Mirrors include achievement of the decarbonisation targets, an analysis of the indicators, an overview of the implementation of GHG emissions reduction measures, and recommendations for the implementation of measures in the coming year. **The most recent, i.e. The Third Climate Action Mirror, consists of 11 parts and more than 800 pages, including a comprehensive summary.***

*The publication of the Climate Action Mirrors and accompanying highlight reports was also widely promoted via press releases, press conferences, the project's website, etc. **Content from the Climate Action Mirrors was presented in 70 articles in different media (daily newspapers, magazines, radio, TV) and used and quoted in several official and other documents.***

*The First Climate Action Mirror* consisted of eight parts: a summary report for decision-making, an overall summary report, indicators for monitoring the implementation of the OP GHG, the catalogue of measures, three parts summarizing the findings for the selected measures in focus (see paragraph 2.6), and GHG emissions and the EU-ETS sector, i.e. a sector that is not a part of the OP GHG but is important for emissions reduction as it contributes over one third of GHG emissions in Slovenia.

Following the feedback on the first report from the relevant stakeholders, *The Second Climate Action Mirror* was restructured in such a way so as to reflect GHG emissions reduction per sector. The report thus consisted of eleven parts: a summary report for decision-making, an assessment of OP GHG target achievement, five sectoral parts (transport, buildings, agriculture, other sectors, multisectoral measures), three parts summarizing the findings for the selected measures in focus (see paragraph 2.6), and GHG emissions and the EU-ETS sector.

*The Third Climate Action Mirror* retained the structure of the second report and also consists of eleven parts:

- **Part 0: Summary for Decision-Making.** This part highlights the achievement of targets in the field of non-ETS GHG emissions, energy efficiency, and RES, as well as the main recommendations for improving measures for GHG emissions reduction. This part is derived from the other parts of *The Third Climate Action Mirror* and the recommendations included were coordinated with the main stakeholders.
- **Part 1: Assessment of Target Achievement.** This part includes an overview of the progress towards the targets, in addition to the targets in the field of non-ETS GHG emissions for the first time also energy efficiency and RES targets. It also includes reviews of the relevant 2030 targets and of financing the measures and a presentation of sectoral indicators together with qualitative assessments regarding achievement of their targets and long-term emissions management.
- **Part 2: Transport.** In this part, the state in the field of GHG emissions reduction in the transport sector is fully presented. The review also includes an analysis of the indicators

used to monitor implementation of the OP GHG in 2018, a catalogue of measures for GHG emissions reduction in this sector for 2019, and recommendations for the implementation of measures in the coming year.

- **Part 3: Buildings.** In this part, the state in the field of GHG emissions reduction in buildings is fully presented. This part is composed in a similar manner as *Part 2*.
- **Part 4: Agriculture.** In this part, the state in the field of GHG emissions reduction in agriculture is fully presented. This part is composed in a similar manner as *Parts 2 and 3*.
- **Part 5: Other Sectors.** This part includes an overview of the state in the field of GHG emissions reduction in non-ETS industry – fuel consumption and process emissions, waste, and LULUCF. In this part, four indicators for the LULUCF sector are included for the first time. The content of this part for each sector is similar to the content of *Parts 2, 3, and 4*.
- **Part 6: Multisectoral Measures.** The state in the field of GHG emissions reduction by measures targeting several sectors is presented in this part. The main chapters are green growth, training, education, information and promotion, and other multisectoral measures. The content of each chapter is similar to the content of *Parts 2, 3, and 4*.
- **Part 7: GHG Emissions and the EU-ETS Sector.** While the OP GHG is oriented only towards the non-ETS sector, also some information about the EU-ETS sector, which contributed 37% of all GHG emissions in Slovenia in 2018 and is therefore also important for the reduction of GHG emissions, is included as well. Similar to *Parts 2, 3, and 4*, also this part includes an analysis of the indicators for 2018, a catalogue of measures for 2019, and recommendations for their implementation in the coming year.
- **Part 8: Measure in Focus – Green Fiscal Reform.** In this part, the concept of green fiscal reform (GFR) and its preparation in Slovenia are presented. Based on the evaluation of existing measures and interviews with selected Slovenian public employees and other relevant stakeholders, recommendations for GFR progress are also given, including a brief summary of expected factors and opportunities for GFR implementation in Slovenia.
- **Part 9: Measure in Focus – the Energy Renovation of Central Government Buildings.** The reasons for lagging behind the targets in the field of the energy renovation of central government buildings, i.e. buildings owned and used by the central government, are analysed in more detail in this part. The existing instruments for reducing energy use and GHG emissions in central government buildings are evaluated as well and recommendations for their improvement are also made.
- **Part 10: Measure in Focus – Organizing Climate Policy Implementation.** This part includes the main findings of the analysis of the organization of state administration bodies for the implementation of the climate policy.

The complete *Climate Action Mirrors* in Slovenian are available at:

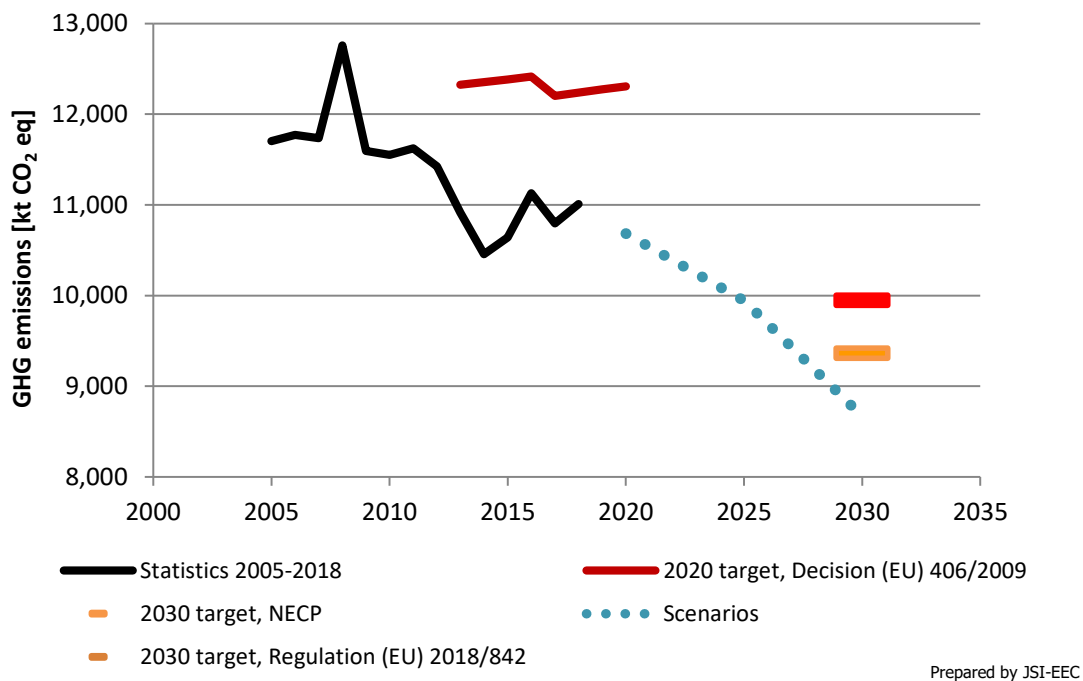
<https://www.podnebnapot2050.si/rezultati-slovenije/letno-podnebno-ogledalo/>.

# 2 The key results of The Third Climate Action Mirror

## 2.1 Achievement of decarbonisation targets – GHG emissions

### 2.1.1 Achievement of annual targets under Decision 406/2009/ES

<b>2020 TARGET</b>	GHG emissions from the non-ETS sector <b>will not increase by more than 4% compared to 2005.</b>
<b>2030 TARGET<sup>1</sup></b>	GHG emissions from the non-ETS sector <b>will be reduced by at least 20% compared to 2005.</b>



**Figure 4: GHG emissions from the non-ETS sector in the 2005–2018 period compared to the target emissions in 2020 and 2030 (source: JSI-EEC).**

Slovenia set the target that until 2020 GHG emissions from the non-ETS sector would not increase by more than 4% compared to 2005. The targets were set for the entire 2013–2020 period; the target for 2013 was 12,324 kt CO<sub>2</sub> eq and for 2020 12,307 kt CO<sub>2</sub> eq.

In 2018, non-ETS emissions increased by 2% to 11,008 kt CO<sub>2</sub> eq but were still 10% below the 2020 target (Figure 4). The first estimates for 2019 show a small decrease. In total emissions, non-ETS emissions represented 62.9%. Compared to 2005, this share increased by

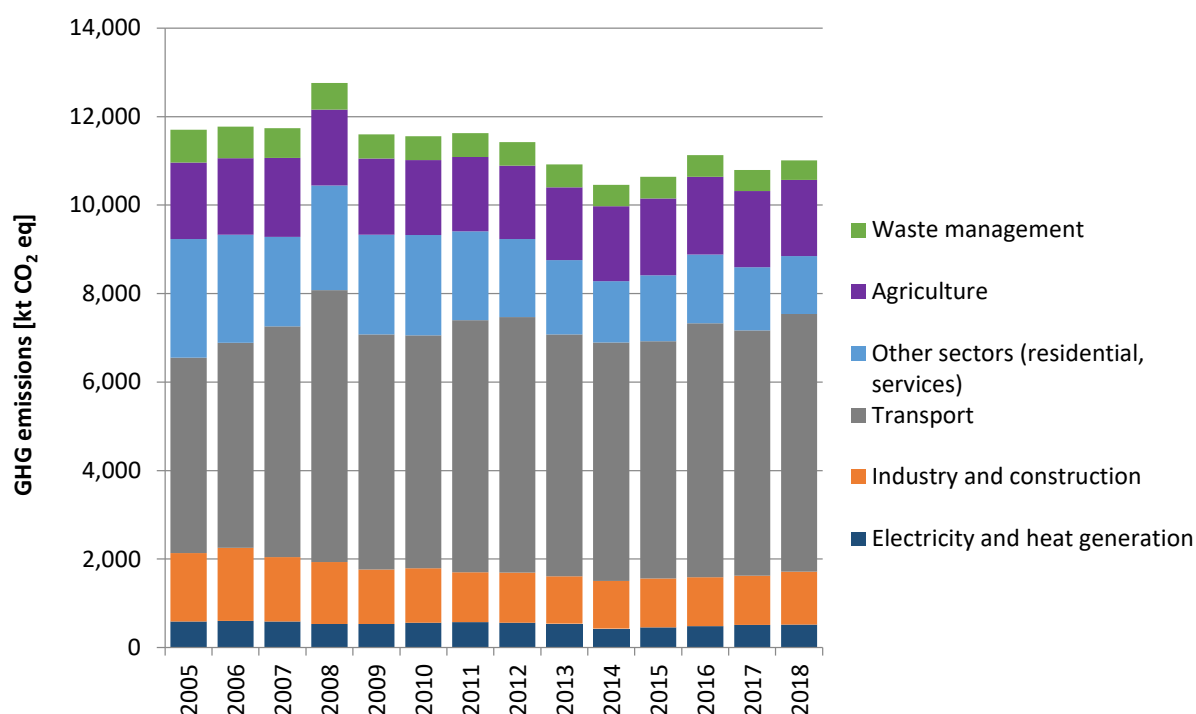
<sup>1</sup> All 2030 targets are from the NECP.

5.7 percentage points. Over a longer period, from 2005 to 2018, non-ETS emissions decreased much less (by 5.9%) than emissions in the ETS sector (by 25.8%), as a result of emissions trends in transport.

### 2.1.2 Achievement of the sectoral targets from the OP GHG

In 2018, non-ETS emissions decreased only in ‘other sectors’ and waste management, remained virtually unchanged in agriculture, and increased in all other sectors, the most in transport and industry.

The biggest share of non-ETS emissions, almost 53%, comes from **transport** (Figure 5). In 2018, GHG emissions in in this sector increased by 5% and were 4.9 percentage points above the 2020 indicative target. This is also the only sector in which emissions increased over the 2005–2018 period. The increase was 31.9%. The first estimates for 2019 show a decrease of around 3.4%, but emissions still remain above the indicative target.



Prepared by JSI-EEC

**Figure 5: Non-ETS emissions by sector over the 2005–2018 period (source: JSI-EEC).**

In 2018, **agriculture** accounted for almost 16% of all non-ETS emissions. The emissions were 5.6 percentage points below the 2020 target and did not change compared to the previous year. Due to a stable trend and slow changes, it is expected that the 2020 indicative target will be achieved.

In ‘**other sectors**’ (residential, services), which contributed 11.9% of all non-ETS emissions in 2018, emissions over the 2005–2018 period decreased the most among all sectors, by 51%. In 2018, emissions decreased by 8.3% and were 1.9 percentage points behind the 2020 indicative

target. Emissions from **buildings**, they represented 9.7% of all non-ETS emissions in 2018, are also included in emissions from 'other sectors'. Most emissions in buildings are caused by heating, so emissions are also dependent on climatic conditions. Normalized emissions in buildings compared to an average winter show a stable downward trend over the most recent period, with the exception of 2016, but emissions reduction has slowed down of late.

Emissions in **non-ETS industry** increased in 2018 for the fifth year in a row, this time by 7.5%. To achieve the 2020 target, they would have to be reduced by 19.5 percentage points. The sector accounts for almost 11% of all non-ETS emissions and the share is increasing.

Despite the fact that emissions increased for the fourth year in a row, the **electricity and heat generation sector**, which contributes only a smaller, i.e. 5%, share of non-ETS emissions, is on the right track towards achieving the 2020 indicative target.

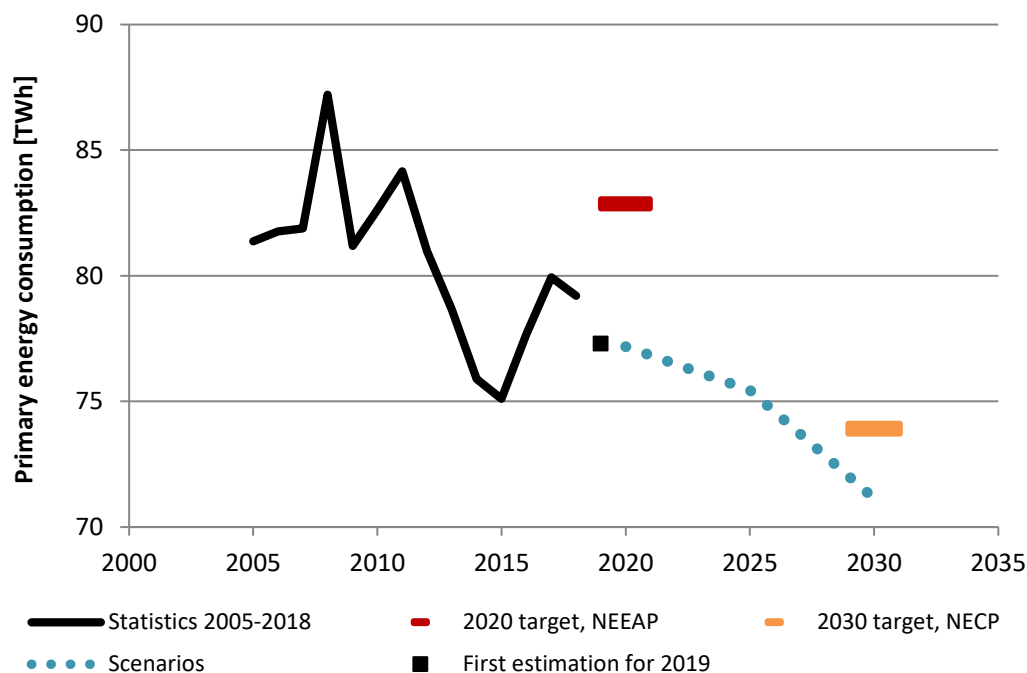
Emissions from **waste management** decreased over the entire period, with the exception of 2015; in 2018 they decreased by 7.4%. Nevertheless, in 2018 emissions were still 3.6 percentage points behind the 2020 indicative target.



## 2.2 Achievement of energy efficiency targets

### 2.2.1 Primary energy consumption – Article 3 of the EED

<b>2020 TARGET</b>	Primary energy consumption <b>will not exceed 82.86 TWh (7.125 million toe).</b>
<b>2030 TARGET<sup>2</sup></b>	Primary energy consumption <b>will not exceed 73.9 TWh (6.356 million toe).</b>



Prepared by JSI-EEC

**Figure 6: Primary energy consumption over the 2005–2018 period compared to the primary energy consumption targets for 2020 and 2030 (source: JSI-EEC).**

In accordance with Article 3 of the Energy Efficiency Directive 2012/27/EU (EED), Slovenia set the energy efficiency target for 2020 within the *National Energy Efficiency Action Plan for the 2014–2020 period* (NEEAP) such that primary energy consumption in 2020 will not exceed 82.86 TWh (7.125 million toe). The target is binding and relates to primary energy consumption in both the non-ETS and ETS sectors. For 2030, the primary energy consumption target is indicative.

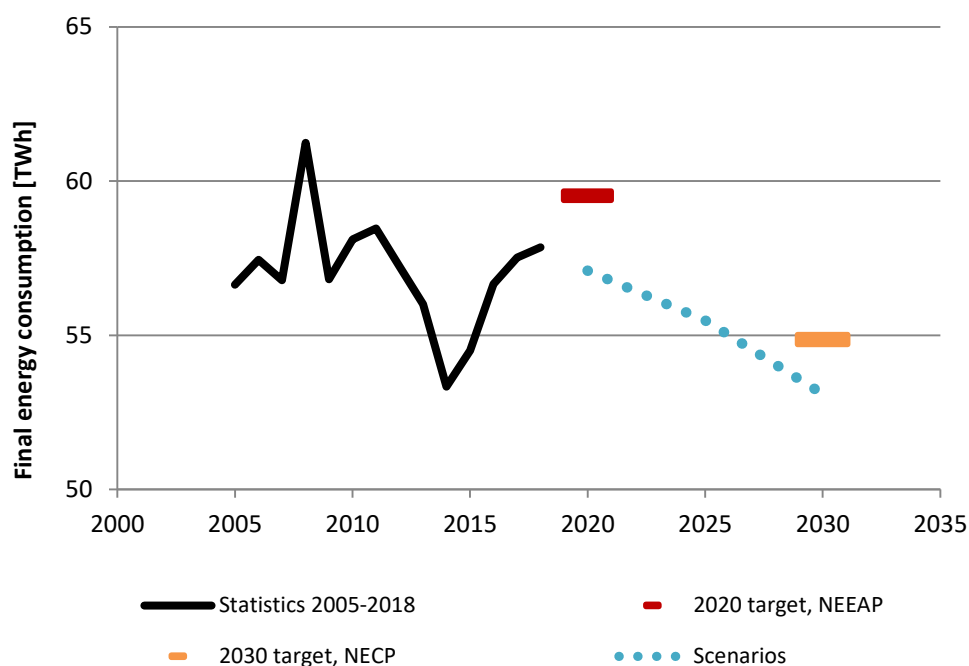
In 2018, primary energy consumption amounted to 79.2 TWh and, after two years of growth, decreased by 0.9% (Figure 6). Over the 2010–2018 period, primary energy consumption decreased by 4.2% and in 2018 was still 4.4% below the 2020 target. Since 2015, when it reached its lowest value in the period observed, it has increased by more than 5%.

<sup>2</sup> All 2030 targets are from the NECP.

The primary energy consumption trends, with some deviations, roughly follow the final energy consumption trends (Chapter 2.2.2), so short-term but large growth in final energy consumption in one of the sectors can also lead to an increase in primary energy consumption.

## 2.2.2 Final energy consumption – Article 3 of the EED

<b>2020 TARGET</b>	Final energy consumption <b>will not exceed 59.52 TWh (5.118 million toe)</b> .
<b>2030 TARGET<sup>3</sup></b>	Final energy consumption <b>will not exceed 54.9 TWh (4.717 million toe)</b> .



Prepared by JSI-EEC

**Figure 7: Final energy consumption in the 2005–2018 period compared to the final energy consumption targets for 2020 and 2030 (source: JSI-EEC).**

In addition to the obligatory primary energy consumption target, within the NEEAP Slovenia has also set an indicative final energy consumption target, so that final energy consumption in 2020 will not exceed 59.52 TWh (5.118 million toe). The target relates to final energy consumption in both the non-ETS and ETS sectors. For 2030, the final energy consumption target is binding.

In 2018, final energy consumption increased for the fourth year in a row, this time by 0.6% (Figure 7). Over the 2010–2018 period, final energy consumption decreased by 0.4% and in 2018 was 2.8% below the 2020 target.

In 2018, there was an increase in final energy consumption in transport and industry, while in the residential and service sectors, final energy consumption decreased. Final energy

<sup>3</sup> All 2030 targets are from the NECP.

consumption in **transport**, which at 40% represented the largest share in the final energy consumption structure, increased in 2018 for the third year in a row, by 2.1%. The increase was due to an increase in transport activity in both the transport of goods and passengers. At 23.3 TWh, final energy consumption in transport still remains 9% below the 2020 indicative target.

Final energy consumption in **industry** increased for the fifth year in a row, with a growth of almost 16% over the 2013–2018 period. In 2018, final energy consumption increased by 7.1% and at 16.1 TWh exceeded the 2020 indicative target by almost 6%. The increase in final energy consumption was due to an increase in economic activity, value added in industry being 4.4% higher in 2018 than in the previous year, as well as improvements in energy statistics for this sector<sup>4</sup>.

Despite the fact that final energy consumption in the **residential sector** decreased by almost 20% over the 2010–2018 period, at 12.4 TWh in 2018 it was still 0.3 TWh or 2.4% above the 2020 indicative target. In 2018, final energy consumption in this sector decreased for the second year in a row, this time by 4.9%. If the final energy consumption for heating is normalized with a climate correction factor over the 2009–2018 period, the final energy consumption in this sector in 2018 even increased by 1% compared to the previous year.

Final energy consumption in **services** is highly variable, which is due to the method of monitoring – final energy consumption in services is not monitored but is calculated as a residual in the energy balance. Final energy consumption in services decreased in 2018 for the second year in a row, by 8.5%, to 6.1 TWh. Thus, the final energy consumption was 529 GWh or 8% below the 2020 indicative target.

### 2.2.3 The exemplary role of public bodies' buildings – Article 5 of the EED

#### ANNUAL TARGETS UNTIL 2030

The energy renovation of **3% of the total floor area of buildings owned and used by the central government annually.**

Article 5 of the EED stipulates that each Member State shall ensure that, as from 1 January 2014, 3% of the total floor area of heated and/or cooled buildings owned and occupied by its central government is renovated each year to meet at least the minimum energy performance requirements or that alternative cost-effective measures are taken to achieve the same energy efficiency improvement of those buildings.

According to the registry of buildings owned and occupied by the central government, the area of central government buildings with a total useful floor area over 250 m<sup>2</sup> is 890,899 m<sup>2</sup>. This entails that 26,727 m<sup>2</sup> of floor area need to be energy renovated annually, i.e. in the 2014–2019

<sup>4</sup> In 2019, the Statistical Office of the Republic of Slovenia completed a project in which it expanded the range of companies involved in the research. This is a sample survey, on the basis of which it is possible to estimate the energy consumption of the entire population of companies. The survey sample now also includes companies with less than 20 employees, which contributed to the number of companies included in the sample rising from 1,414 in 2017 to 3,401 in 2018, and the number of companies included in the statistics increasing from 1,226 in 2017 to 2,129 in 2018.

period a total of 160,362 m<sup>2</sup>. In 2019, 11,333 m<sup>2</sup> of floor area was renovated, which is one third of the amount in the previous year and only 42% of the annual target. A total of 62,841 m<sup>2</sup> had been renovated by 2019, which is only 39% of the target for this period. In the 2014–2019 period, the planned annual target was achieved only in 2018, and thus never cumulatively. The use of funds from the Cohesion Fund lags behind the planned use thereof; in the field of the energy renovation of buildings owned and occupied by the central government only 15% of the funds have been used.

According to the data from the project office for the energy renovation of public buildings at the Ministry of Infrastructure, in the 2014–2020 period a total of 65,436 m<sup>2</sup> will be renovated, or only 1.07% instead of 3% of the total floor area per year.

## 2.2.4 Energy efficiency obligation schemes – Article 7 of the EED

<b>2020 TARGET</b>	<b>Cumulative energy savings</b> over the 2014–2020 period will amount to <b>11,596 GWh</b> .
<b>2030 TARGET<sup>5</sup></b>	<b>Cumulative energy savings</b> over the 2021–2030 period will amount to <b>25,230 GWh</b> .

Slovenia implements the obligations under Article 7 of the EED through an energy efficiency obligation scheme (EEOS) for energy distributors and/or retail energy sales companies and an alternative measure. For the first measure, the obligation to achieve energy savings for 2018 was set at 0.75% of energy sold in the previous calendar year, while for the alternative measure the amount of planned energy savings does not vary and is 262 GWh annually. The total cumulative target for 2020 in accordance with the NEEAP is 11,596 GWh, of which 7,336 GWh by means of the alternative measure.

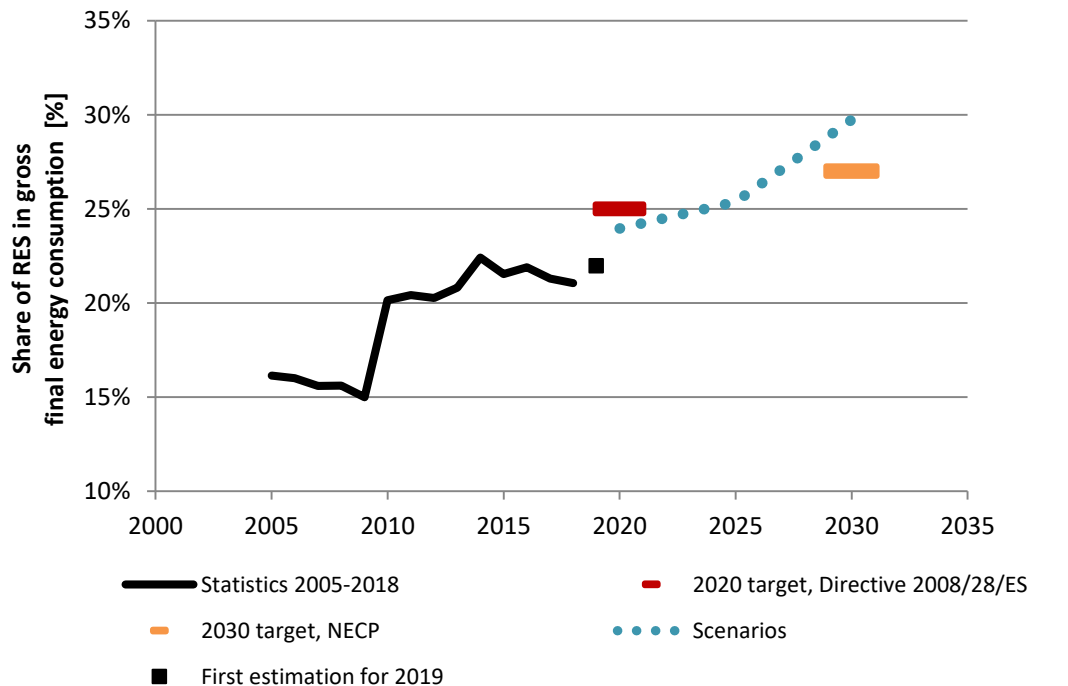
Savings under the EEOS and the alternative measure, i.e. the incentive programmes for energy efficiency measures and the use of renewable energy sources (RES) at the *Eco Fund*, the *Slovenian Environmental Public Fund*, amounted to 490.4 GWh in 2018, of which energy distributors and/or retail energy sales companies provided 57% or 281.9 GWh and the Eco Fund 208.5 GWh, and represented 94% of the annual target. The 2018 target in accordance with Article 7 of the EED and the NEEAP was therefore not achieved. At the cumulative level, the target was not achieved either, as the achieved savings over the 2014–2018 period represent 83% of the cumulative target of 11,596 GWh for the 2014–2020 period instead of the planned 86%. The first data for 2019 show that the energy savings achieved within the Eco Fund programmes amounted to 295.6 GWh, thus fulfilling the annual target for the alternative measure for the first time.

<sup>5</sup> All 2030 targets are from the NECP.

## 2.3 Achievement of decarbonisation targets – RES

### 2.3.1 Achievement of the RES target share

<b>2020 TARGET</b>	<b>25% share of RES</b> in gross final energy consumption.
<b>2030 TARGET<sup>6</sup></b>	<b>27% share of RES</b> in gross final energy consumption.



**Figure 8: The share of RES in gross final energy consumption over the 2005–2018 period compared to the target RES shares in 2020 and 2030 (source: JSI-EEC).**

In the field of renewable energy sources, Slovenia set a target and prepared the *National Energy Efficiency Action Plan for the 2010–2020 period (NREAP)*, both as a result of the implementation of the EU common policy. By Directive 2009/28/EC, the Member States adopted two legally binding targets for 2020, Slovenia's targets are to achieve a 25% share of RES in gross final energy consumption and a 10% share of RES in transport.

In 2018, the share of RES in gross final energy consumption was 21.1% and was 5.1 percentage points higher than in 2005. Over the period since the adoption of the NREAP, the share of RES increased by 0.7 of a percentage point. In 2018, the share was 3.9 percentage points lower than the 2020 target. The first estimates for 2019 do not show much improvement.

6 All 2030 targets are from the NECP.



### 2.3.2 Achievement of sectoral RES share targets

<b>2020 TARGET</b>	<b>10% share of RES</b> in final energy consumption in transport.
<b>2030 TARGET<sup>7</sup></b>	<b>21% share of RES</b> in final energy consumption in transport.

Sectors in the field of RES utilization are the use of electricity, heating and cooling, and transport. The binding targets for 2020 and 2030 are set only for transport.

The largest share of RES, which amounted to 32.3% in 2018, is in the **use of electricity**. This is 5.9 percentage points less than planned for the year and 7 percentage points less than the 2020 target. Over the 2005–2018 period, progress was made as the share of electricity from RES increased by 3.7 percentage points, but the lag behind the target, which in this sector is the largest, is much bigger than the progress made.

With a 31.6% share of RES in gross final energy consumption for **heating and cooling** in 2018, the 2020 target has already been exceeded. In the 2005–2018 period, the share increased by 12.7 percentage points, the most among all sectors.

From 2005 to 2018, the share of RES in **transport** increased by 4.7 percentage points. In 2018, the sector lagged behind the planned share by 2.8 percentage points and was 4.5 percentage points below the 2020 target.




<sup>7</sup> All 2030 targets are from the NECP.

## 2.4 What do the sectoral progress tracking indicators show?

Thirty-three indicators from different sectors – achievement of targets (4), green growth (5), buildings (7), transport (4), agriculture (5), industry (3), waste (1), and LULUCF (4) – are used within *The Third Climate Action Mirror* to indicate the stronger and weaker points of Slovenian climate actions and also to support short-term corrective actions and provide specific guidelines for the mid- and long-term planning tasks. Table 2 shows an overview of the indicators, the English version of the indicators is also available online (<http://kazalci.arso.gov.si/en/themes/climate-mirror>), along with qualitative assessments regarding the achievement of their targets and long-term emissions management. The qualitative assessment of an indicator is used to evaluate the following and assign one of three levels (green, yellow, red; Table 1) to the indicator, as described below.

- **Achievement of the indicative annual target.** If the annual target has not been achieved, the assessment is red; if it has been achieved, the assessment is green. However, indicators are assessed as yellow if the deviation of the indicator from the indicative annual target is due to a methodological change in determining the indicator’s value, or if the deviation from this target is very small while long-term emissions management is assessed as green.
- **Long-term emissions management.** In this assessment, a warning is given that special attention needs to be devoted to the implementation of the OP GHG until 2020. The assessment is based on different information: a change in the trend in recent years, data on the poor implementation of measures, and identified uncertainties (the recurrence of the worst trend would jeopardize the 2020 target). All this information is given in a separate column.

Table 1: Legend of the indicators’ qualitative assessment.

	<p><b>Achievement of the indicative annual target</b></p> <p>Long-term emissions management. Achievement of the 2020 target is expected and the prospects for the subsequent years are good. The following factors are analysed: the change of the indicator in the year observed (size and direction); the fluctuation of the indicator in the past; whether the achievement of the target would be jeopardized if the worst year were repeated more than once; whether the implementation of the measures will lead to achieving the target; and whether the planned measures are sufficient.</p>
	<p><b>Non-achievement of the indicative annual target as a result of changes in the methodology, etc.</b></p> <p>Long-term emissions management. Achievement of the 2020 target could be jeopardized. The following factors are analysed: the change of the indicator in the in the year observed (size and direction); the fluctuation of the indicator in the past; whether the achievement of the target would be jeopardized if the worst year were repeated more than once; whether the implementation of the measures will lead to achieving the target; and whether the planned measures are sufficient.</p>
	<p><b>Non-achievement of the indicative annual target</b></p> <p>Long-term emissions management. Some indications clearly show – or a single indication very clearly shows – that achievement of the target in the year 2020 and in the subsequent years could be greatly jeopardized. The following factors are analysed: the change of the indicator in the year observed (size and direction); the fluctuation of the indicator in the past; whether the achievement of the target would be jeopardized if the worst year were repeated more than once; whether the implementation of the measures will lead to achieving the target; and whether the planned measures are sufficient.</p>

**Table 2: An overview of indicators and target achievement and an assessment of the prospects of achieving the 2020 target.**

No.	Indicator	Unit	Year observed	State	Annual target	2020 target	Indicative annual target achievement	Long-term emissions management	Assessment of the long-term emissions management – Explanation
<b>General indicators – Annual GHG emissions</b>									
PO01	Annual GHG emissions according to Decision No. 406/2009/EC	kt CO <sub>2</sub> eq	2018	11,008	12,238	12,307	😊		The annual target was significantly exceeded. In 2018 emissions increased. Reaching the 2020 target might still be endangered if the circumstances do not change and the worst growth trends are repeated in the next two years (the emissions increase of 500 kt CO <sub>2</sub> eq in 2016 or 1,018 kt CO <sub>2</sub> eq in 2008).
PO01a	Electricity and heat generation	Index (2005=100)	2018	87	103	106	😊		Emissions increased for the fourth year in a row. The indicative annual target was nevertheless achieved. Even if the worst trend from the period observed is repeated for two consecutive years, the 2020 target will still be achieved. If such growth continues, achievement of the targets beyond 2020 will be questionable.
PO01b	Industry and construction (including process emissions)	Index (2005=100)	2018	78	62	58	😞		In 2018, the worst trend from 2006 was repeated. Both emissions and the distance from the target increased significantly. Achievement of the 2020 target is uncertain.
PO01c	Transport	Index (2005=100)	2018	132	128	127	😐		After a decrease in 2017, emissions increased again in 2018 and did not reach the annual target. The on-going monitoring indicator shows a 3.4% decrease in transport emissions in 2019. Achievement of the 2020 target is questionable. The implementation of measures in this sector is still very weak.
PO01d	'Other sectors' (residential, services)	Index (2005=100)	2018	49	52	47	😊		Emissions significantly decreased for two years in a row. The annual target was achieved. The backlog caused by the growth in 2015 and 2016 was compensated for. Achievement of the 2020 target, however, remains uncertain.

No.	Indicator	Unit	Year observed	State	Annual target	2020 target	Indicative annual target achievement	Long-term emissions management	Assessment of the long-term emissions management – Explanation
PO01e	Agriculture	Index (2005=100)	2018	99	102	105	😊		Emissions increased only slightly in 2018 and were still below the annual target. The trend is stable and the changes are slow, so we can conclude that emissions in this sector are on track towards achieving the 2020 indicative target.
PO01f	Waste	Index (2005=100)	2018	60	61	56	😊		Emissions decreased for the third year in a row and the annual target was achieved. Emissions started to decrease due to the significantly lower amount of disposed biodegradable waste, so the 2020 target is still achievable.
<b>General indicators – Share of RES</b>									
EN24	The share of renewable energy in gross final energy consumption	%	2018	21.1	23.6	25	😞		The indicator improved slightly in 2018. Achievement of the 2020 target is on a critical path, as the lag behind the target is large.
EN24a	Heating and cooling	%	2018	31.6	29.4	30.8	😊		In 2018, the indicator deteriorated for the second year in a row, but it was still above the 2020 target. With a further decline, achievement of the 2020 target is uncertain.
EN24b	Use of electricity	%	2018	32.3	38.1	39.3	😞		The indicator improved slightly in 2018, but the gap to the annual and 2020 targets widened further. Achievement of the 2020 target is on a critical path.
EN24c	Transport	%	2018	5.5	8.3	10	😞		The indicator improved for the second year in a row, but the gap to the annual and 2020 targets was still big. Achievement of the 2020 target is on a critical path.
<b>General indicators – Energy efficiency</b>									
EN16	Primary energy consumption	TWh	2018	79.2	81.7	82.9	😊		Primary energy consumption was below the 2020 target. Due to the coronavirus pandemic in 2020, we expect the 2020 target to be achieved.

No.	Indicator	Unit	Year observed	State	Annual target	2020 target	Indicative annual target achievement	Long-term emissions management	Assessment of the long-term emissions management – Explanation
EN10	Final energy consumption	TWh	2018	57.9	58.4	59.5	😊		In 2018, the indicator deteriorated for the fourth year in a row, but it was still below the 2020 target. Due to the coronavirus pandemic in 2020, we expect the 2020 target to be achieved.
EN10a	Transport	TWh	2018	23.3	24.4	25.6	😐		The indicator deteriorated again, but still remains well below the 2020 target. The sector is problematic due to its large share in the final energy consumption structure and the limited impact on energy consumption.
EN10b	Industry	TWh	2018	16.1	14.8	15.2	😞		The indicator increased for the fifth year in a row and significantly exceeded the 2020 target. The trend towards achieving the target thus remains unfavourable.
EN10c	Households	TWh	2018	12.4	12.6	12.1	😐		The indicator improved in 2018, but was still above the 2020 target. Despite a significant reduction in energy consumption in this sector over the 2010–2018 period, achievement of the 2020 target is on a critical path.
EN10d	Services	TWh	2018	6.1	6.6	6.6	😊		The indicator improved in 2018 and exceeded the 2020 target. Final energy consumption in services is highly variable, and due to the way of monitoring it, it is difficult to predict achievement of the 2020 target.
<b>Transport</b>									
PO02	CO <sub>2</sub> emissions of new personal vehicles	gCO <sub>2</sub> /km	2018	120	113	101	😞		In 2016 and 2017, the trend of a reduction in the specific emissions of new vehicles stopped, and in 2018 such emissions even slightly increased, so that achievement of the 2020 target is questionable.
	and of all personal vehicles	gCO <sub>2</sub> /km	2018	178	160	152	😞		The average emissions of all vehicles decreased significantly in 2017 and then again increased in 2018. Here, too, achievement of the target is on a critical path, and the implementation of measures in this field will need to be strengthened.



No.	Indicator	Unit	Year observed	State	Annual target	2020 target	Indicative annual target achievement	Long-term emissions management	Assessment of the long-term emissions management – Explanation
PO03	Share of RES in transport	%	2018	5.5	8.3	10.0	☹️		The indicator improved for the second year in a row, but still lags behind the annual target.
PO04	Passenger-kilometres in public passenger transport	Million pkm	2018	1,514	1,946	2,092	☹️		In 2018, the total number of passenger kilometres in public passenger transport decreased, thus interrupting the multi-year growth trend. Achievement of the target is on a critical path; it will be necessary to strengthen the implementation of measures in this field. The year 2020 will not be representative; the target will not be achieved due to the changed circumstances during the coronavirus pandemic.
PO05	Sustainable freight transport (share of rail transport in total transport volume)	%	2018	25	25	26	😊		The share of rail transport in total freight transport with at least one point in Slovenia continues to stay above the indicator projected values; however, in 2018 it fell below the 2020 indicative target.
<b>Buildings</b>									
PO06	Leverage of incentives in the public sector	EUR/EUR	2018	0.38	0.39	0.33	😊		The indicator improved again in 2018 and exceeded the annual target. The leverage is expected to remain at around 2018 levels also in the future, so achievement of the 2020 target is questionable.
PO07	CO <sub>2</sub> emissions reduction through measures in the public sector	kt CO <sub>2</sub> eq	2018	39	49	64	☹️		The indicators improved again in 2018, but the changes are too slow to achieve the 2020 targets. The short-term projection, based on the available data, shows that the indicators will increase also in 2019 and 2020, but not enough to reduce the lag behind the targets.
PO07a	Energy savings through measures in the public sector	GWh	2018	160	235	310	☹️		

No.	Indicator	Unit	Year observed	State	Annual target	2020 target	Indicative annual target achievement	Long-term emissions management	Assessment of the long-term emissions management – Explanation
PO08	Floor area of energy renovated buildings in the public sector	1000 m <sup>2</sup>	2018	1,515	1,388	1,795	☺		The indicator increased also in 2018 and remains well above the indicative annual target. The indicator is closer to the target than achieved energy savings and GHG emissions reduction. In order to achieve the necessary emissions reductions, energy renovation will have to be focused on more comprehensive renovations.
PO09	CO <sub>2</sub> intensity in the commercial and institutional sector	t CO <sub>2</sub> /mio EUR <sub>1995</sub>	2018	30	36	32	☺		In 2018, the indicator improved for the second year in a row and exceeded the annual target. The indicator fluctuates greatly, but is too rough for a more detailed explanation of year-on-year changes.
PO10	Improvement of energy efficiency in the residential sector – CO <sub>2</sub> emissions reduction	kt CO <sub>2</sub> eq	2018	165	212	268	☹		The indicator shows an increasing trend, but since it already lags behind the targets, the current trend is not expected to be sufficient to reduce the lag to such an extent that the 2020 target is achieved. The backlog could only be compensated for by increasing the intensity of the implementation of the measures and by focusing on measures which contribute to greater GHG emissions reduction.
PO10a	Improvement of energy efficiency in the residential sector – energy savings	GWh	2018	1,234	1,125	1,401	☹		The indicator is still increasing and the indicative annual target was achieved, but this could change rapidly with a slightly slower pace of implementation of the relevant measures.
PO11	Specific GHG emissions in the residential sector	kg CO <sub>2</sub> eq/m <sup>2</sup>	2018	9	10	9	☺		The indicator improved again in 2018 and is on target. In the event of an extremely cold year in 2019 or 2020, the indicator could increase again, so achievement of the 2020 target is still uncertain.

No.	Indicator	Unit	Year observed	State	Annual target	2020 target	Indicative annual target achievement	Long-term emissions management	Assessment of the long-term emissions management – Explanation
PO12	Share of RES in the use of fuels for heating and cooling in the tertiary sector (residential, commercial, and institutional)	%	2018	58	59	61	☹️		The indicator improved again in 2018, but still lags behind the targets. Due to the lack of statistics on the use of RES in services, the indicator is probably slightly underestimated.
<b>Agriculture</b>									
PO13	Increasing the efficiency of raising farm animals – GHG emissions per unit of milk production	kg CO <sub>2</sub> eq/kg	2018	0.82	0.79	0.77	☹️		The indicator fluctuates greatly also as a result of external circumstances. In 2018, it improved and came slightly closer to the annual target. It is not possible to detect a downward trend, which would be necessary for achievement of the indicative target.
PO14	Rational fertilization of agricultural plants with nitrogen – consumption of nitrogen from mineral fertilizers for the fertilization of agricultural plants	kt/year	2018	27.29	27.58	28.00	😊		The indicator deteriorated also in 2018, but the annual target was achieved. The average value over the last five years is lower than the 2020 target.
PO15	Improvement of the efficiency of the nitrogen cycle in agriculture – gross nitrogen budget	kg N/ha	2018	45	54	53	😊		In 2018, the indicator improved, but the value fluctuates greatly between years. The average value in the last five years is 48 kg N/ha and thus significantly exceeds the 2020 target.
PO16	Improvement of the efficiency of the nitrogen cycle in agriculture – land area included in the organic farming measure	1000 ha	2018	46	40	44	😊		The indicator improved again in 2018. The annual and 2020 targets were achieved. Significant improvement was achieved throughout the observed period.

No.	Indicator	Unit	Year observed	State	Annual target	2020 target	Indicative annual target achievement	Long-term emissions management	Assessment of the long-term emissions management – Explanation
PO17	Improvement of the efficiency of the nitrogen cycle in agriculture – field and garden areas included in measures that require fertilization based on rapid soil or plant tests	1000 ha	2018	64	49	50	😊		The indicator has been improving over the last four years, but its growth has slowed. The annual and 2020 targets were significantly exceeded. Significant improvement was achieved throughout the observed period.
<b>Industry</b>									
PO18	Financial incentives for energy efficiency and renewable energy in non-ETS industry	1000 EUR/year	2018	46	-	-	😞		The indicator value for 2018 could only be partially estimated. The monitoring of these incentives under the OP ECP is not properly targeted and sufficiently systematic. In 2018, monitoring problems arose also regarding the Eco Fund's incentives due to joint calls for different sectors. The target is not defined.
PO19	Share of RES in the use of fuels in non-ETS industry	%	2018	16.4	20	22	😞		The indicator deteriorated considerably in 2018, also due to the improved energy statistics for industry, and was significantly below the indicative annual target. With the current downward trend, in 2020 a lag behind the target is expected.
<b>Industry, process emissions</b>									
PO20	GHG emissions due to the leakage of F-gases from devices	kt CO <sub>2</sub> eq	2018	156	100	92	😐		The indicator improved significantly in 2018, but still lags behind the target, which is mainly due to changes in the records of these emissions.
<b>Waste management</b>									
PO21	Quantity of deposited biodegradable waste	kt	2017	0	50	29	😊		In 2016, the quantity decreased significantly as a result of the upgrade of the infrastructure for mechanical biological treatment of waste before disposal. In 2018, similar to 2017, the quantity was significantly lower than the 2020 target.

No.	Indicator	Unit	Year observed	State	Annual target	2020 target	Indicative annual target achievement	Long-term emissions management	Assessment of the long-term emissions management – Explanation
<b>Green growth</b>									
PO22	Emissions productivity	EUR <sub>2010</sub> /kg CO <sub>2</sub> eq	2018	2.35	improvement	improvement	☹️		The indicator improved again in 2018, but still lags behind the progress in other countries. The target is not defined.
PO23	Implicit energy tax rate	EUR/toe	2018	251	253	level comparable with the EU average	😊		The target is not defined. The level of the implicit energy tax rate is comparable to that of the EU average.
PO24	Incentives that work against the goal of reducing GHG emissions	EUR million at current prices	2018	124.3	reduction	significant reduction	😊		The target is not defined. The goal is to achieve a reduction. In 2018, the indicator decreased by 8% compared to the previous year. For the first time since 2012, the indicator improved in the direction of the target.
PO25	Green jobs	%	2017	25,691	increase	increase	☹️		The target is not defined. The goal is to increase the number of green jobs. The indicator has not changed much in recent years, and it is not moving or is moving too slowly in the direction of the target.
PO26	Supporting eco-innovations for the transition to a low-carbon society	%, EU-28 = 100%	2018	107	100	100	☹️		The indicator fluctuates in comparison to the European average. In 2018, the indicator deteriorated but still remained above the EU average.
<b>Land use, land-use change, and forestry (LULUCF)</b>									
PO31	GHG net emissions	kt CO <sub>2</sub> eq	2018	243	reduction	reduction	☹️		The indicator deteriorated in 2018, with emissions in the sector remaining higher than sinks. The target is not defined.
PO32	GHG emissions due to land-use change	kt CO <sub>2</sub> eq	2018	196	reduction	reduction	😊		The target is not defined. The indicator generally shows a downward trend.



No.	Indicator	Unit	Year observed	State	Annual target	2020 target	Indicative annual target achievement	Long-term emissions management	Assessment of the long-term emissions management – Explanation
PO33	Area of restored forests according to type of regeneration	ha	2018	7,962	8,000	increase	☹️		The target is not defined. At least 8,000 ha should be restored annually for sustainable forest management. In 2018, the indicator improved significantly for the second year in a row and approached the estimated minimum value.
PO34	Ratio of forest development phases: <ul style="list-style-type: none"> <li>share of youth</li> <li>share of pole stages</li> </ul>	%	2018	4% 24%	10% 43%	increase	☹️		The target is not defined. Sustainable forest development would require 10% of youth and 43% of pole stages. The indicator shows that there is a shortage of younger development phases in Slovenian forests, with the share of youth remaining constant for a long time and the share of pole stages even declining.

## 2.5 Sectoral and multisectoral measures

An important part of the *Climate Action Mirrors* are also presentations of the implementation of the climate mitigation measures in catalogue form (Figure 3), which was introduced in *The Second Climate Action Mirror*. Besides the measures from the OP GHG, some measures from the NEEAP and NREAP are included as well, which is in line with the integration of plans within the NECP. The catalogues of measures are included for all sectors: transport, buildings, agriculture, non-ETS industry, the non-ETS energy sector, waste management, and LULUCF, as well as for the multisectoral measures (green growth, training, education, information and promotion, and other multisectoral measures) and measures in the EU-ETS sector.

The description of each individual measure covers all relevant information needed:

- a general description of the measure, also including the type and a short description of the measure, the institutions responsible for the implementation of the measure, and the targets affected by measure implementation;
- the European and national legal and strategic background;
- information on implementation of the measure in the previous year, including the effects achieved (CO<sub>2</sub> emissions reduction, energy savings, etc.), where possible;
- plans for the implementation of the measure in the current and the next year, again also including the effects planned, where possible;
- recommendations for short-term corrective actions and also specific guidelines for the mid- and long-term planning tasks, if needed. The aim of the recommendations is to support the implementation of the continuous improvement cycle (plan-do-check-act) and thus to develop a system that goes beyond only monitoring and reporting. The recommendations are therefore discussed and coordinated with representatives from the ministries responsible for OP GHG implementation, and the main recommendations for decision-makers are included in the summaries for decision-making, which comprise *Part 0* of the *Climate Action Mirrors*. The recommendations from *The Second Climate Action Mirror* were also considered in the preparation of the Slovenian NECP.

Information on the implementation of the climate mitigation measures in English is available in the national biennial reports (<https://unfccc.int/documents/225908>) and national communications (<https://unfccc.int/documents/64747>) under the United Nations Framework Convention on Climate Change (UNFCCC), while the recommendations are only available in Slovenian as a part of the *Climate Action Mirrors*.

## 2.6 Measures in focus

Within the preparation of the *Climate Action Mirrors*, altogether nine measures were put into focus. These measures were chosen to be analysed in detail because they did not achieve the expected effects or their implementation was not going as planned. The analyses also included reviews of the obstacles preventing the planned implementation and instruments to address these obstacles. Within *The First Climate Action Mirror*, the following three measures were put into focus:

- **energy poverty**, wherein energy poverty in Slovenia was assessed and an overview of the current instruments for reducing energy poverty, their evaluation, and recommendations for their improvement were prepared;
- **electric mobility**, wherein the emphasis of the proposed measures was on supporting the use of electric vehicles, the installation of charging systems, and investments in research and development;
- **the promotion of district heating systems**, wherein an overview of district heating in Slovenia, a measure which is particularly important for achieving synergies between climate policy and measures against air pollution, was prepared.

The following measures were put into focus within *The Second Climate Action Mirror*:

- **sustainable mobility and user behaviour**, wherein the measures for improving the railway infrastructure for passenger transport, building cycling infrastructure, promoting a sustainable choice of transport in the context of the reimbursement of costs for transfer to and from work, and integrated public transport were analysed;
- **emissions in cattle breeding**, wherein the economic and social importance of cattle breeding, the structure and trends of GHG emissions, the possibilities for reducing emissions, and the existing measures for GHG emissions reduction and their effects were examined;
- **supporting companies in the transition to a low-carbon society**, wherein an overview of activities in the field of financial incentives for the transition of companies to a low-carbon society within the framework of cohesion policy was carried out.

Within *The Third Climate Action Mirror*, green fiscal reform, the energy renovation of central government buildings, and organizing climate policy implementation were analysed. Short summaries are presented below.

### 2.6.1 Green fiscal reform

The green fiscal reform (GRF) covers a comprehensive package of policies and measures that introduce changes on the revenue and expenditure side of the budget, or more broadly regarding all public finance resources. In terms of climate change mitigation, the GFR includes measures such as the abolition of fossil fuel subsidies, explicit and implicit carbon pricing – including excise duties and a carbon tax – and the reform of the use of financial resources. Several policy documents have already been aimed at implementing such and similar measures; however, progress in introducing such reform is thus far limited. Current policies

include a CO<sub>2</sub> tax, energy excise duties, the motor vehicle tax, energy efficiency and RES fees on the basis of energy consumption, and the Climate Change Fund. While these measures are certainly important for climate change mitigation, so far they have not been very effective in reducing GHG emissions.

Further progress of the GFR in Slovenia is hindered by several obstacles, such as the lack of a common language and understanding to address the reform, a lack of continuity of work on the GFR in the public administration, international economic competitiveness and international competition for tax revenues, and a lack of political will for the introduction of the GFR. Three main proposals for stimulating GFR implementation were prepared. The first proposal refers to the establishment of permanent institutions for managing the integration of climate policy into various aspects of public finances in Slovenia. The second proposal highlights the planning and implementation of reforms to ensure a more efficient carbon pricing system, especially in the non-ETS sectors. The third proposal covers the systematic planning and monitoring of public support schemes with the aim of reducing GHG emissions. Removing the existing obstacles can increase the contribution of public finances to climate change mitigation, but it should be noted that even the most advanced reform cannot solve all the problems. In addition to the green tax system and support schemes, also other climate policy instruments are crucial.

## 2.6.2 Energy renovation of central government buildings

The energy renovation of central government buildings, i.e. buildings owned and used by the central government, should have served as an example of long-term energy efficient renovation, which is to play an important role in achieving Slovenia's climate neutrality by 2050. The binding target of annually renovating 3% of the total floor area of heated and/or cooled buildings owned and occupied by a given country's central government was set in Article 5 of the EED (see also paragraph 2.2.3). This obligation will also continue in the 2021–2030 period.

In the 2014–2019 period, only 1.2% instead of the targeted 3% of the total floor area was renovated per year, despite there being sufficient funds from the Cohesion Fund and a range of support mechanisms. However, despite the currently available funds, the financing of the energy renovation of buildings is insufficient and unpredictable in the long run, as it is linked to the use of EU funds. Furthermore, there are no financial resources ensured for costs incurred but not eligible for energy renovation subsidies. The identified obstacles further include administrative barriers, as well as the absence of binding targets for the energy renovation of buildings at the level of individual ministries. A process for the identification of possible projects has also not yet been established. There is a lack of suitable financial instruments and adequate training of public employees for the use of these instruments and the increased number of energy renovation projects.

In order to achieve the annual binding target and other energy efficiency challenges by 2030, immediate action is required in this sector, especially because energy renovations are long-term investments that affect the achievement of climate neutrality by 2050 and also have multiplicative effects on the economy. Commitment to implementation of the programme for the energy renovation of central government buildings will have to be ensured within a new strategy and energy management programme for the public sector. The implementation of the

programme could be accelerated by upgrading the role of the existing project office. Existing financing models for the energy renovation of central government buildings need to be extended to long-term budget financing via a revolving fund within the budget.

### 2.6.3 Organizing climate policy implementation

Climate change is one of the greatest challenges facing humanity. The success of dealing with this challenge will depend mainly on the effectiveness of the implementation of mitigation and adaptation measures. One of the most important targets, i.e. to prevent or to the greatest possible extent limit climate change impacts, was already transposed from international political agreements into regional and national legislation. However, this is not enough. Without serious, systemic action by the competent institutions, the harm-benefit ratio can turn to the negative direction.

Successful implementation of the climate policy requires, firstly, appropriate preparation of the key documents. The legal validity of such documents is important because such impacts the commitment to implement the measures and the related responsibility. Documents need to contain all the elements of a systemic approach to achieving the targets set. The starting points for the planning of such must be as objective as possible, and the proposed measures must be concrete and have a clearly defined responsible person. The synergies among individual measures must also be clear. Successful and efficient implementation of the adopted documents requires a dynamic approach – intermediate steps, milestones, which enable the detection of changes and that appropriate actions be taken in the event of deviations. Programme and implementation documents must address individuals' participation, the responsiveness to their needs, and changes in the environment. The appointed heads of the relevant internal organizational units of state authorities shall be the responsible persons, and not the state authority as such.

Reducing GHG emissions is extremely complex, as it includes a number of measures and bodies. A government service should be established which will provide organizational, expert, and other assistance to the government and coordinate the work of the ministries, as the latter cannot be achieved effectively at the horizontal level without appropriate competencies. The diversity of the field also requires the establishment of a single online and publicly accessible platform that would integrate all measures for all areas included and their indicators, the institutions involved and the responsible persons, the timelines for actions, reporting, monitoring, and corrective activities. There is also a problem of staff competence in the field of climate change and the related general problem of competent management in the public administration, which is often lacking. The lack of competence and the insufficient number of suitably trained employees are a problem that is at least as great as the problem of organization itself.

## 2.7 An overview of financing the measures

In 2019, more than EUR 71 million in incentives was spent on energy efficiency measures and the use of RES in the public and private service sectors, the residential sector, industry, and transport, which contributed to the reduction of CO<sub>2</sub> emissions by almost 58 kt per year. These incentives do not include energy efficiency (EE) measures and the use of RES that reduce emissions from installations in the EU-ETS scheme.

In the observed 2014–2019 period, the highest amount of incentives was paid in 2019. The effects and efficiency of incentives are improving from year to year. In 2019, twice the annual reduction in emissions was achieved compared to 2014, when the amount of incentives paid was comparable. The efficiency of incentives<sup>8</sup> increased, with slightly less than EUR 1,300 of incentives paid for 1 tonne of CO<sub>2</sub> emissions reduction in 2019, compared to EUR 1,544 the year before.

An overview of incentives paid in 2019 by source of funding (Figure 9):

- EUR 11 million was paid from the Cohesion Fund, representing 16% of all incentives. These measures stimulated EUR 33 million in investments and contributed to a reduction in CO<sub>2</sub> emissions of 2.9 kt per year.
- EUR 36 million was paid from the funds collected through energy efficiency contribution in the price of energy, which represents 52% of all incentives. These measures stimulated EUR 190 million in investments and contributed to a reduction in CO<sub>2</sub> emissions of 25 kt per year.
- EUR 23 million was paid from the Climate Change Fund, representing 32% of all incentives. These measures stimulated more than EUR 62 million in investments and contributed to a reduction in CO<sub>2</sub> emissions of 30 kt per year.

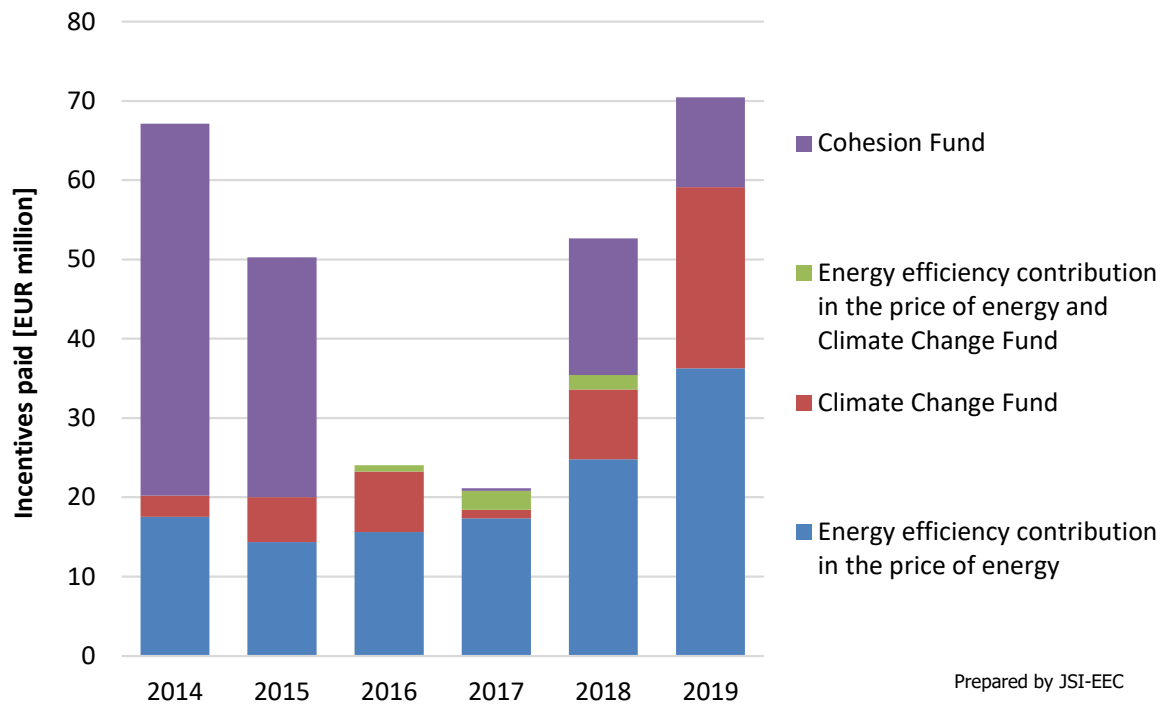
In 2018, several calls for incentives were made for different types of incentive users within the same call, thus causing a problem as regards how to monitor the effects of the supported measures, as it is very difficult to differentiate the results of measures across sectors.<sup>9</sup>

To maximize the long-term benefits in terms of job creation, stable budget inflows, and the contribution to economic growth and recovery from the coronavirus pandemic, it is important that incentives are constantly available and that investments are distributed as evenly as possible, without the concentration of investments in individual years or shorter periods and a decrease in activities in other periods. Potential gaps in supporting investments in the transition periods from one financial perspective to another should be avoided. It was because of such a gap that the energy renovation of public buildings within the OP ECP was delayed and a lag in the implementation of projects in the 2015–2017 period also led to a lag behind the OP GHG targets.

<sup>8</sup> The ratio between the GHG emissions reduction and the amount of incentives needed to achieve this reduction.

<sup>9</sup> A call for applications for subsidies can be aimed at users from several different target groups (the residential sector, the public sector, industry, the private service sector), which causes difficulties in separating the effects of measures by different sectors, as no appropriate identifiers are available for such separation.





**Figure 9: Financial resources for GHG emissions reduction measures in the 2014–2019 period by source of funding<sup>10</sup> (source: JSI-EEC).**

<sup>10</sup> For incentives from the Cohesion Fund for the 2017–2019 period, only data for the measures in buildings are included.

# 3 Abbreviations, figures and tables

## 3.1 List of abbreviations

<b>AIS</b>	Agricultural Institute of Slovenia
<b>DPSIR</b>	“driving forces – pressures – states – impacts – responses” framework of the European Environment Agency
<b>EE</b>	energy efficiency
<b>EEA</b>	European Environment Agency
<b>EED</b>	Energy Efficiency Directive
<b>EEOS</b>	energy efficiency obligation scheme
<b>EU</b>	European Union
<b>EU-ETS</b>	EU Emissions Trading Scheme
<b>GFR</b>	green fiscal reform
<b>GHG</b>	greenhouse gas
<b>IER</b>	Institute for Economic Research
<b>JSI</b>	Jožef Stefan Institute
<b>LIFE</b>	The European Union’s financial instrument supporting environmental and nature conservation projects throughout the Union
<b>LULUCF</b>	land use, land-use change and forestry
<b>MESP</b>	Ministry of the Environment and Spatial Planning
<b>NECP</b>	Integrated National Energy and Climate Plan
<b>NEEAP</b>	National Energy Efficiency Action Plan ( <i>Akcijski načrt za energetska učinkovitost</i> )
<b>non-ETS</b>	installations, emissions, or sectors outside the ETS scheme
<b>NREAP</b>	National Renewable Energy Action Plan ( <i>Akcijski načrt za obnovljive vire energije</i> )
<b>OP ECP</b>	Operational Programme for the Implementation of the EU Cohesion Policy in the Period 2014–2020 ( <i>Operativni program za izvajanje evropske kohezijske politike v obdobju 2014–2020</i> )
<b>OP GHG</b>	Operational Programme for Reducing GHG Emissions until 2020 ( <i>Operativni program ukrepov zmanjšanja emisij toplogrednih plinov do leta 2020</i> )
<b>RES</b>	renewable energy sources
<b>SFI</b>	Slovenian Forestry Institute
<b>UNFCCC</b>	United Nations Framework Convention on Climate Change

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