Deliverable C4.1, Vol. 2

The Second Climate Action Mirror and Accompanying Reports

English summary

LIFE ClimatePath2050 (LIFE16 GIC/SI/000043)

Projekt LIFE ClimatePath2050 (LIFE16 GIC/SI/000043) je sofinanciran iz sredstev LIFE, finančnega inštrumenta Evropske unije za Okolje in podnebne spremembe na prednostnem področju Podnebno upravljanje in informacije in iz sredstev Ministrstva za okolje in prostor RS, Sklada za podnebne spremembe.
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The Second Climate Action Mirror and Accompanying Reports, English summary was prepared within the project LIFE ClimatePath2050 »*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 carried out by a consortium led by the Jožef Stefan Institute (JSI), with partners: ELEK, Building and Civil Engineering Institute ZRMK (GI ZRMK), Institute for Economic Research (IER), The Agricultural Institute of Slovenia (KIS), PNZ, The Slovenian Forestry Institute (GIS) and external contractors.

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REPORT TITLE/NASLOV POROČILA:

Deliverable C4.1 Vol.2: The Second Climate Action Mirror and Accompanying Reports, English summary

Poročilo projekta št. C4.1, volumen 2: Podnebno ogledalo 2019, povzetek v angleškem jeziku

Projekt LIFE ClimatePath2050 (LIFE16 GIC/SI/000043) je sofinanciran iz sredstev LIFE, finančnega inštrumenta Evropske unije za Okolje in podnebne spremembe na prednostnem področju Podnebno upravljanje in informacije in iz sredstev Ministrstva za okolje in prostor RS, Sklada za podnebne spremembe.
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1 The aim of the preparation of *The Climate Action Mirror* reports

The Climate Action Mirror reports are documents, in which the main findings of the monitoring of the measures for the reduction of greenhouse gas (GHG) emissions implementation are presented. After the first report was published in April 2018, *The Second Climate Action Mirror* was published on June 12th 2019, presenting the state of the climate actions implementation in 2018. In 2020 these two reports will be followed by *The Third Climate Action Mirror*, also 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 coherent, transparent and high-quality information,
- improving access to information to be used in decision-making and thus implementing the continuous improvement cycle (plan-do-**check-act**) for the short-term correction 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 planned *Integrated National Energy and Climate Plans* (NECP) to be prepared by the EU member states for the period 2021 to 2030.

2 Preparation process of *The Second Climate Action Mirror*

To fulfil the goals of the *Climate Action Mirror* reports, which at the same time include also 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 the ones from the public sector, in their preparation processes. The process for the preparation of *The Second Climate Action Mirror* consisted of several important parts:

- To conclude the process of *The First Climate Action Mirror* preparation and start a process for the preparation of *The Second Climate Action Mirror* a working meeting with relevant stakeholders was organised in November 2018. An overview of the activities, associated with the preparation of *The First Climate Action Mirror*, was presented, as well as the main focuses of *The Second Climate Action Mirror* preparation.
- Within the process of the report preparation again working meetings with representatives from the ministries, responsible for the implementation of the OP GHG, were held, this time

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with the goal to discuss and coordinate the main recommendations of *The Second Climate Action Mirror* for the decision-makers.

- At the end of April 2019, the draft version of *The Second Climate Action Mirror* was presented and discussed with relevant stakeholders at the workshop.
- During the preparation of the report's final version in May and at the beginning of June 2019 also 3 workshops dedicated to the selected measures in focus were organised, on one hand to discuss a present status and the short-term prospects and on the other hand to support also a GHG projections preparation process with the discussion on the GHG mitigation potential and the long term prospective of these measures.
- The presentation event at the release of *The Second Climate Action Mirror* was held on 12.6.2019 (Figure 1). To emphasise the importance of cooperation between the national and local level in the field of climate activities, the event was joined with the second local scoreboard event for municipalities. At this occasion also *The Second Annual Highlight Report on the Project's Progress and Results* was published.
- The process of *The Second Climate Action Mirror* preparation will end with the beginning of the new cycle for the preparation of *The Third Climate Action Mirror* in autumn 2019.

Figure 1: One of the opening speakers of the presentation event for *The Second Climate Action Mirror* was also Mr. Simon Zajc, the minister for the environment and spatial planning (photo by Marjan Verč)

In comparison to the preparation of *The First Climate Action Mirror* some changes were introduced while preparing the second report:

- More attention was given to the discussion about and coordination of the main recommendations of *The Second Climate Action Mirror* for the decision-makers with representatives from the ministries, responsible for the implementation of the OP GHG.

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- Based on the feed-back from users about *The First Climate Action Mirror* the second report was restructured – individual parts of the report are now sector orientated. Among other sectors a new sector was included – land use, land-use change and forestry (LULUCF). The feed-back was gathered from the users via an online survey. In the survey the questions about the content, appearance and the preparation process of *The First Climate Action Mirror* were asked.
- Indicators are now included in the relevant sectoral parts of the report, while in *The First Climate Action Mirror* they were published together in the *Part 2*. The web version of the indicators was prepared for the first time this year. 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 were prepared also in English language. The Slovenian version of the indicators is available on http://kazalci.arso.gov.si/sl/themes/climate-mirror and the English version on http://kazalci.arso.gov.si/en/themes/climate-mirror.
- All measures are now presented in a catalogue form, covering all relevant information needed about an individual measure. Included are also some measures from the *National Energy Efficiency Action Plan (NEEAP)* and *National Renewable Energy Action Plan (NREAP)*, which is in line with the planned combining of plans within the *Integrated National Energy and Climate Plans.* Catalogues are available also on the website of the project LIFE ClimatePath2050 – catalogues of multisectoral measures and measures in EU-ETS sector on the main website of *The Second Climate Action Mirror*, and the catalogues of measures in other sectors on the sectoral subpages.

PRENOVA STAVB KULTURNE DEDIŠČINE IN DRUGIH POSEBNIH SKUPIN STAVB

SPLOŠEN OPIS

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 ☒ ETS ☐
TGP NA KATERE VPLIVA INSTRUMENT	ogljikov dioksid (CO_2)
VRSTA INSTRUMENTA	sklop instrumentov
ODGOVORNOST ZA IZVAJANJE	MzI DE
NA KATERE CILJE VPLIVA INSTRUMENT	zmanjšanje rabe energije ☒ zmanjšanje emisij TGP ☒ povečanje rabe OVE ☐ drugo: _____ ☐
KRATEK OPIS	V okviru ukrepa bodo pripravljena merila za prenovo 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.

PRAVNE IN STRATEŠKE PODLAGE

EU ZAKONODAJA	/
NACIONALNE PRAVNE PODLAGE	/
NACIONALNE STRATEŠKE PODLAGE	Operativni program ukrepov zmanjšanja emisij toplogrednih plinov do leta 2020 (OP TGP) Akcijski načrt za energetsko učinkovitost za obdobje 2017–2020 (AN URE) Dolgoročna strategija za spodbujanje naložb energetske prenove stavb (DSEPS) Operativni program za izvajanje evropske kohezijske politike v obdobju 2014–2020 (OP EKP)

IZVAJANJE INSTRUMENTA V LETU 2018

POTEK IZVAJANJA	Instrument se še naprej izvaja samo delno. *Smernice za energetsko prenovo stavb kulturne dediščine* sta MzI in MK izdala že leta 2016, leta 2017 pa je bil potrjen pilotni projekt energetske prenove petih stavb Ministrstva za kulturo, s skupno tlorisno površino skoraj 55.500 m², po modelu energetskega pogodbeništva. 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 enegetsko prenovo stavb javnega sektorju se za stavbe kulturne dediščine upoštevajo specifična merila za ocenjevanje, in sicer se lahko v izračunu upošteva tudi prihranek tistih ukrepov, ki jih zaradi varovanja kulturne dediščine ni mogoče izvesti v celoti ali delno. V skladu z *Dopolnitvijo DSEPS* so bila omenjena merila januarja 2019 v okviru prenove *Navodil za delo posredniških organov in upravičencev pri ukrepu energetske prenove stavb javnega sektorja* še nekoliko nadgrajena. V *Dopolnitvi DSEPS* 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 prenove 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.
DOSEŽENI UČINKI	Spremljanje učinkov je predvideno samo za pilotni projekt, ki pa leta 2018 še ni bil izveden.

PREDVIDENO IZVAJANJE INSTRUMENTA V OBDOBJU 2019–2020

PREDVIDENO IZVAJANJE	Predvideno je izvajanje pilotnega projekta.
PREDVIDENI UČINKI	V okviru pilotnega projekta je predvideno: • zmanjšanje rabe energije: 3,5 GWh/leto • povečanje proizvodnje energije iz OVE: 81 MWh/leto • zmanjšanje emisije CO_2: 0,7 kt/leto

PRIPOROČILA ZA ODLOČANJE

Za večji obseg enegetske prenove stavb kulturne dediščine in drugih posebnih skupin stavb je nujno, da MzI DE čim hitreje vzpostavi izvajanje ukrepa v celotnem obsegu iz *Dopolnitve DSEPS* in zagotovi sofinanciranje, prilagojeno tem ciljnim skupinam (npr. tudi v ločenih razpisih oz. pozivih).

VIRI PODATKOV

- MzI DE, Projektna pisarna za energetsko prenovo
- MzI, Portal energetika, Projektna pisarna za energetsko prenovo (http://www.energetika-portal.si/podrocja/energetika/energetska-prenova-javnih-stavb/projektna-pisarna/)

DATUM PRIPRAVE

22. marec 2019

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Figure 2: An example of a presentation of a measure in a catalogue form

3 *The Second Climate Action Mirror* structure

The Second Climate Action Mirror consists of 11 parts:

- **Part 0: Summary for decision making.** This summary report highlights achievement of the targets in the field of non-ETS GHG emissions and main recommendations for the improvement of measures for GHG emissions reduction from the OP GHG. The report is derived from the other parts of *The Second Climate Action Mirror* and the recommendations included have been discussed and coordinated with the main stakeholders (Ministry of the Environment and Spatial Planning, Ministry of Infrastructure, Ministry of Agriculture…).
- **Part 1: Assessment of the OP GHG goals achievement.** This report includes an overview of the progress towards targets, including a review of the measures' financing and a presentation of sectoral indicators together with qualitative assessments regarding the achievement of their goals and long-term emission management.
- **Part 2: Transport.** In this report the state in the field of GHG emissions reduction in the transport sector is fully presented. The review includes also an analysis of the indicators, used to follow the implementation of the OP GHG, for 2017, a catalogue of measures for GHG emissions reduction in this sector for 2018 and recommendations for the implementation of measures in the coming year.
- **Part 3: Buildings.** In this report the state in the field of the GHG emissions reduction in buildings is fully presented. The report is composed similar to the report *Part 2*.
- **Part 4: Agriculture.** In this report the state in the field of the GHG emissions reduction in the agriculture is fully presented. The report is composed similar to the reports *Part 2* and *3*.
- **Part 5: Other sectors.** This report includes an overview of the state in the field of the GHG emissions reduction in the non-ETS industry – fuel consumption and process emissions, waste and for the first time included land use, land-use change and forestry (LULUCF). The content of this report for each sector is similar to the content of the reports *Part 2, 3* and *4*.
- **Part 6: Multisectoral measures.** The state in the field of the GHG emissions reduction by measures targeting several sectors is presented in this report. The main chapters, which are included, are green growth, training, education, information and promotion, and other multisectoral measures. The content of each chapter is similar to the content of the reports *Part 2, 3* and *4*.
- **Part 7: The Measure in Focus – Sustainable Mobility and User Behaviour.** The report summarizes findings from the analysis of current measures aimed at changing the user behaviour in transport and recommendations for further work. The included measures are: improving the railway infrastructure for the passenger transport, building a cycling

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infrastructure, promoting a sustainable choice of transport in the context of the of reimbursement of costs for transfer to and from work and integrated public transport.

- **Part 8: The Measure in Focus – Emissions in Cattle Breeding.** In this report 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 are presented. Recommendations for improvements of the measures are also included.
- **Part 9: The Measure in Focus – Supporting Companies in Transition to a Low-Carbon Society.** The report includes 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, together with the recommendations for possible improvements of the current measures.
- **Part 10: GHG emissions and EU-ETS sector.** While OP GHG is oriented only towards the non-ETS sector, also some information about EU-ETS sector, which contributed 38 % of all Slovene GHG emissions in 2017 and is therefore also important for the reduction of the GHG emissions, are included in *The Second Climate Action Mirror*. Similar to the reports *Part 2, 3* and *4* also this report includes an analysis of the indicators for 2017, a catalogue of measures for 2018 and recommendations for their implementation in the coming year.

The complete *Second Climate Action Mirror and Accompanying Reports* in Slovene language are available at https://www.podnebnapot2050.si/rezultati-slovenije/letno-podnebno-ogledalo/.

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4 Main findings of *The Second Climate Action Mirror*

4.1 Achievement of goals

Slovenia has set the goal that until 2020 GHG emissions from the non-ETS sector will not rise by more than 4% in comparison to the year 2005. *The Second Climate Action Mirror* shows that after two years of growth, non-ETS emissions declined by 2.8% in 2017 and were 11.9% below the 2020 target (Figure 3). The first estimates for 2018 show a small increase. In total emissions, non-ETS emissions represented 62%.

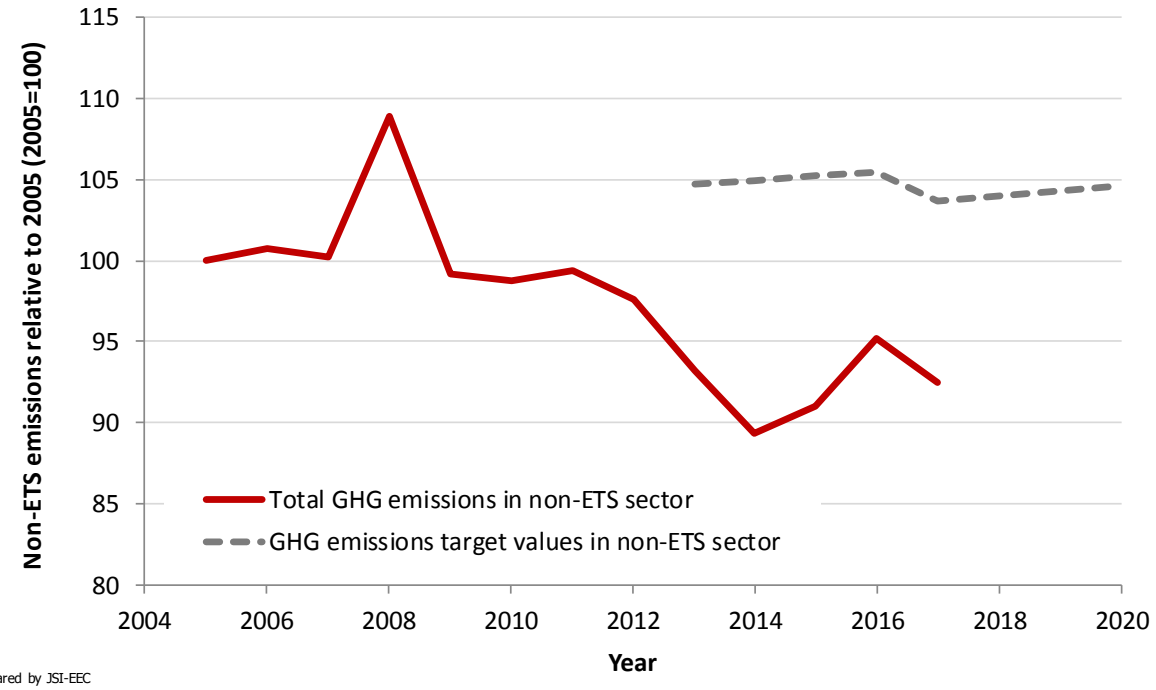

Figure 3: Non-ETS emissions in the period 2005-2017 compared to the target emissions in the period 2013-2020 relative to 2005 emissions (source: JSI-EEC)

The situation is, however, not that good in the field of energy efficiency and renewable energy sources (RES). Because the primary energy consumption has increased for a second year in a row, reaching the 2020 target for energy efficiency is currently questionable, while achieving of the RES target is on a critical path. In 2017, the share of RES in the gross final energy consumption increased by 0.2 percentage points to 21.5% and it was lagging behind the 2020 target of 25% by 3.5 percentage points, which is almost three times more than the increase in the share of RES in the period 2010-2017.

The biggest share of the non-ETS emissions, almost 51%, is coming from the transport (Figure 4). Despite the 3.4% emissions reduction in 2017, there is virtually no room left for the increase of emissions, as they were in 2017 only 1.5 percentage point below the 2020 indicative sectoral

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target. This is also the only sector in which the emissions in the period 2005-2017 increased. The implementation of measures that can in the future contribute to the reduction of emissions and their long-term management is, however, slowly strengthening − municipalities are preparing and implementing integrated transport strategies and actively participating in the annual European Mobility Week, the public transport infrastructure is being renovated, the program for the integrated transport planning is in preparation etc.

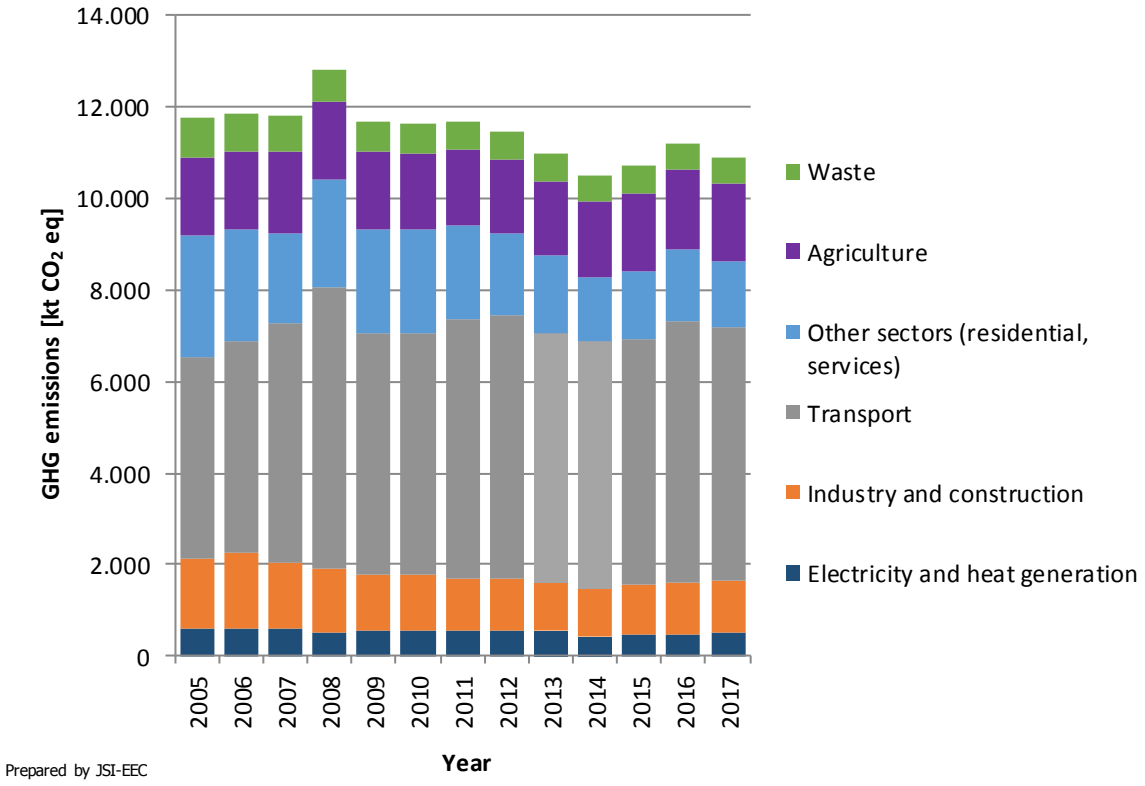

Figure 4: Non-ETS emissions by sectors in the period 2005-2017 (source: JSI-EEC)

In 2017, agriculture accounted for a good 15% of all non-ETS emissions. After three years of growth, emissions decreased by 2% and were 6.2 percentage points below the 2020 target. Due to a stable trend and slow changes it is expected that the indicative sectoral target will be achieved. While at the same time following the goal of increasing food self-sufficiency, GHG emissions in agriculture are reduced primarily by increasing the efficiency of domestic animal production and rational fertilization.

In buildings, which contributed 11% of all non-ETS emissions in 2017, emissions in the period 2005-2017 decreased the most among all sectors, by more than 50%. After the overall increase of emissions in buildings by 15.7% in 2015 and 2016, emissions in 2017 significantly decreased (by 9.6%) and were 7.7 percentage points behind the 2020 indicative target. In buildings is the implementation of measures for the GHG emissions reduction the most intense. Measures in households are successfully supported by Eco Fund grants and ENSVET – energy advisory network for citizens. The energy renovation of public buildings takes place using European funds.

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On a good track towards achieving the indicative sectoral target is the electricity and heat generation sector, which contributes only a smaller, 5% share of non-ETS emissions. In industry the current growth trend will need to be changed to reduce emissions by 15.4 percentage points by 2020. In 2017, this sector accounted for 10.4% of all non-ETS emissions.

Emissions from waste management decreased over the entire period, with the exception of 2015; in 2017 they decreased by 2.6%. Nevertheless, they were 9.7 percentage points behind the 2020 target. In the next two years a special attention will therefore have to be paid also to this sector.

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4.2 What do sectoral indicators show?

26 indicators from different sectors – achieving of targets (1), green growth (5), buildings (7), transport (4), agriculture (5), industry (3), waste (1), are used within *The Second Climate Action Mirror* to indicate better and weaker points of Slovenian climate actions and also support short-term correction actions and provide specific guidelines for the mid- and long-term planning tasks. The table (Table 2) shows the overview of the indicators, their English version is available also on the web (http://kazalci.arso.gov.si/en/themes/climate-mirror), and qualitative assessments regarding the achievement of their goals and long-term emission management. The qualitative assessment of the indicator is used to evaluate three levels (green, yellow, red; Table 1) of:

- **Achieving the indicative annual target**. If the annual target has not been achieved, the assessment is given red, otherwise green. Exceptions are examples evaluated yellow, which occur, if 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, while long-term emission management is evaluated green, is very small.
- **Long-term emission management**. In this assessment, a warning is given that a special attention for the implementation of the OP GHG-2020 until 2020 is needed. The assessment is based on different information: a trend change in recent years, data on poor implementation of measures and identified uncertainties (the recurrence of the worst trend would jeopardize the 2020 target). All these information are given in a separate column.

Table 1: Legend of the indicators' qualitative assessment

☺	**Achievement of the indicative annual target** Long-term emission management. Achieving the 2020 target is expected and the prospects for the years after are good. The following factors are observed: the change of the indicator in the last year (size and direction), the fluctuation of the indicator in the past, it is checked whether the achievement of the target would be jeopardized if the worst year would be repeated more than once, it is estimated whether the implementation of the measures leads towards achieving the target and whether the planned measures are sufficient.
😐	**Non-achievement of the indicative annual target as a result of changes in the methodology, etc.** Long-term emission management. Achieving the 2020 target could be jeopardized. The following factors are observed: the change of the indicator in the last year (size and direction), the fluctuation of the indicator in the past, it is checked whether the achievement of the target would be jeopardized if the worst year would be repeated more than once, it is estimated whether the implementation of the measures leads towards achieving the target and whether the planned measures are sufficient.
☹	**Non-achievement of the indicative annual objective** Long-term emission management. Some signs clearly or a single sign very clearly show that achieving the target in the year 2020 and in the years after could be greatly jeopardized. The following factors are observed: the change of the indicator in the last year (size and direction), the fluctuation of the indicator in the past, it is checked whether the achievement of the target would be jeopardized if the worst year would be repeated more than once, it is estimated whether the implementation of the measures leads towards achieving the target and whether the planned measures are sufficient.

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Table 2: Overview of indicators and targets' achievement and an assessment of the perspective of achieving the 2020 target

No.	Indicator	Unit	Year observed	State	Annual target	2020 target	Indicative annual target achievement	Long-term emission management	Assessment of the long-term emission management - Explanation
General indicators									
1	Annual GHG emissions according to Decision 406/2009/EC	kt CO_2 eq	2017	10.883	12.203	12.307	☺		The annual target set is significantly exceeded. In 2017 emissions decreased. Reaching the 2020 target, however, might still be endangered. If the worst growth trends are repeated for several years (emission increase of 492 kt CO_2 eq in 2016 or 1.025 kt CO_2 eq in 2008), then the 2020 target would not be achieved.
1a	Electricity and heat generation	Index (2005=100)	2017	86	102	106	😐		Emissions have increased for a third year in a row. The indicative annual target has nevertheless been achieved. If the trend from the period 2011-2015 continues, the 2020 target will be achieved. Even if the worst trend from this period is repeated for two consecutive years, the 2020 target will not be compromised.
1b	Industry and construction (with processes and solvent use)	Index (2005=100)	2017	73	64	58	☹		In 2017 emissions increased. The distance from the 2020 target is increasing. The achievement of the 2020 target is therefore questionable.
1c	Transport	Index (2005=100)	2017	125	128	127	☺		In 2017, after two years of growth, emissions slightly decreased and were lower than the annual target. The on-going monitoring indicator shows a 1% increase in transport emissions in 2018. Should the worst-case trend from the period 2011-2017 was repeated for two years in a row, then the 2020 target would be significantly exceeded. The implementation of measures in this sector is still very weak.
1d	Other sectors (residential, services)	Index (2005=100)	2017	55	54	47	😐		Emissions significantly decreased in 2017, but the annual target was still not achieved. The backlog caused by the growth over the past two years has not been compensated. The achievement of the 2020 target is uncertain.

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No.	Indicator	Unit	Year observed	State	Annual target	2020 target	Indicative annual target achievement	Long-term emission management	Assessment of the long-term emission management - Explanation
1e	Agriculture	Index (2005=100)	2017	99	101	105	☺		Emissions decreased in 2017 and were 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 indicative target.
1f	Waste	Index (2005=100)	2017	66	63	56	☹		Emissions have decreased somewhat in the past year, but the annual target has not been achieved. In the future, due to the significantly lower quantity of disposed biodegradable waste, emissions will rapidly decline, which is not yet reflected in the current trend, so that the 2020 target is still achievable.
Transport									
2	CO_2 emissions from new personal vehicles	gCO_2/km	2017	119	118	101	😐		The indicator increased for the first time in the observed period, which suggests a possible lagging behind the 2020 target. The less favourable indicator assessment is influenced by the increase in the difference between the factory data on the energy consumption and emissions and the actual data. This difference will be reduced after the introduction of the new test cycle in 2017.
	and all personal vehicles	gCO_2/km	2017	174	164	152	😐		The indicator does not meet the annual targets, but in the last year a significant improvement was made and the indicator reached the lowest value in the period observed.
3	Share of renewables in motor fuels	%	2017	2,7	7,3	10,0	☹		The indicator value has improved for the first time in the last 4 years, but it is still far behind the annual target.
4	Passenger-kilometres in the public passenger transport	pkm	2017	1550	1873	2092	☹		The indicator value has a positive trend and the improvement in the last year was significant. The indicator lags behind the targets, however, the 2020 target could be achieved, if the improvement from the last year is repeated.

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No.	Indicator	Unit	Year observed	State	Annual target	2020 target	Indicative annual target achievement	Long-term emission management	Assessment of the long-term emission management - Explanation
5	Sustainable freight transport (share of railways in total transport volume)	%	2017	26	25	26	☺		The indicator has improved over the last year. The annual target has been achieved and the indicator currently follows the target. If the worst trend from the period observed is repeated for two consecutive years, the objective will nevertheless be achieved.
Buildings									
6	Leverage of incentives in the public sector	EUR/EUR	2016	2017	0,40	0,42	☺		The indicator improved in 2017 and reached the annual target. The first estimates for 2018 indicate a further approximation to the indicative target values.
7	CO_2 emissions reduction through measures in the public sector	kt CO_2 eq	2016	2017	29	41	☹		The indicator has improved over the last year, but the change is too slow and the gap behind the targets was further increased. The short-term projection, based on the available data, shows that the indicator's value will increase again in 2018, but it is unlikely that the lag behind the targets will be reduced.
7a	Energy savings through measures in the public sector	GWh	2016	2017	128	198	☹		
8	Floor area of energy renovated buildings in the public sector	1000 m^2	2016	2017	1.360	1184	☺		The indicator has improved over the last year and remains well above the indicative annual target. The indicator follows the target better than the achieved energy savings and the GHG emissions reduction. In order to achieve the necessary emissions reductions, energy renovation will have to be directed towards more comprehensive renovations.
9	CO_2 intensity in the commercial and institutional sector	t CO_2/mio EUR_{1995}	2016	2017	36	38	☺		The indicator improved in 2017 and reached the annual target. The indicator fluctuates a lot, but is too rough for a more detailed explanation of year-on-year changes.
10	Improvement of energy efficiency in the residential sector – CO_2 emissions reduction	kt CO_2 eq	2017	146	185	268	☹		The indicator shows an increasing trend, but since it is already lagging behind the targets, the current trend will not be enough to reduce the lag behind the targets. The backlog could be compensated only by increasing the intensity of the measures implementation and by targeting measures, which contribute to a greater GHG emissions reduction.

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No.	Indicator	Unit	Year observed	State	Annual target	2020 target	Indicative annual target achievement	Long-term emission management	Assessment of the long-term emission management - Explanation
10a	Improvement of energy efficiency in the residential sector – Energy savings	GWh	2017	1059	987	1401	☹		The indicator is still increasing and the indicative annual target has been achieved, but this could change rapidly with a somewhat slower dynamics of the measures' implementation.
11	Specific GHG emissions in the residential sector	kg CO_2 eq/m^2	2017	10	11	9	☺		The indicator improved in 2017 and follows the target, but with the current, rather small, downward trend, a lag behind the 2020 target is to be expected.
12	Share of RES in the use of fuels for heating and cooling in the tertiary sector (residential, commercial and institutional)	%	2017	57	58	59	☹		The indicator improved in 2017, but the annual target was not achieved. Due to the lack of statistics on the use of RES in the service sector, the indicator's value is probably slightly underestimated.
Agriculture									
13	Increasing efficiency of farm animals - GHG emissions per kg of milk produced in the country	kg CO_2 eq/kg	2017	0,82	0,80	0,77	😐		The indicator varies greatly also as a result of external circumstances. Over the past year, an increase has been observed, causing the distance from the annual target to increase as well. It is not possible to detect the necessary downward trend for achieving the indicative target value.
14	Rational fertilisation of agricultural plants with nitrogen - Consumption of nitrogen from mineral fertilizers for the fertilization of agricultural plants	kt/year	2017	27,08	27,36	28,00	😐		Over the past year, the value of the indicator has deteriorated and lags behind the target value. The average value over the last five years is lower than the 2020 target.
15	Improvement of the nitrogen cycle efficiency in agriculture - gross nitrogen balance surplus	kg N/ha	2017	65	55	53	☺		Over the past year, the value of the indicator has improved, but the value varies greatly over the years. The average value over the last five years is roughly the same as the 2020 target.
16	Improvement of the nitrogen cycle efficiency in agriculture – land area included in the organic farming measure	1000 ha	2017	44	38	44	☺		The indicator has improved over the last year. The annual target was achieved. A significant improvement was achieved over the observed period.

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No.	Indicator	Unit	Year observed	State	Annual target	2020 target	Indicative annual target achievement	Long-term emission management	Assessment of the long-term emission management - Explanation
17	Improvement of the nitrogen cycle efficiency in agriculture - field and garden areas included in measures that require fertilization based on rapid soil or plant tests	1000 ha	2017	64	49	50	☺		The indicator has improved in the last three years. The annual target was strongly exceeded. A significant improvement was achieved over the observed period.
Industry									
18	Financial incentives for energy efficiency and renewable energy in the non-ETS industry	1000 EUR/year	2017	na	-	-	☹		The indicator value for 2017 could not be estimated, because the monitoring of these incentives is not properly targeted and sufficiently systematic. The target value is not defined.
19	Share of RES in the use of fuels in the non-ETS industry	%	2017	18,7	18,9	22	😐		The indicator deteriorated considerably over the last year and is for the first time in the observed period below the indicative annual target. With the current downward trend, a lag behind the 2020 target is to be expected.
Industry, process emissions									
20	GHG emissions due to leakage of devices with F-gases	kt CO_2 eq	2017	194	104	92	😐		The indicator has improved over the last year, but is lagging behind the target, which is also the result of changes in the records of these emissions.
Waste									
21	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 2017 the quantity was significantly lower than the 2020 target.

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No.	Indicator	Unit	Year observed	State	Annual target	2020 target	Indicative annual target achievement	Long-term emission management	Assessment of the long-term emission management - Explanation
Green growth									
22	Emission productivity	EUR_{2010}/kt CO_2 eq	2017	2,28	improvement	improvement	😐		The indicator has improved over the last year, but is still lagging behind the progress in other countries. The target value is not specified.
23	Implicit tax rate on energy	EUR/toe	2016	257	235	level comparable with the EU	☺		The target is not specified. The level of the implicit tax rate is comparable to that of the EU.
24	Reduction of environmentally harmful subsidies	EUR million at current prices	2017	135,2	reduction	significant reduction	☹		The target value is not specified. The goal is to achieve a reduction. The indicator is not improving in the direction of the target.
25	Green jobs	%	2016	24.611	increase	increase	😐		The target value is not specified. The goal is to increase the number of green jobs. The indicator has not changed much in recent years, it has stagnated, and it is not moving or it is moving too slowly in the direction of the target.
26	Supporting of eco-innovations for the transition to a low carbon society	%, EU-28 = 100 %	2017	117	100	100	☺		The indicator fluctuates greatly in comparison to the European average. Over the past year, the indicator value has improved. Over the observed period, the lag behind the EU average decreased.

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4.3 The measures in focus

4.3.1 Sustainable mobility and user behaviour

Our habits and changes in society as a whole are crucial in the transition to a low-carbon society. This is especially true for the transport, which in Slovenia represents the largest share of non-ETS emissions. An appropriate user behavior in relation to the promotion of public transport is an important element of the sustainable mobility. The most important groups of measures that influence the change in user behavior are currently: improving the railway infrastructure for the passenger transport, building a cycling infrastructure, promoting a sustainable choice of transport in the context of the of reimbursement of costs for transfer to and from work and integrated public transport. The report shows that ambitions related to the public transport must be increased and that the integrated public transport, where the railway is the backbone supplemented by buses and other means of transport (P+R system, bicycle…), has to be developed. A number of recommendations for different stakeholders was prepared to support the implementation of measures related to the development of the sustainable mobility in the future.

4.3.2 Emissions in cattle breeding

In Slovenia, cattle breeding is the most important part of the agriculture. The development of cattle breeding is related to a large share of grasslands in the structure of the agricultural land. In 2017, cattle breeding contributed 66.9% of total GHG emissions in agriculture (Figure 4), 6.6% of total emissions and 10.3% of non-ETS emissions.

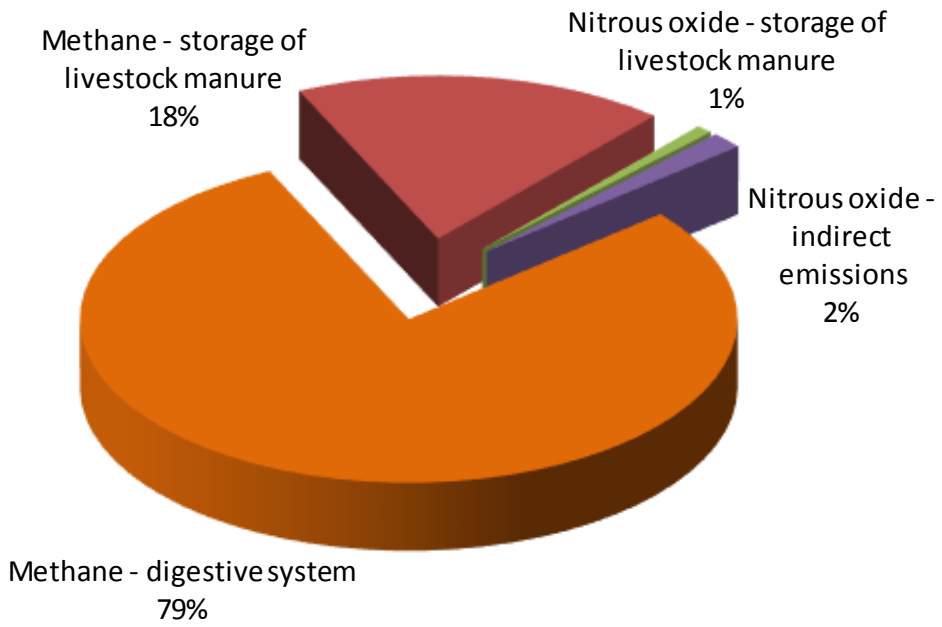

Figure 5: GHG emissions in cattle breeding by source in 2017 (source: KIS)

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The greatest potential for reducing GHG emissions in cattle farming is to increase the breeding efficiency, which can be achieved by improving the selection of animals, by their optimal care and by the proper storage of livestock manure. In Slovenia, especially the common basic breeding program for cattle breeds and the public agricultural advisory service contribute to the increase of efficiency breeding. For greater impact, it will be necessary to involve those farms and animal categories that do not yet achieve adequate results in the field of efficient breeding. The interest in small and micro biogas plants that can almost completely prevent methane emissions, significantly reduce nitrous oxide emissions from livestock manure stores and contribute to a greater use of RES, is among the farmers still very low.

4.3.3 Supporting companies in transition to a low-carbon society

Financial resources from the Cohesion Fund are currently aimed also at the implementation of activities that contribute to the achievement of climate goals in the fields of promoting the innovation potential of enterprises and of promoting small and medium-sized enterprises in the transition to a low-carbon society. The impact of those incentives over the last three years was not sufficient, as the incentives were not targeted at measures, which would contribute to the GHG emissions reduction, improvement of energy efficiency and greater use of RES. The measures did not have quantitative climate goals set and they were focused mainly on promoting business competencies and development of products. Among the recommendations for the improvement of the efficiency of those incentives are also a better coordination of climate activities among different ministries and other bodies, a targeted use of funds, aimed at achieving of climate goals, for the development projects, which really focus on the transition to a low-carbon society, and a better planning of requirements, goals and measures for the achievement of climate goals in the future.

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4.4 Overview of measures' financing

Preliminary data[1] show, that 25,9 million euros of grants were paid out for the implementation of GHG emissions reduction measures in the public sector, households, transport and industry in 2017 and 41,6 million euros in 2018 (Figure 6). In 2018, the amount of incentives was slowly approaching the level from the years when the amount was the highest. The main source of funding for incentives was a supplement to energy price for energy efficiency payed by all final energy users (24,8 million euros or 61% of the incentives paid in 2018). 22% of all incentives were contributed by the Fund for Climate Change and 13% by the Cohesion Fund.

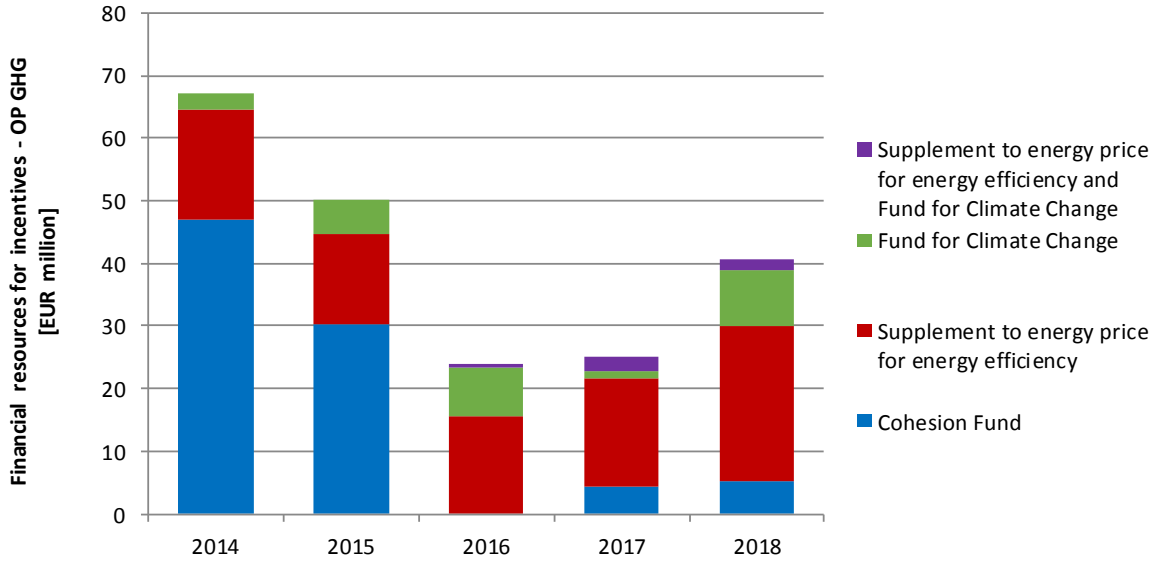

Figure 6: Financial resources for GHG emissions reduction measures in the period 2014-2018 (source: JSI-EEC)

In 2018, similar to previous years, the majority of funds, 86%, was used to support the implementation of measures in buildings. The incentives for the transport sector accounted for 14%, while the incentives for industry were still very low, they represented less than 1%. The incentives for industry were granted by the Eco Fund as well as by the Cohesion Fund, but for the latter it is difficult to determine the share, which was really used for the GHG emissions reduction, as the monitoring of these incentives is not properly targeted and sufficiently systematic.

The efficiency of incentives – the ratio between the reduction of GHG emissions achieved and the incentives paid – was much better in 2018 than in 2014, 1.333 euros in comparison to 2.198 euros of the incentives paid for 1 t of CO_2 emission reduction. The reason lies mainly in the still small share of incentives for the energy renovation of buildings in the public sector, where in the past the specific costs of incentives were the highest, and also improved leverage of these incentives. In the last years, the Eco Fund has increased the amount of incentives for the electric vehicles – the effects this measure has on GHG emissions reduction are still relatively small, but the promotion of this measure is important because it supports the penetration of a new technology.

1 For the Cohesion Fund in years 2017 and 2018 only the data for incentives in buildings are included.

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5 Abbreviations, figures and tables

5.1 List of abbreviations

ETS	EU Emission Trading Scheme
EU	European Union
GHG	greenhouse gas
LIFE	European Union's financial instrument supporting environmental and nature conservation projects throughout the Union
LULUCF	land use, land-use change and forestry
NECP	Integrated National Energy and Climate Plans
NEEAP	National Energy Efficiency Action Plan (Akcijski načrt za energetsko učinkovitost)
non-ETS	installations, emissions or sectors outside the ETS scheme
NREAP	National Renewable Energy Action Plan (Akcijski načrt za obnovljive vire energije)
OP GHG	Operational Programme for Reducing GHG emissions until 2020 (Operativni program ukrepov zmanjšanja emisij toplogrednih plinov do leta 2020)
RES	renewable energy sources

5.2 List of figures

5.3 List of tables

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