

# Final Review Report

## 2019 annual review of national greenhouse gas inventory data

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

Sweden  
28 June 2019

European Environment Agency



Reference: 340201/2018/790329/SER/CLIMA.C  
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## Conclusions from the 2019 annual ESD review

This Final Review Report presents the findings from the 2019 annual review of the greenhouse gas (GHG) emission inventory of Sweden, pursuant to Article 19(2) of Regulation (EU) No 525/2013, with a view to monitoring Sweden's achievement of its GHG emission reduction or limitation target pursuant to Article 3 of Decision No 406/2009/EC (the 'Effort Sharing Decision', ESD) in 2017.

The reviewers carried out checks to verify the transparency, accuracy, consistency, comparability and completeness of the national GHG inventory for the year 2017 submitted in 2019 by Sweden 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 Climate Change Mitigation and Energy (ETC/CME), 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 2019 annual ESD review.

More information on the ESD legislation and the procedures for the 2019 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, Sweden was subject to a second step of the 2019 annual ESD review. Only significant issues were subject to the second step review checks.

### Step 2 conclusions

1. The reviewers raised 29 issues with Sweden during the first and the second step of the 2019 annual ESD review (see Table 1). The TERT provided recommendations for 1 of these issues. Other issues raised during the annual review were clarified and are considered resolved.
2. The TERT identified cases where inventory data were prepared in a manner which is inconsistent with UNFCCC guidance documentation or Union rules. In particular, the TERT identified an under- or over-estimate exceeding the threshold of significance pursuant to Article 31 of Commission Implementing Regulation (EU) No 749/2014.
3. Sweden provided 1 revised estimate. Table 2 below summarises the revised estimate and further information in the respective chapter of this report. The TERT agreed with the revised estimate.
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 Sweden.
5. The TERT identified a non-binding recommendation in order to improve the national inventory data of Sweden (see Table 4).
6. The TERT considers that it received a response from Sweden that was sufficient in order to undertake the annual review appropriately.

**Table 1: Overview of issues raised with Sweden 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>29</b>	<b>1</b>	<b>1</b>	<b>-</b>
Energy	17	1	1	-
IPPU	5	-	-	-
Agriculture	6	-	-	-
Waste	1	-	-	-
Cross-cutting	-	-	-	-

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

<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> 2017
Total greenhouse gas emissions, including indirect CO <sub>2</sub> , without land use, land-use change and forestry as reported by Sweden pursuant to Article 7(4) of Regulation (EU) No 525/2013, taking into account any resubmission to the Commission	SWE_2019_1_05032019	52 660.267
<b>Difference between original estimate and revised estimate provided by Sweden and accepted by the TERT<sup>2</sup></b>		
1.A.3.b Road transportation, CO <sub>2</sub>	SE-1A3b-2019-0002	54.564
<b>Total greenhouse gas emissions including accepted revised estimate provided by Sweden</b>		<b>52 714.832</b>
CO <sub>2</sub> emissions from 1.A.3.a Domestic aviation	SWE_2019_1_05032019	544.872
NF <sub>3</sub> emissions	SWE_2019_1_05032019	-

<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> 2017
Total greenhouse gas emissions including accepted revised estimate provided by Sweden	<i>See Table 2 above</i>	52 714.832
Total verified emissions from stationary installations under Directive 2003/87/EC	Extracted by the European Commission from EUTL on 8 March 2019 (as agreed at the Working Group I of the Climate Change Committee on 18 May 2015) <sup>2</sup>	19 639.417
CO <sub>2</sub> emissions from 1.A.3.a Domestic aviation	<i>See Table 2 above</i>	544.872
NF <sub>3</sub> emissions	<i>See Table 2 above</i>	-
<b>Total ESD emissions</b>		<b>32 530.542</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 Sweden on the conclusions presented by the TERT

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

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

1	ESD Review Tool ID:	SE-1A3b-2019-0002
	ESD Review Tool URL:	<a href="https://emrt-esd.eionet.europa.eu/2019/SE-1A3b-2019-0002">https://emrt-esd.eionet.europa.eu/2019/SE-1A3b-2019-0002</a>
	Member State:	Sweden
	Sector:	1A3b Road transportation
	Gases:	CO <sub>2</sub>
	Fuel	Other fuels
	Completed by Sector Expert:	Graham Anderson
	Reviewed by Counterpart:	Eva Krtkova
	Reviewed by Lead Reviewer:	Suvi Monni
	Reviewed by Quality Controller:	Justin Goodwin
The underlying problem:	According to the 2006 IPCC GLs (volume 2, chapter 3, section 'CO <sub>2</sub> emissions from biofuels' in page 3.17): "it is important to assess the biofuel origin so as to identify and separate fossil from biogenic feedstocks". In other words, a part of the carbon of biofuels (and the associated CO <sub>2</sub> emissions) may have a fossil origin. The 2006 IPCC GLs provide some examples about biofuels' fossil part: "biodiesel made from coal methanol with animal feedstocks has a non-zero fossil fuel fraction and is therefore not fully carbon neutral". Sweden did not include these emissions in its inventory.	
Summarise the methodology used:	Sweden calculated the revised estimate based on national statistics on the amount of FAME and ETBE. CO <sub>2</sub> emissions were calculated with the default fossil fractions and carbon emission factors from the WG1 paper "Note on fossil carbon content in biofuels".	

2	<b>Details of the corrected estimate</b>										
			Original estimate (Gg CO <sub>2</sub> e)								Notes
		Year	CO <sub>2</sub>	CH <sub>4</sub>	N <sub>2</sub> O	HFCs	PFCs	SF <sub>6</sub>	Mixed GHG		
	SE-1A3b-2019-0002-OE	2017	0.000								Fossil CO <sub>2</sub> emissions from biofuels not reported
	Was a Revised Estimate received from the MS? <input checked="" type="checkbox"/> yes										
			Revised Estimate received from MS (Gg CO <sub>2</sub> e)								Notes
		Year	CO <sub>2</sub>	CH <sub>4</sub>	N <sub>2</sub> O	HFCs	PFCs	SF <sub>6</sub>	Mixed GHG		
	SE-1A3b-2019-0002-RE	2017	54.564								
			Difference between RE and OE (Gg CO <sub>2</sub> e)								
			54.564								
Was a Revised Estimate accepted by the TERT? <input checked="" type="checkbox"/> yes											
		Technical Correction calculated by TERT (Gg CO <sub>2</sub> e)								Notes	
	Year	CO <sub>2</sub>	CH <sub>4</sub>	N <sub>2</sub> O	HFCs	PFCs	SF <sub>6</sub>	Mixed GHG			
SE-1A3b-2019-0002-TC	2017										
		Difference between TC and OE (Gg CO <sub>2</sub> e)									
Was the Technical Correction accepted by the MS? <input type="checkbox"/>											



## 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
SE-1A3b-2019-0002	Yes	1.A.3.b Road transportation , 2017, CO <sub>2</sub>	The TERT notes with reference to category 1.A.3.b Road transportation, Other fossil fuels and CO <sub>2</sub> in 2017 that there may be an underestimate of emissions because the fossil part of the biofuels was not considered while preparing the inventory. The TERT noted that the issue is above the threshold of significance for a technical correction. Sweden provided a revised estimate based on national statistics on the amounts of FAME and ETBE used in Sweden. The Member State also explained that one refinery in Sweden uses partly biogenic methanol in the production of RME/FAME, but that the data was not available when the revised estimate was prepared. Sweden indicated that it plans to obtain the data for the 2020 submission. The TERT agreed with the revised estimate provided by Sweden and included in the review report. The TERT recommends that Sweden carry out the planned improvement to take into consideration, in its emission estimates, also the amount of biogenic methanol produced. The TERT recommends that Sweden report the emissions from fossil part of biofuels under 1.A.3.b, "Other fossil fuels" in the next submission. The TERT notes that the CRF Reporter software provides the option to specify the type of fossil fuel (e.g. it can be named "fossil part of biodiesel or biogasoline"). The related activity data associated to the fossil part of biofuels should be also reported under "Other fossil fuels". They can be estimated by multiplying the amount of biofuel by the fossil part of the carbon content (%). Finally the TERT recommends that Sweden include a description of the method applied in the next NIR.	Yes	No

## Annex I: Legal background and procedures of the 2019 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 2019 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 2017 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 2019 annual ESD review of national GHG inventory data was carried out for the compliance year 2017 pursuant to Article 19 of the MMR. The EEA review secretariat (consisting of Melanie Sporer, Claire Qoul and Kirsten May) coordinated the 2019 annual ESD review as foreseen in Article 28 of the Commission Implementing Regulation (EU) No 749/2014.

The scope of the 2019 annual ESD review is presented in Table A.1.1. The checks carried out during the 2019 annual ESD review are presented in Annex II.

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/CME, JRC, Eurostat). The EU inventory team consisted of the following experts:

- ETC/CME task manager: Nicole Mandl, Marion Pinterits (ETC/CME)
- Energy: Julien Vincent, Coralie Jeannot, Beata Ondrusova, Eva Krtkova, Marion Pinterits, Matina Kastori (ETC/CME), Michael Goll (Eurostat)
- IPPU: Barbara Gschrey, Steffi Osterheld, Lorenz Moosmann, Graham Anderson (ETC/CME)
- Agriculture: Adrian Leip, Janka Szemesova, Gema Carmona (JRC)
- Waste: Celine Gueguen (ETC/CME)
- LULUCF: Raul Abdas-Vinas (JRC)
- Quality coordinators: Adrian Leip, Giacomo Grassi (JRC), Bernd Guegle, Nicole Mandl, Maria Purzner, Julien Vincent, Giorgos Mellios, Ils Moorkens, Kaat Jespers (ETC/CME)
- Cross-cutting: Nicole Mandl (ETC/CME)

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 2019 annual ESD review was performed by a Technical Expert Review Team (TERT) under service contract 340201/2018/790329/SER/CLIMA.C of the Directorate General for Climate Action of the European Commission. The TERT consisted of the following experts:

- Lead Reviewers: Suvi Monni, Ralph Harthan
- Energy: Graham Anderson, Stephan Poupa, Eva Krtkova
- IPPU: Kristina Kaar, Jolanta Merkeliene
- Agriculture: Etienne Mathias, Steen Gyldenkaerne

- Waste: Hans Oonk, Juraj Farkas
- Quality controller: Justin Goodwin
- Co-ordinator: Bernd Gugele

The TERT 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 2019 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 2017.

**Table A.1.1: Scope of the 2019 annual ESD review**

Element	Scope	Further information
Member States	EU geographical coverage of the Member States	
Years	2017	
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 2019	

## Annex II: Checks carried out during the 2019 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.