

# Declaration on consistent reporting of Approved Adjustments

Country: FINLAND

Date of submission: 15 March 2021

## Adjustments approved in 2015 for the years 2010-2013

Herewith Finland declares that the methods used for the calculation of ammonia emissions for the years 2010-2017 are the same for NFR sectors 1A3bi, 1A3bii, 1A3biii, 1A3biv, 1A4ai, 1A4bi and 1A4ci as in the year the adjustments for these NFR sectors were approved.

Corrections since the 2015 submission are made due to revised official energy statistics, due to the national survey results on wood use in different wood combustion devices and due to changes in the emission factors presented in the EMEP EEA Emission Inventory Guidebook in 2016 as explained on pages 2-3. Detailed information and the calculation sheets for the corrected inventory and adjustment are annexed to Finland's IIR 2021 to be submitted by 15 March 2021.

A comparison of accepted adjustments by NFR category and the calculated adjustments in the 2021 submission are presented in Table 1.

**Table 1. Comparison of accepted adjustments by NFR category, recalculated adjustments thereafter and those recalculated in the 2021 submission**

NH3 (kt) (A) accepted 2015 (B) recalculated thereafter, in red to 2021 submission	2010		2011		2012		2013		2014		2015	
	A	B	A	B	A	B	A	B	A	B	A	B
National total	38.246	35.597	37.450	34.530	37.318	NA	37.283	33.496	NA	33.877	NA	32.226
Adjustment: Small combustion	-0.531	-0.862	-0.413	-0.730	-0.507	0.803	-0.462	-0.706	NA	-0.721	NA	-0.692
Adjustment: Transport	-1.52	-1.515	-1.44	-1.403	-1.34	NA	-1.26	-1.176	NA	-1.097	NA	-1.005
Sum of adjustments	-2.05	-2.378	-1.85	-2.142	-1.85	NA	-1.72	-1.881	NA	-1.819	NA	-1.704
National total for compliance	35.745	33.219	35.597	32.388	35.471	NA	35.561	31.614	NA	32.058	NA	30.522
NH3 (kt) (C) accepted 2015 (D) recalculated thereafter, in red to 2020 submission	2016		2017		2018		2019		2020			
	A	B	A	B	A	B	A	B	A	B		
National total	NA	31.817	NA		NA		NA		NA			
Adjustment: Small combustion	NA	-0.774	NA	0.747	NA	0.731	NA		NA			
Adjustment: Transport	NA	-0.916	NA		NA		NA		NA			
Sum of adjustments	NA	-1.687	NA		NA		NA		NA			
National total for compliance	NA	30.130	NA	xxx	NA	xxx	NA		NA			

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## 1. Activity data and Emission Factor corrections for NFRs 1A2gviii, 1A4ai, 1A4bi and 1A4ci (Small combustion)

### Changes made in the 2016 submission

The approved adjustment for NFR 1A2gviii was deleted due to correction of activity data. The correction resulted in recalculation of the shares of wood in the 13 small scale wood combustion equipment in NFR 1A4 sectors because the shares in the approved adjustments were calculated from combined wood use in NFR 1A2gviii and in NFR 1A4 sectors. The correction resulted in decreased emissions and adjustments in NFR 1A4 categories.

### Changes made in the 2017 submission

The latest official Energy Statistics, available at [http://tilastokeskus.fi/til/asen/index\\_en.html](http://tilastokeskus.fi/til/asen/index_en.html), has been used for the calculation of emissions and adjustments for 2015 as well as for the earlier years 2010-2014.

No changes in the 2018 submission.

### Changes made in the 2019 submission

#### Activity data

The shares of the 14 wood combustion techniques (Sauna Stoves Modern were added as a new category) were updated based on national survey results as presented in the file FI IIR 2019 Appendix 3B Documentation Small Combustion February 2019.xls.

#### Emission factors

During the revision of the wood use shares in the different techniques it was discovered that incorrect EFs had been used in the earlier calculations for the boilers as presented in Table 3.

The combined change due to improved understanding of wood use in the different techniques and the correction of boiler-specific emission factors increased slightly NH<sub>3</sub> emissions.

Table 3. Correction of EFs

Combustion Technique	Correct EF 2019 submission (mg/MJ)	Incorrect EF 2018 submission
Boiler/Automatic Fed Wood Chips	1.037	0.73
Boiler/Automatic Fed Pellets	0.829	0.584
Boiler/Manually Fed with	1.555	1.095
Boiler/Manually Fed Modern	1.555	5.475
Boiler/Manually Fed without	7.775	1.095

### Changes made in the 2020 submission

The latest official Energy Statistics, available at [http://tilastokeskus.fi/til/asen/index\\_en.html](http://tilastokeskus.fi/til/asen/index_en.html), has been used for the calculation of emissions and adjustments for 2015 as well as for the earlier years 2010-2014. A change in the statistics for wood use in 2016 in sector 1A4ci has been imported to the calculation of adjustments in the 2020 submission.

### Changes made in the 2021 submission

Regarding the years of the adjustment calculations, corrections presented in Table 4 were made to national wood use statistics in Autumn 2020 and the corrections will be included in the official Energy Statistics [http://tilastokeskus.fi/til/asen/index\\_en.html](http://tilastokeskus.fi/til/asen/index_en.html) to be published later. The values in red increased and values in blue decreased.

Table 4. Correction of AD

	1A4bi	1A4bi in 2020 submission	1A4ci corrected	1A4bi in 2020 submission
2010	62000	62013	6677	6680
2011	52300	52959	5650	5650
2012	58100	57198	6824	6820
2013	52400	52396	7669	7670
2014	53000	53057	7179	7180
2015	49600	50037	6449	6450
2016	55400	54445	7191	7191
2017	53400	53320	7104	7040
2018	52400	45003	7034	7034

## 2. Emission factor correction for NFRs 1A3bi, 1A3bii, 1A3biii and 1A3biv (Road transportation)

### Changes made in the 2017 submission

Emission factors were revised according to the EMEP EEA Emission Inventory Guidebook 2016, the latest version that should be used in the inventories. In the previous submissions emission factors from the Guidebook version 2013 were used. The corrections to emission factors in the 2017 submission are listed in Table 4.

**Table 4. Corrected emission factors for road transportation in the 2017 submission.**

NFR	Type of car	European emission standard	EF in 2016 Guidebook [mg/km]	Previously used EFs	
				EF [kg/km]	Reference
1A3bi	Passenger cars, diesel	EURO5	1.9	1	Expert estimate based on EMEP/EEA 2013 Guidebook
1A3bi	Passenger cars, diesel	EURO6	1.9	1	Expert estimate based on EMEP/EEA 2013 Guidebook
1A3bi	Passenger cars, gasoline	EURO4	12.3	34.1	Expert estimate based on EMEP/EEA 2013 Guidebook
1A3bi	Passenger cars, gasoline	EURO5	12.3	34.1	Expert estimate based on EMEP/EEA 2013 Guidebook
1A3bii	Vans, diesel	EURO0	1.2	1	Same EF assumed as for diesel passenger cars
1A3bii	Vans, diesel	EURO1	1.2	1	Same EF assumed as for diesel passenger cars
1A3bii	Vans, diesel	EURO2	1.2	1	Same EF assumed as for diesel passenger cars
1A3bii	Vans, diesel	EURO3	1.2	1	Same EF assumed as for diesel passenger cars
1A3bii	Vans, diesel	EURO4	1.2	1	Same EF assumed as for diesel passenger cars
1A3bii	Vans, diesel	EURO5	1.9	1	Same EF assumed as for diesel passenger cars
1A3bii	Vans, gasoline	EURO0	2.5	2	Same EF assumed as for gasoline passenger cars
1A3bii	Vans, gasoline	EURO1	75.8	92.2	Same EF assumed as for gasoline passenger cars
1A3bii	Vans, gasoline	EURO2	91	104.3	Same EF assumed as for gasoline passenger cars
1A3bii	Vans, gasoline	EURO3	30.2	34.2	Same EF assumed as for gasoline passenger cars
1A3bii	Vans, gasoline	EURO4	30.2	34.1	Same EF assumed as for gasoline passenger cars
1A3bii	Vans, gasoline	EURO5	12.3	34.1	Same EF assumed as for gasoline passenger cars
1A3biii	Lorries without trailer, diesel	EURO5	11	2.9	Expert estimate based on EMEP/EEA 2013 Guidebook
1A3biii	Lorries without trailer, diesel	EURO6	11	2.9	Expert estimate based on EMEP/EEA 2013 Guidebook
1A3biii	Lorries with trailer, diesel	EURO5	11	2.9	Expert estimate based on EMEP/EEA 2013 Guidebook
1A3biii	Lorries with trailer, diesel	EURO6	11	2.9	Expert estimate based on EMEP/EEA 2013 Guidebook
1A3biii	Busses, diesel	EURO5	11	2.9	Expert estimate based on EMEP/EEA 2013 Guidebook
1A3biii	Busses, diesel	EURO6	11	2.9	Expert estimate based on EMEP/EEA 2013 Guidebook

### Changes made in the 2018 submission

Four emission factors were corrected in the adjustment documentation Excel spreadsheet. The emission factors were corrected in the actual transport sector's emission calculation database. Therefore, the emissions were correct also in the NFR table. The corrections are listed in Table 5.

**Table 5. Correction of EFs in the 2018 submission.**

NFR	Type of car	European emission standard	EF in 2016 Guidebook [mg/km]	Previously used EFs	
				EF [kg/km]	Additional information
1A3bi	Passenger cars, gasoline	EURO4	34.1	12.3	EF was taken incorrectly from the 2016 GB to the adjustment documentation Excel spreadsheet. The correction applies to the years 2010-2015.
1A3biii	Lorries, diesel	EURO5	11	2.9	EF was taken incorrectly from the 2016 GB to the adjustment documentation Excel spreadsheet. The correction applies to the years 2010-2012.
1A3biii	Busses, diesel	EURO5	2.9	11	EF was taken incorrectly from the 2016 GB to the adjustment documentation Excel spreadsheet. The correction applies to the years 2010-2015.

1A3biii	Busses, diesel	EURO6	2.9	11	EF was taken incorrectly from the 2016 GB to the adjustment documentation Excel spreadsheet. The correction applies to the year 2015.
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#### Changes made in the 2019 submission

##### Activity data

Due to revised kilometrage in the national road transport emissions model LIISA carried out during 2018 the activity data is changed from the 2018 submission as presented in the file FI IIR 2019 Appendix 3B Documentation Road Transport February 2019.xls on the sheet "Road transport NEW 2019". For comparison, the sheets including the old kilometrage are left in the file and marked with "OLD".

##### Emission factors

Four emission factors were corrected in the adjustment documentation Excel spreadsheet. The emission factors were corrected in the actual transport sector's emission calculation database. Therefore, the emissions were correct also in the NFR table. The corrections are listed in Table 6.

Table 6. Correction of EFs in the 2019 submission

NFR	Type of car	European emission standard	EF in 2016 Guidebook [mg/km]	Previously used EFs [kg/km]	Reference
1A3bi	Passenger cars, gasoline	EURO4	34.2	34.1	EF was taken incorrectly from the 2016 Guidebook
1A3biii	Lorries diesel	EURO6	9	11	Updated EF in the 2016 Guidebook
1A3biii	Busses diesel	EURO5	11	2.9	Updated EF in the 2016 Guidebook
1A3biii	Busses diesel	EURO6	9	2.9	Updated EF in the 2016 Guidebook
1A3biv	Motorised quadricycles	EURO1	1	2.9	Added as a new category to the 2016 Guidebook
1A3biv	Motorised quadricycles	EURO2	1	2.9	Added as a new category to the 2016 Guidebook

#### Changes made in the 2020 submission

##### Activity data

Kilometrage data of some heavy-duty vehicles for 2015 to 2017 were revised in the national road transport emissions model LIISA. The revised kilometrage are listed in table 7.

Table 7. Revised heavy duty vehicle kilometrage in the 2020 submission.

NFR	Type of vehicle	European emission standard	Year	Old mileage	New mileage [Mkm/a]
1A3biii	Busses diesel	EURO3	2015	134.926	134.463
1A3biii	Busses diesel	EURO3	2016	120.196	120.064
1A3biii	Busses diesel	EURO4	2015	122.432	121.258
1A3biii	Busses diesel	EURO4	2016	120.726	119.612
1A3biii	Busses diesel	EURO4	2017	112.653	112.008
1A3biii	Busses diesel	EURO6	2017	123.832	123.477
1A3biii	Lorries without trailer	EURO5	2015	513.343	512.762
1A3biii	Lorries without trailer	EURO5	2016	531.449	530.866
1A3biii	Lorries without trailer	EURO5	2017	494.706	494.290
1A3biii	Lorries without trailer	EURO6	2015	41.235	41.059
1A3biii	Lorries without trailer	EURO6	2016	140.986	140.769
1A3biii	Lorries without trailer	EURO6	2017	232.203	232.045

##### Emission factors

Emission factors from the 2019 version of the EMEP EEA Emission Inventory Guidebook have been included in the inventory for all the sectors 1A3bi-iv. However, there are no changes in the emission factors compared to the 2016 Guidebook version.

## Changes made in the 2021 submission

### Activity data

Kilometrage data for some EURO6 passenger cars and vans and for all motorised quadricycles were revised for 2018 in the national road transport emissions model LIISA. The revised kilometrage are listed in table 8.

Table 8. Revised vehicle kilometrage in the 2021 submission.

NFR	Type of car	European emission standard	Year	Old mileage [Mkm/a]	New mileage [Mkm/a]
1A3bi	PC diesel	EURO6	2018	3559.921	4014.377
1A3bi	PC FFV	EURO6	2018	4.513	4.560
1A3bi	PC gas	EURO6	2018	22.660	31.442
1A3bi	PC gasoline	EURO6	2018	4091.808	4892.439
1A3bii	Vans gas	EURO6	2018	2.411	2.894
1A3bii	Vans gasoline	EURO6	2018	5.850	7.992
1A3biv	Motorised quadricycles	EURO1	2018	1.419	3.549
1A3biv	Motorised quadricycles	EURO2	2018	65.292	9.936
1A3biv	Motorised quadricycles	EURO3	2018	0	43.292
1A3biv	Motorised quadricycles	EURO4	2018	4.258	14.194