

# Final Review Report

## 2018 annual review of national greenhouse gas inventory data

pursuant to Article 19(2) of Regulation (EU) No 525/2013

### Slovakia

30 June 2018

European Environment Agency



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## Conclusions from the 2018 annual ESD review

This Final Review Report presents the findings from the 2018 annual review of the GHG emission inventory of Slovakia, pursuant to Article 19(2) of Regulation (EU) No 525/2013, with a view to monitoring Slovakia's achievement of its greenhouse gas emission reduction or limitation target pursuant to Article 3 of Decision No 406/2009/EC (the 'Effort Sharing Decision', ESD) in 2016.

The reviewers carried out checks to verify the transparency, accuracy, consistency, comparability and completeness of the national greenhouse gas inventory for the year 2016 submitted in 2018 by Slovakia pursuant to Articles 7(1) and 7(3) of Regulation (EU) No 525/2013.

The review consisted of two steps:

1. The EU inventory team (European Environment Agency (EEA), European Topic Centre on Air Pollution and Climate Change Mitigation (ETC/ACM), Joint Research Centre (JRC) and Eurostat) performed the initial checks under Step 1.
2. A Technical Expert Review Team (TERT) performed Step 2 of the 2018 annual ESD review.

More information on the Effort Sharing Decision and the procedures for the 2018 annual ESD review is presented in the annexes to this review report.

### Step 1 conclusions

The EU inventory team identified 1 significant issue through the checks performed in Step 1. Therefore, Slovakia was subject to a second step of the 2018 annual ESD review. Only this significant issue was subject to the second step review checks.

### Step 2 conclusions

1. The TERT considered 1 significant issue from Step 1 in the second step of the review 2018. The TERT provided a recommendation for that issue (see Table 1).
2. The TERT identified a case where inventory data were prepared in a manner, which is inconsistent with UNFCCC guidance documentation or Union rules. In particular, the TERT identified an underestimate or overestimate exceeding the threshold of significance pursuant to Article 31 of Commission Implementing Regulation (EU) No 749/2014.
3. Slovakia provided 1 revised estimate. The TERT agreed with the revised estimate. Table 2 below summarises the revised estimate and further information is provided at the end of this report.
4. On that basis, the TERT did not deem necessary any technical corrections within the meaning of Article 19(3)(c) of Regulation (EU) No 525/2013 in consultation with Slovakia.
5. The TERT identified non-binding recommendations in order to improve the national inventory data of Slovakia (see Table 4).
6. The TERT considers that it received a response from Slovakia that was sufficient in order to undertake the annual review appropriately.

**Table 1: Issues raised with Slovakia during the first and the second step**

	Issues raised <sup>1</sup>	Recommendations	Revised estimates <sup>2</sup>	Technical corrections <sup>3</sup>
<b>Total</b>	<b>13</b>	<b>1</b>	<b>1</b>	<b>-</b>
Energy	7	-	-	-
IPPU	3	-	-	-
Agriculture	2	-	-	-
Waste	1	1	1	-
Cross-cutting	-	-	-	-

<sup>1</sup> Excluding findings related to Land use, land use change and forestry (LULUCF) and LULUCF KP.

<sup>2</sup> Revised estimates: changes in inventory estimates triggered by the review and provided by the Member State.

<sup>3</sup> Technical corrections: changes in inventory estimates triggered by the review and provided by the TERT.

## National totals

**Table 2: National totals**

Data / Source category	Reference	Emission estimates (kt CO <sub>2</sub> equivalent) <sup>1</sup> 2016
Total greenhouse gas emissions, including indirect CO <sub>2</sub> , without land use, land-use change and forestry as reported by Slovakia pursuant to Articles 7(1) and 7(3) of Regulation (EU) No 525/2013	SVK_2018_2_12032018	41 086.514
<b>Difference between original estimate and revised estimate provided by Slovakia and accepted by the TERT<sup>2</sup></b>		
5.A Solid waste disposal, CH <sub>4</sub>	SK-5A-2018-0001	-60.216
<b>Total greenhouse gas emissions including accepted revised estimate provided by Slovakia</b>		<b>41 026.298</b>
CO <sub>2</sub> emissions from 1.A.3.a Domestic aviation	SVK_2018_2_12032018	3.559
NF <sub>3</sub> emissions	SVK_2018_2_12032018	-

<sup>1</sup> The tables presented in this report show numbers rounded to three decimal places, although most numbers are available with greater precision. For all calculations (in particular of total GHG emissions and total ESD emissions), all available decimal places were used. Therefore, the totals shown may slightly differ from calculation results where only three decimals would be taken into account.

<sup>2</sup> A positive difference indicates an increase compared to reported emissions. A negative difference indicates a decrease compared to reported emissions.

## Greenhouse gas emissions covered by Decision 406/2009/EC

**Table 3: Greenhouse gas emissions covered by Decision 406/2009/EC**

Data	Reference	Emissions (kt CO <sub>2</sub> equivalent) <sup>1</sup> 2016
Total greenhouse gas emissions including accepted revised estimate provided by Slovakia	<i>See Table 2 above</i>	41 026.298
Total verified emissions from stationary installations under Directive 2003/87/EC	Extracted by the European Commission from EUTL on 8 March 2018 (as agreed at the Working Group I of the Climate Change Committee on 18 May 2015) <sup>2</sup>	21 264.045
CO <sub>2</sub> emissions from 1.A.3.a Domestic aviation	<i>See Table 2 above</i>	3.559
NF <sub>3</sub> emissions	<i>See Table 2 above</i>	-
<b>Total ESD emissions</b>		<b>19 758.694</b>

<sup>1</sup> The tables presented in this report show numbers rounded to three decimal places, although most numbers are available with greater precision. For all calculations (in particular of total GHG emissions and total ESD emissions), all available decimal places were used. Therefore, the totals shown may slightly differ from calculation results where only three decimals would be taken into account.

<sup>2</sup> The emissions of ETS stationary installations were independently verified and recorded in the EU Transaction Log (EUTL). These emissions do not derive from the national greenhouse gas emission inventory data and therefore the TERT was not tasked to review them.

## Statement from Slovakia on the conclusions presented by the TERT

Slovakia agrees with the aggregated GHG emission inventory estimates presented in Table 3.

## Revised estimates provided by Slovakia and accepted by the TERT

1	ESD Review Tool ID:	SK-5A-2018-0001
	ESD Review Tool URL:	<a href="https://emrt-esd.eionet.europa.eu/2018/SK-5A-2018-0001">https://emrt-esd.eionet.europa.eu/2018/SK-5A-2018-0001</a>
	Member State:	Slovakia
	Sector:	5.A Solid waste disposal
	Gases:	CH <sub>4</sub>
	Fuel	
	Completed by Sector Expert:	Hans Oonk
	Reviewed by Counterpart:	Ioannis Sempos
	Reviewed by Lead Reviewer:	Suvi Monni
	Reviewed by Quality Controller:	Justin Goodwin
The underlying problem:	Slovakia did not report methane utilization and flaring at SWDS. During the review, Slovakia explained that they have data available on electricity produced from landfill gas and provided references for the amount of electricity produced per landfill site. Estimation of landfill gas flaring for the years 2013-2016 by extrapolating measured amounts of flared gas before 2013 was considered as well, but was not used because it is not in agreement with the 2006 IPCC Guidelines.	
The rationale for the corrected estimate:	Slovakia calculates methane utilized, based on the amount of electricity produced in Slovak landfill gas projects, in agreement with the 2006 IPCC Guidelines, volume 5, chapter 3, page 3.19.	
Summarise the methodology used:	Methane collection is based on electricity generation at landfill gas projects (total of 10036 MWh in 2016). This information is publicly available for each individual project. Calculation of MWh to kg methane used is based on the assumption that 1 MWh represents the consumption of 240 kg of methane (1 kg methane has a lower heating value of 50 MJ/kg (see <a href="https://en.wikipedia.org/wiki/Heat_of_combustion">https://en.wikipedia.org/wiki/Heat_of_combustion</a> ). Assuming 30% efficiency, this produces 15 MJe or 4.16 kWh. 1 MWh = 1000 kWh requires 1000/4,16=240 kg of methane.	
References to other workbooks:		

2	<b>Details of the corrected estimate</b>								
			<b>Original estimate (kt CO<sub>2</sub>eq)</b>						Notes
		Year	CO <sub>2</sub>	CH <sub>4</sub>	N <sub>2</sub> O	HFCs	PFCs	SF <sub>6</sub>	
	SK-5A-2018-0001- OE	2016		666.200					
	<b>Was a Revised Estimate received from the MS?</b>		<b>yes</b>						
			<b>Revised Estimate received from MS (kt CO<sub>2</sub>eq)</b>						Notes
		Year	CO <sub>2</sub>	CH <sub>4</sub>	N <sub>2</sub> O	HFCs	PFCs	SF <sub>6</sub>	
	SK-5A-2018-0001-RE	2016		605.984					
	<b>Was the Revised Estimate accepted by the TERT?</b>		<b>yes</b>						
			<b>Technical Correction calculated by TERT (kt CO<sub>2</sub>e)</b>						Notes
	Year	CO <sub>2</sub>	CH <sub>4</sub>	N <sub>2</sub> O	HFCs	PFCs	SF <sub>6</sub>		
SK-5A-2018-0001-TC	2016								
<b>Was the Technical Correction accepted by the MS?</b>									



## Recommendations from the TERT including revised estimates and technical corrections

**Table 4: Recommendations from the TERT**

EMRT - ID	Key category	Category, gas, year	Conclusion step 2 note	Revised estimate	Technical correction
SK-5A-2018-0001	Yes	5.A Solid waste disposal, CH <sub>4</sub> , 2013-2016	For 5.A Solid waste disposal for the years 2013-2016 the TERT noted that Slovakia does not report methane utilization and flaring at SWDS. In response to questions raised during the review, Slovakia explained that information is available on amount of electricity produced at Slovak landfills and methane utilization could be estimated on this basis. Slovakia provided revised estimates for the years 2013-2016 taking into account the methane recovered in utilisation for electricity generation and stated that they will be included in the next submission. The TERT agreed with the revised estimate provided by Slovakia and included in the review report. The TERT recommends that Slovakia include the revised estimate in its next submission.	Yes	No

## Annex I: Legal background and procedures of the 2018 annual ESD review

The Effort Sharing Decision No 406/2009/EC (ESD) sets national emission limits for greenhouse gas (GHG) emissions in the sectors outside the EU's Emission Trading System (ETS) for the period 2013-2020. The ESD and the Monitoring Mechanism Regulation (EU) 525/2013 (MMR) lay down annual reporting obligations, compliance checks and a Union review process to ensure that the compliance with annual GHG emission limits is assessed in a credible, consistent, transparent and timely manner. The requirements for the Union review of the national inventory data submitted by Member States are set out in Article 19 of the MMR.

The details concerning the review process, such as the timing and steps of conducting the annual and comprehensive reviews are set out in Chapter III and Annex XVI of the Commission Implementing regulations (EU) No 749/2014.

The objectives of the 2018 annual ESD review of Member States' GHG emission inventories are:

- a) to support the European Commission by ensuring it has accurate, reliable and verified information on annual GHG emissions for determining compliance with ESD targets for the year 2016 in a credible, consistent, transparent and timely manner, according to Article 19 (2) of the MMR;
- b) to assist Member States in improving the quality of their GHG inventories.

The 2018 annual ESD review of national greenhouse gas (GHG) inventory data was carried out for the compliance year 2016 pursuant to Article 19 of the MMR. The EEA review secretariat (consisting of Melanie Sporer, Claire Qoul and Emma Salisbury) coordinated the 2018 annual ESD review as foreseen in Article 28 of the Commission Implementing Regulation (EU) No 749/2014.

The scope of the 2018 annual ESD review is presented in Table A.1.1. The checks carried out during the 2018 annual ESD review are presented in Annex I.

The review consisted of 2 steps. Step 1 was combined with the 'EU QA/QC procedures' (i.e. initial checks) and was carried out by the EU inventory team (EEA, ETC/ACM, JRC, Eurostat). All findings from the initial checks that were relevant for the ESD and that were not resolved within the initial check phase were followed up in the second step of the annual review.

Step 2 of the 2018 annual ESD review was performed by a Technical Expert Review Team (TERT) under service contract 340201/2017/765292/SER/CLIMA.C2 of the Directorate General for Climate Action of the European Commission. The TERT consisted of the following experts:

- Lead Reviewers: Suvi Monni, Klaus Radunsky
- Energy: Laetitia Nicco, Graham Anderson, Ioannis Sempas
- IPPU: Kristina Kaar, Eva Krtkova
- Agriculture: Etienne Mathias, Katalin Lovas
- Waste: Hans Oonk, Juraj Farkas
- Quality controller: Justin Goodwin
- Co-ordinator: Bernd Gugele

The lead reviewers and sector review experts did not review emission inventories of Member States where these individuals have themselves contributed to the compilation of that inventory, or presently are or have been any part of the decision-making process related to the compilation of that inventory. Reviewers who are nationals of the Member State whose inventory is concerned, did not take part in the review of that inventory.

Step 2 of the review was performed on the basis of GHG emission data and the national inventory report (NIR) officially reported by Member States by 15 March 2018 under the MMR. Where relevant, the TERT calculated technical corrections for over- or underestimates identified in a mandatory category in the

Member States' GHG inventories that exceed the threshold of significance. Technical corrections were calculated for the year 2016.

**Table A.1.1: Scope of the 2018 annual ESD review**

Element	Scope	Further information
Member States	EU geographical coverage of the Member States	
Years	2016	
Gases	CO <sub>2</sub> , CH <sub>4</sub> , N <sub>2</sub> O, HFCs, PFCs, SF <sub>6</sub>	NF <sub>3</sub> is not covered by the ESD
Sectors	All emission source sectors excluding LULUCF	National totals exclude emissions from LULUCF and emissions reported under memo items
Indirect CO <sub>2</sub> emissions	Included in national total	
Inventory Submission	Submissions received by 15 March 2018	

## Annex II: Checks carried out during the 2018 annual ESD review in line with Art.29 and 32 of the Commission Implementing Regulation (EU) No 749/2014

**As part of the EU's effort to assist Member States in improving the quality of the GHG inventories, the checks to verify the transparency, consistency, comparability and completeness of the greenhouse gas inventory included:**

### **First step review checks:**

1. Assessment whether all emission source categories and gases required under Regulation (EU) No 525/2013 are reported;
2. Assessment whether emissions data time series are consistent;
3. Assessment whether implied emission factors across Member States are comparable taking the IPCC default emission factors for different national circumstances into account;
4. Assessment of the use of 'Not Estimated' notation keys where IPCC tier 1 methodologies exist and where the use of the notation key is not justified in accordance with paragraph 37 of the UNFCCC reporting guidelines on annual greenhouse gas inventories as included in Annex I to Decision 24/CP.19;
5. Analysis of recalculations performed for the inventory submission, in particular if the recalculations are based on methodological changes;
6. Comparison of the verified emissions reported under the Union's Emissions Trading System with the greenhouse gas emissions reported pursuant to Article 7 of Regulation (EU) No 525/2013 with a view of identifying areas where the emission data and trends as submitted by the Member State under review deviate considerably from those of other Member States;
7. Comparison of the results of Eurostat's reference approach with the Member States' reference approach;
8. Comparison of the results of Eurostat's sectoral approach with the Member States' sectoral approach;
9. Assessment whether recommendations from earlier Union or UNFCCC reviews, not implemented by the Member State could lead to a technical correction;
10. Assessment whether there are potential overestimations or underestimations relating to a key category in a Member State's inventory.

### **Second step review checks:**

1. Detailed examination of the inventory estimates including methodologies used by the Member State in the preparation of inventories;
2. Detailed analysis of the Member State's implementation of recommendations related to improving inventory estimates as listed in its most recent UNFCCC annual review report made available to that Member State before the submission under review or in the final review report pursuant to Article 35(2) of this Regulation; where recommendations have not been implemented a detailed analysis of the justification provided by the Member State for not implementing them;
3. Detailed assessment of the time series consistency of the greenhouse gas emissions estimates;
4. Detailed assessment whether the recalculations made by a Member State in the given inventory submission as compared to the previous one are transparently reported and made in accordance with the 2006 IPCC Guidelines for National Greenhouse Gas Inventories;
5. Follow-up on the results of the checks referred to in Article 29 of the Commission Implementing Regulation (EU) No 749/2014 and on any additional information submitted by the Member State under review in response to questions from the technical experts review team and other relevant checks.