

Adjustment DE-A regarding NO_x from Road Vehicles

PREFACE

When deriving proposals for national emission ceilings for negotiations of the 1999 Gothenburg Protocol, sector-specific emission estimates for the year 2010 were calculated at IIASA using a set of scenarios which assumed various technological abatement measures, policy incentives, and legislation available / in place or planned at that time. As a result, the 2010 emission by road transport in Germany was estimated at NO_x, (IIASA, 1999) ¹⁾. The over-all 2010 national emission ceiling (NEC) for NO_x, was set to 1,081 kt. When negotiating the EU NEC Directive two years later, Germany agreed to reduce its NO_x, emissions further, resulting in a NEC of 1,051 kt.

In its 2016 NEC emissions reporting, Germany provided a national total for NO_x, emissions of 1,337 kt for 2010. However, this total includes emissions from agricultural soils and other source categories not accounted for when setting the NEC. In addition, some assumptions made in 1999, including on emission factors from road traffic, turned out to be wrong in reality. Like in many other European countries, non-compliance with the 2010 NEC as set in 1999 was partly not caused by failed national mitigation policies, but by changes beyond the control of, and unforeseen by, the individual Party or Member State.

In order to differentiate such changes from policy failures in the responsibility of the individual Parties to the Gothenburg Protocol, a procedure (Inventory Adjustment) allowing the adjustment of emissions resulting from new emission categories, changes in estimation methodologies, emission factors etc. provided within the EMEP/EEA Guidebook, or other effects beyond national control with respect to complying to emission reduction obligations (EB, 2012a & c) ^{2), 3)} was agreed. This procedure is applicable also for existing NECs (EB, 2012b) ⁴⁾.

With respect to road transport, such an unforeseeable effect was the partial failure of several so-called “Euro norms” set on the EU level to reduce emissions from road vehicles. In this report, Germany presents an estimate of the NO_x, emissions resulting from the partial failure of the mitigation policy reflected by the Euro norms, and lays out the calculations leading to these estimates.

REASONS FOR MISSING THE GOTHENBURG CEILINGS

The TREMOD methodology applied for estimating emissions from road transportation in Germany has changed over time. These changes include updates of emission factors (EF) for various pollutants and other changes such as an extension of vehicle classification (and thus inclusion of emission factors associated with these new vehicle sub-categories) to improve the estimation's accuracy.

The main changes occurred for the emission factors and for the Heavy Duty Vehicles (HDV) fleet structure. This last point led to changes in emissions because of the reallocation of activities (consumption/traffic) between the sub-categories of vehicles.

For the formalism of the adjustments, it is difficult to flag whether the modifications for road transport are due to “methodological changes” or due to “changes of emission factor”. Therefore, only the term “change of methodology” will be used (even if at the NFR reporting level this may seem like a simple change in EFs).

So far as road transport is concerned, the inability to attain the emission ceiling is most likely to have been affected by a combination of technological changes within the fleet (which of course made their way into the several versions of TREMOD) combined with greater than originally expected dieselisation of the fleet.

ANALYSING THE PROBLEM: THE EUROPEAN PERSPECTIVE BASED ON COPERT

Already in 2011, these effects were demonstrated by Ntziachristos and Papageorgiou (2011) ⁵⁾. Here, the impacts of changing model versions and activity data in the context of meeting the EU NEC Directive ceiling commitments were examined for four European countries including Germany. Unfortunately, this comparison study was carried out within a COPERT environment. Therefore, the results gained cannot be transferred to the German TREMOD environment on a one-to-one level but nonetheless allow a highly illustrative insight in the reasons for not meeting the set ceiling. The study modeled fuel consumption and NO_x, emissions for four selected countries (Germany, France, Netherlands and Belgium) and found higher NO_x, emissions were estimated for the road transport sector than originally modelled by the RAINS model of IIASA (which underpinned the setting of 2010 ceilings). For Germany, this study shows that with the same activity data set (LIFE+

EC4MACS data from Amann et al. (2010)), NO_x, emissions estimated with COPERT II vs. COPERT 4 (v8.0) increase from 410 kt to 518 kt due to methodological changes, a difference of 282 kt. An additional consideration of changes in AD would lead to 620 kt of NO_x. However, as changes in AD are no valid adjustment reason, the latter value is for information only.

This was mainly due to: * NO_x, emission factors updated in COPERT 4 that did not follow the reductions as set by the emission standards for diesel passenger cars; * important part of diesel fuel consumption in the total fuel consumption of the road traffic.

The results of this study showed that it is the combination of different parameters which might affect the ability (to different extents) of a Party to attain the emission ceilings. In other words, the exceeding of NO_x, ceilings for road transport is due to:

Changes in methodology and emission factors

As these technologically driven changes (as reflected in the evolution of the different so-called Euro norms) lie outside the country's responsibility, current methodology and EFs have to be adjusted in a way to allow the comparison of the actual inventory and the Gothenburg ceilings.

Changes in the activity data

As the development of mileage driven and fuels used within a country (Germany: stronger dieselisation then originally expected) is of the country's responsibility, this effect has to be excluded from any adjustment estimation.

IN-COUNTRY ANALYSIS: THE TREMOD PERSPECTIVE

INITIAL ASSUMPTION

In order to estimate the effect of NO_x, emissions resulting from the failure of the so-called Euro norms, the following procedure has been agreed by expert review teams in the last two years:

proposed amount of adjustable emissions = current AD x current EF - current AD x original EF = current AD x (current EF - original EF) = current EM - "artificial" current EM¹

¹ "artificial" current emissions = virtual current emissions assuming no changes in emission factors

$$EM_{\text{adjustment}} = AD_{\text{current}} * EF_{\text{current}} - AD_{\text{current}} * EF_{\text{original}} = AD_{\text{current}} * (EF_{\text{current}} - EF_{\text{original}}) = EM_{\text{current}} - EM_{\text{current-artificial}}$$

with * **EM_{adjustment}**, = amount of emissions to be subtracted from National Totals * **AD_{current}**, = AD from latest TREMOD version as used for current submission * **EF_{current}**, = EF from latest TREMOD version as used for current submission * **EF_{original}**, = EF from TREMOD version used at the time NEC ceilings were set (here: TREMOD 3.1) * **EM_{current}**, = EM estimated from AD and EF from latest TREMOD version = EM reported for NFR 1.A.3.b with latest submission * **EM_{current-artificial}**, = EM estimated from AD from latest TREMOD version and EF from TREMOD version used at the time NEC ceilings were set (here: TREMOD 3.1)

APPLYING THE ORIGINAL METHODOLOGY

FRAMEWORK INFORMATION

The methodology used for estimating Germany's exhaust emissions from road transport when determining emissions ceilings of the Gothenburg Protocol (1999), was the second version of the EMEP/CORINAIR guidebook corresponding to COPERT II software. This method proposed NO_x, emission factors for

- passenger cars (PC): up to Euro 1
- light commercial vehicles (LCV2): up to Euro 1
- heavy duty vehicles (HDV): pre-EURO I only (conventional)

Back then, without better knowledge, the emission factors for the most recent standards were derived by directly applying the expected reductions in emission standards.

However, as Germany does not use COPERT for compiling its road transport emissions inventory but a national model called

TREMODO, the following comparison has to be carried out between the oldest version of TREMOD still available and the version as applied for the current inventory submission (2020).

Unfortunately, the oldest TREMOD version available for such comparison is TREMOD 3.1 from 2002⁶⁾, including the following set of NO_x, emission factors:

- passenger cars (PC): up to Euro 4
- light commercial vehicles (LCV): up to Euro 4
- heavy duty vehicles (HDV) only up to EURO V

However, as this version includes the technological development since 1999 (when the ceilings were set based on COPERT II), the results from this analysis and the adjustment proposal based upon these results are likely to slightly underestimate the effect of technological changes since 1999 and must therefore be considered conservative.

THE COMPARISON

Application of the original NO_x, methodology to the current road transport background activity data

The *basic activity data* (such as over-all fuel sold and traffic mileages by vehicle type, by fuel or by Euro regulation) implemented in TREMOD 3.1 differ significantly from those of the current TREMOD version especially for the more recent years as of 2005. In addition, *specific activity data* (such as fuel consumptions per vehicle type, per fuel or per Euro regulation) strongly depend on the TREMOD version.

Within this report, Germany re-estimates the NO_x, emission within the TREMOD 3.1 model. To isolate the requested information, the original TREMOD 3.1 activity data was combined with emission factors from both TREMOD 3.1 and the currently used TREMOD 6.02 (Knörr et al., 2019a)⁷⁾.

Description of the updated methodology used

The updated methodology, used in 2019 (for NFR submission 2021) and implemented in version 6.12 of the TREMOD software, considers emission factors of

- passenger cars (PC) up to Euro 6d
- light commercial vehicles (LCV) up to Euro 6d
- heavy duty vehicles (HDV) up to EURO VI

and

- motorized two-wheelers (M2W) up to Euro 4

Comparison of emission estimates made using the original and updated methodologies

The values of NO_x, emissions presented in the table below are estimated with:

- TREMOD 3.1 model equations as initial methodology

and ,

- TREMOD 6.12 equations as methodology applied for NEC submission 2021.

The activity data applied to initial (here: oldest available) and most recent methodology, are those of the latest inventory provided with NEC submission 2021.

Table 1: Resulting adjustment proposal 2020

for year	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
proposed adjustment	-296.1	-300.7	-300.4	-305.2	-294.9	-274.9	-250.9	-221.1	-179.6	-144.8

The following screenshots show the TREMOD 3.1 / TREMOD 6.12 implementation comparisons per vehicle type/fuel/Euro regulation.

Activity Data

* **current:** from TREMOD 6.12, as reported with the latest inventory submission

* **adjusted:** has to be similar to **current** AD!

* **difference:** as only recent AD are to be used for adjustment estimations, this value must be zero!

Implied Emission Factor

* **current:** representing the ratio of current emissions and current AD

* **adjusted:** representing the ratio of adjusted emissions and current AD

* **difference:** shows percentual difference

NO_x, Emissions

* **current:** from TREMOD 6.12, as reported with the latest inventory submission

* **adjusted:** estimated based on TREMOD 3.1 methodology and TREMOD 6.12 AD

* **adjustment:** adjusted emissions minus current emissions

* **difference:** percentual difference between current and adjusted emissions

Adjustment overview for years 2010 to 2019

NER Code	Fuel	Year	Activity Data			Implied Emission Factor			NO _x Emissions			
			current	adjusted	difference	current	adjusted	difference	current	adjusted	adjustment	difference
			in [TJ]		in [%]	in [kg/TJ]		in [%]	in [kg]			in [%]
1.A.3.b.i	gasoline		795.957	795.957	0%	97.55	94.99	-13%	77.644.842	67.950.906	9.693.935	-13%
1.A.3.b.i	diesel oil		529.390	529.390	0%	429.45	160.51	-63%	227.341.056	84.370.461	142.970.635	-63%
1.A.3.b.ii	gasoline		6.325	6.325	0%	255.87	214.75	-16%	1.618.432	1.358.328	260.104	-16%
1.A.3.b.ii	diesel oil		113.450	113.450	0%	476.34	134.96	-72%	54.040.533	15.311.584	38.728.949	-72%
1.A.3.b.iii	diesel oil		46.844	46.844	0%	623.00	482.55	-23%	29.931.266	23.183.732	6.747.534	-23%
1.A.3.b.iii	diesel oil		566.741	566.741	0%	446.67	271.83	-39%	253.148.243	154.056.160	99.092.083	-39%
1.A.3.b.iv	gasoline		19.712	19.712	0%	113.68	168.43	48%	2.240.749	3.320.034	-1.079.285	48%
1.A.3.b TOTAL		2010	2.079.608	2.079.608	0%			0%	645.965.162	349.851.206	296.113.956	-46%
1.A.3.b.i	gasoline		794.688	794.688	0%	92.09	81.61	-11%	73.185.851	64.351.951	8.333.900	-11%
1.A.3.b.i	diesel oil		553.564	553.564	0%	434.12	159.22	-63%	248.313.791	88.138.959	160.174.832	-63%
1.A.3.b.ii	gasoline		6.118	6.118	0%	229.35	198.57	-13%	1.403.081	1.214.776	188.305	-13%
1.A.3.b.ii	diesel oil		115.967	115.967	0%	481.55	126.92	-74%	55.844.518	14.718.142	41.126.376	-74%
1.A.3.b.iii	diesel oil		47.365	47.365	0%	592.65	448.99	-24%	28.071.221	21.286.323	6.884.898	-24%
1.A.3.b.iii	diesel oil		563.891	563.891	0%	419.38	244.97	-40%	231.410.271	138.136.342	93.273.929	-40%
1.A.3.b.iv	gasoline		19.289	19.289	0%	119.79	171.60	54%	2.137.602	3.299.162	-1.162.160	54%
1.A.3.b TOTAL		2011	2.100.883	2.100.883	0%			0%	632.365.736	331.625.655	300.740.081	-48%
1.A.3.b.i	gasoline		750.957	750.957	0%	85.73	78.00	-9%	64.379.994	58.577.229	5.802.765	-9%
1.A.3.b.i	diesel oil		555.245	555.245	0%	435.96	158.66	-64%	242.062.902	88.096.699	153.966.203	-64%
1.A.3.b.ii	gasoline		5.657	5.657	0%	218.93	193.15	-12%	1.238.520	1.092.662	145.859	-12%
1.A.3.b.ii	diesel oil		114.350	114.350	0%	481.91	128.17	-75%	55.106.382	13.741.354	41.365.028	-75%
1.A.3.b.iii	diesel oil		50.902	50.902	0%	533.22	384.33	-28%	27.141.913	19.563.208	7.578.704	-28%
1.A.3.b.iii	diesel oil		589.585	589.585	0%	381.33	224.00	-41%	224.829.180	132.064.753	92.764.428	-41%
1.A.3.b.iv	gasoline		18.268	18.268	0%	107.43	173.28	61%	1.962.546	3.165.439	-1.202.893	61%
1.A.3.b TOTAL		2012	2.084.964	2.084.964	0%			0%	616.721.438	316.391.343	300.420.094	-49%
1.A.3.b.i	gasoline		749.114	749.114	0%	80.35	74.85	-7%	60.190.007	56.071.797	4.118.211	-7%
1.A.3.b.i	diesel oil		589.131	589.131	0%	437.14	158.71	-64%	257.533.728	93.499.010	164.034.718	-64%
1.A.3.b.ii	gasoline		5.578	5.578	0%	202.80	184.07	-9%	1.131.209	1.026.727	104.482	-9%
1.A.3.b.ii	diesel oil		116.777	116.777	0%	489.60	114.93	-76%	57.003.533	13.690.488	43.333.045	-76%
1.A.3.b.iii	diesel oil		81.716	81.716	0%	509.54	369.96	-29%	26.350.969	18.420.843	7.930.126	-29%
1.A.3.b.iii	diesel oil		600.139	600.139	0%	353.06	287.93	-19%	211.807.531	124.788.459	87.019.072	-41%
1.A.3.b.iv	gasoline		18.229	18.229	0%	194.34	175.38	-9%	1.902.668	3.197.038	-1.294.361	68%
1.A.3.b TOTAL		2013	2.132.683	2.132.683	0%			0%	616.079.663	316.854.371	300.224.692	-50%
1.A.3.b.i	gasoline		752.526	752.526	0%	75.03	73.09	-3%	57.215.533	54.988.921	2.216.612	-4%
1.A.3.b.i	diesel oil		626.845	626.845	0%	435.87	159.12	-63%	272.876.061	99.613.892	173.262.169	-63%
1.A.3.b.ii	gasoline		5.845	5.845	0%	190.34	176.49	-7%	1.112.584	1.031.612	80.972	-7%
1.A.3.b.ii	diesel oil		128.578	128.578	0%	475.56	110.96	-77%	61.146.575	14.267.237	46.879.338	-77%
1.A.3.b.iii	diesel oil		45.143	45.143	0%	468.37	339.99	-27%	23.017.116	16.708.234	6.308.881	-27%
1.A.3.b.iii	diesel oil		672.754	672.754	0%	314.05	196.05	-38%	179.874.133	112.285.582	67.588.551	-38%
1.A.3.b.iv	gasoline		18.673	18.673	0%	100.59	179.24	78%	1.878.294	3.346.794	-1.468.499	78%
1.A.3.b TOTAL		2014	2.153.563	2.153.563	0%			0%	597.120.297	302.252.271	294.868.025	-49%
1.A.3.b.i	gasoline		715.156	715.156	0%	74.38	71.73	-4%	53.190.787	51.300.983	1.889.805	-4%
1.A.3.b.i	diesel oil		645.565	645.565	0%	426.19	159.80	-63%	275.130.233	103.163.501	171.966.732	-63%
1.A.3.b.ii	gasoline		5.793	5.793	0%	187.12	172.80	-8%	1.083.927	1.000.999	82.928	-8%
1.A.3.b.ii	diesel oil		135.396	135.396	0%	469.35	187.96	-77%	63.505.443	14.607.490	48.897.953	-77%
1.A.3.b.iii	diesel oil		52.287	52.287	0%	458.96	327.99	-29%	23.997.817	17.149.448	6.848.370	-29%
1.A.3.b.iii	diesel oil		589.411	589.411	0%	266.69	187.51	-30%	157.189.676	116.529.703	40.659.973	-30%
1.A.3.b.iv	gasoline		18.459	18.459	0%	99.32	180.65	82%	1.833.362	3.334.472	-1.501.090	82%
1.A.3.b TOTAL		2015	2.161.576	2.161.576	0%			0%	575.931.265	301.877.596	274.053.670	-48%
1.A.3.b.i	gasoline		715.272	715.272	0%	79.93	78.65	-2%	50.736.967	50.535.049	201.918	0%
1.A.3.b.i	diesel oil		675.119	675.119	0%	410.36	160.76	-61%	277.041.660	108.535.230	168.506.430	-61%
1.A.3.b.ii	gasoline		5.926	5.926	0%	189.27	171.06	-9%	1.068.292	1.013.678	54.614	-5%
1.A.3.b.ii	diesel oil		144.068	144.068	0%	458.12	185.62	-77%	65.712.732	15.216.007	50.496.726	-77%
1.A.3.b.iii	diesel oil		54.157	54.157	0%	424.73	388.24	-9%	23.002.109	16.893.117	6.108.992	-27%
1.A.3.b.iii	diesel oil		594.013	594.013	0%	226.31	180.97	-20%	134.431.899	107.496.262	26.935.637	-20%
1.A.3.b.iv	gasoline		18.785	18.785	0%	96.14	181.66	89%	1.805.897	3.412.476	-1.606.579	89%
1.A.3.b TOTAL		2016	2.207.339	2.207.339	0%			0%	553.799.556	302.901.820	250.897.738	-45%
1.A.3.b.i	gasoline		724.571	724.571	0%	67.66	69.88	3%	49.026.074	50.634.714	-1.608.640	3%
1.A.3.b.i	diesel oil		696.592	696.592	0%	399.65	161.95	-59%	272.126.091	112.810.721	159.315.370	-59%
1.A.3.b.ii	gasoline		6.186	6.186	0%	171.15	167.18	-2%	1.058.799	1.034.211	24.588	-2%
1.A.3.b.ii	diesel oil		153.294	153.294	0%	424.66	183.89	-78%	66.093.930	15.925.216	50.168.714	-76%
1.A.3.b.iii	diesel oil		53.382	53.382	0%	378.80	286.71	-23%	19.793.501	15.304.828	4.488.673	-23%
1.A.3.b.iii	diesel oil		598.263	598.263	0%	195.02	175.92	-9%	116.671.141	105.248.508	11.422.633	-10%
1.A.3.b.iv	gasoline		19.160	19.160	0%	92.83	183.39	98%	1.778.674	3.513.787	-1.735.114	98%
1.A.3.b TOTAL		2017	2.251.437	2.251.437	0%			0%	525.549.410	304.469.906	221.079.424	-42%
1.A.3.b.i	gasoline		699.027	699.027	0%	64.42	68.36	6%	45.032.996	47.786.817	-2.753.820	6%
1.A.3.b.i	diesel oil		666.074	666.074	0%	371.66	163.30	-56%	247.695.063	108.768.604	138.926.459	-56%
1.A.3.b.ii	gasoline		6.315	6.315	0%	158.22	168.11	1%	999.199	1.011.138	-11.939	1%
1.A.3.b.ii	diesel oil		154.259	154.259	0%	384.71	182.69	-73%	59.344.525	15.840.310	43.504.215	-73%
1.A.3.b.iii	diesel oil		51.634	51.634	0%	399.75	263.53	-35%	15.993.526	13.607.106	2.386.420	-15%
1.A.3.b.iii	diesel oil		585.186	585.186	0%	171.18	172.10	1%	188.173.337	188.710.869	-537.532	1%
1.A.3.b.iv	gasoline		18.497	18.497	0%	89.66	184.61	106%	1.658.568	3.414.767	-1.756.209	106%
1.A.3.b TOTAL		2018	2.180.993	2.180.993	0%			0%	478.758.206	291.139.612	179.618.593	-38%
1.A.3.b.i	gasoline		704.691	704.691	0%	62.30	68.45	10%	43.901.941	48.238.025	-4.336.084	10%
1.A.3.b.i	diesel oil		683.841	683.841	0%	345.81	165.07	-52%	229.566.088	109.582.982	119.983.106	-52%
1.A.3.b.ii	gasoline		6.683	6.683	0%	146.08	153.25	5%	976.219	1.024.160	-47.941	5%
1.A.3.b.ii	diesel oil		159.183	159.183	0%	347.42	181.90	-71%	55.303.335	16.221.445	39.081.890	-71%
1.A.3.b.iii	diesel oil		52.939	52.939	0%	274.41	247.81	-9%	14.527.012	13.118.578	1.408.434	-10%
1.A.3.b.iii	diesel oil		595.913	595.913	0%	153.35	169.17	10%	91.380.700	100.809.376	-9.428.676	10%
1.A.3.b.iv	gasoline		18.750	18.750	0%	86.05	186.83	117%	1.613.450	3.502.941	-1.889.491	117%
1.A.3.b TOTAL		2019	2.202.000	2.202.000	0%			0%	437.268.744	292.497.497	144.771.248	-33%

Adjustment details for 2020												
NFR Code	Fuel	Activity Data			Implied Emission Factor			NO _x Emissions				
		current	adjusted	difference	current	adjusted	difference	current	adjusted	adjustment	difference	
		in [t]	in [t]	in [%]	in [g/t]	in [g/t]	in [%]	in [kg]	in [kg]	in [kg]	in [kg]	
1.A.3.a.i. Passenger Cars	Gasoline	pre-Cars	13.685	13.685	0%	584.75	514.25	-12%	7.955.060	6.986.917	-958.143	-12%
		Car 1	36.541	36.541	0%	338.50	297.71	-10%	25.915.925	10.189.262	-7.716.663	-30%
		Car 2	96.425	96.425	0%	172.95	135.63	-22%	16.580.020	13.020.026	-3.588.995	-22%
		Car 3	133.139	133.139	0%	58.51	70.18	20%	7.790.384	9.343.433	1.553.129	20%
		Car 4	444.981	444.981	0%	42.27	42.19	0%	18.911.389	18.773.529	-37.859	0%
		Car 5	31.234	31.234	0%	18.61	42.19	127%	581.142	1.317.737	736.595	127%
		Car 6	0	0	0%	25.08	42.19	67%	2	2	0	0%
		Gasoline total	795.057	795.057	0%	92.55	83.59	-10%	77.646.042	67.650.586	-9.995.456	-13%
	Diesel Oil	pre-Cars	1.249	1.249	0%	627.99	545.95	-13%	183.760	157.256	-26.504	-15%
		Car 1	10.338	10.338	0%	294.42	245.17	-17%	3.044.428	2.741.387	-302.521	-10%
		Car 2	50.088	50.088	0%	406.90	279.19	-30%	29.372.795	10.974.210	-18.398.584	-63%
		Car 3	134.025	134.025	0%	542.54	170.54	-69%	72.648.173	23.929.276	-48.718.957	-67%
		Car 4	279.154	279.154	0%	304.37	140.58	-53%	187.299.180	39.243.811	-148.055.369	-81%
		Car 5	53.547	53.547	0%	434.70	140.58	-68%	23.276.735	7.527.796	-15.748.939	-68%
		Car 6	334	334	0%	257.62	140.58	-45%	85.044	46.953	-38.091	-45%
		Diesel oil total	529.380	529.380	0%	429.45	160.55	-63%	227.347.096	84.970.461	-142.376.635	-63%
		Flx Total	1,325,337	1,325,337	0%	238.12	155.14	-36%	364,985,938	152,621,367	-152,364,570	-42%
	Gasoline	pre-Cars	1.249	1.249	0%	627.99	545.95	-13%	183.760	157.256	-26.504	-15%
		Car 1	367	367	0%	361.95	297.39	-16%	361.969	186.620	-208.958	-58%
		Car 2	1.393	1.393	0%	264.75	184.41	-30%	368.840	256.917	-111.923	-30%
		Car 3	856	856	0%	82.47	30.83	-63%	70.631	77.625	6.994	10%
		Car 4	2.420	2.420	0%	36.32	44.90	24%	87.987	188.679	28.772	33%
		Car 5	49	49	0%	15.34	44.90	193%	750	2.218	1.468	193%
		Car 6	0	0	0%	0	0	0%	0	0	0	0%
		Gasoline total	6.345	6.345	0%	255.87	254.75	-0%	1,478,832	1,358,128	-120,704	-8%
1.A.3.b.i. Light Duty Vehicles (LDVs)	Gasoline	pre-Cars	4.876	4.876	0%	425.99	386.79	-9%	2,077,142	1,436,983	-640,239	-31%
		Car 1	9.989	9.989	0%	399.18	276.24	-30%	2,389,080	1,289,636	-1,099,444	-46%
		Car 2	13.126	13.126	0%	336.76	153.18	-54%	4,420,280	2,534,731	-1,885,549	-43%
		Car 3	33.249	33.249	0%	531.91	150.58	-72%	17,665,883	5,085,760	-12,580,123	-71%
		Car 4	54.581	54.581	0%	491.42	80.69	-84%	26,021,636	4,940,722	-21,080,914	-81%
		Car 5	1,629	1,629	0%	427.50	80.69	-81%	696,286	144,434	-551,772	-80%
		Car 6	0	0	0%	15.73	80.69	-81%	7	4	-3	-43%
		LDVs total	113,450	113,450	0%	476.34	134.94	-72%	54,043,533	15,351,584	-38,691,949	-72%
	Diesel Oil	pre-Cars	119.175	119.175	0%	464.70	139.18	-70%	55,658,966	36,689,913	-18,969,053	-34%
		Car 1	3,382	3,382	0%	1096.25	1828.78	67%	3,674,087	3,452,644	-221,423	-6%
		Car 2	2,826	2,826	0%	749.41	732.14	-2%	2,117,871	2,125,595	7,723	0%
		Car 3	10,152	10,152	0%	801.96	643.47	-20%	8,140,119	6,532,213	-1,607,906	-20%
		Car 4	15,890	15,890	0%	633.22	437.25	-30%	13,065,776	7,289,299	-5,776,477	-44%
		Car 5	5,461	5,461	0%	448.63	351.65	-22%	2,650,016	1,501,527	-1,148,489	-43%
		Car 6	10,326	10,326	0%	337.28	182.33	-46%	3,882,417	1,882,644	-1,999,773	-51%
		LDVs total	48,044	48,044	0%	623.80	482.55	-23%	29,931,266	23,185,732	-6,745,534	-23%
	Heavy Duty Vehicles (HDVs)	pre-Cars	10,185	10,185	0%	1040.16	787.37	-25%	10,510,623	7,754,136	-2,756,487	-26%
		Car 1	5,677	5,677	0%	758.59	575.55	-24%	4,261,383	3,287,681	-973,702	-23%
		Car 2	38,558	38,558	0%	817.62	524.79	-35%	31,525,526	20,234,619	-11,290,907	-36%
		Car 3	169,923	169,923	0%	636.28	274.48	-57%	161,136,182	59,617,271	-101,518,911	-63%
		Car 4	69,636	69,636	0%	368.34	280.62	-24%	27,183,867	20,146,636	-7,037,231	-26%
		Car 5	283,934	283,934	0%	276.42	151.65	-45%	78,643,643	43,115,897	-35,527,746	-45%
		LDVs total	566,141	566,141	0%	446.67	271.83	-39%	293,148,243	154,696,160	-138,452,083	-47%
1.A.3.b.ii. Heavy Duty Vehicles (HDVs) - Trucks & Lorries	Gasoline	pre-Cars	7,973	7,973	0%	122.80	149.18	22%	972,721	1,189,393	216,672	22%
		Car 1	5,231	5,231	0%	123.77	165.74	34%	647,479	887,039	239,560	34%
		Car 2	3,587	3,587	0%	141.16	184.21	31%	585,362	686,681	101,319	17%
		Car 3	2,950	2,950	0%	38.11	184.21	381%	116,188	657,032	540,844	465%
		Car 4	0	0	0%	0	0	0%	0	0	0	0%
		Car 5	0	0	0%	0	0	0%	0	0	0	0%
		LDVs total	19,112	19,112	0%	113.68	168.43	48%	2,283,149	3,326,034	1,042,885	46%
	Diesel Oil	pre-Cars	10,185	10,185	0%	1040.16	787.37	-25%	10,510,623	7,754,136	-2,756,487	-26%
		Car 1	5,677	5,677	0%	758.59	575.55	-24%	4,261,383	3,287,681	-973,702	-23%
		Car 2	38,558	38,558	0%	817.62	524.79	-35%	31,525,526	20,234,619	-11,290,907	-36%
		Car 3	169,923	169,923	0%	636.28	274.48	-57%	161,136,182	59,617,271	-101,518,911	-63%
		Car 4	69,636	69,636	0%	368.34	280.62	-24%	27,183,867	20,146,636	-7,037,231	-26%
		Car 5	283,934	283,934	0%	276.42	151.65	-45%	78,643,643	43,115,897	-35,527,746	-45%
		LDVs total	566,141	566,141	0%	446.67	271.83	-39%	293,148,243	154,696,160	-138,452,083	-47%
	Trucks & Lorries	pre-Cars	7,973	7,973	0%	122.80	149.18	22%	972,721	1,189,393	216,672	22%
		Car 1	5,231	5,231	0%	123.77	165.74	34%	647,479	887,039	239,560	34%
		Car 2	3,587	3,587	0%	141.16	184.21	31%	585,362	686,681	101,319	17%
		Car 3	2,950	2,950	0%	38.11	184.21	381%	116,188	657,032	540,844	465%
		Car 4	0	0	0%	0	0	0%	0	0	0	0%
		Car 5	0	0	0%	0	0	0%	0	0	0	0%
		LDVs total	19,112	19,112	0%	113.68	168.43	48%	2,283,149	3,326,034	1,042,885	46%
	1.A.3.b. Road Transport	Total	2,879,688	2,879,688	0%	219.62	168.23	-26%	645,965,162	349,851,296	-296,113,866	-46%

Adjustment details for 2021												
NFR Code	Fuel	Activity Data			Implied Emission Factor			NO _x Emissions				
		current	adjusted	difference	current	adjusted	difference	current	adjusted	adjustment	difference	
		in [t]	in [t]	in [%]	in [g/t]	in [g/t]	in [%]	in [kg]	in [kg]	in [kg]	in [%]	
1.A.3.a.i. Passenger Cars	Gasoline	pre-Cars	13.063	13.063	0%	592.96	534.68	-10%	7.720.235	6.979.435	-740.801	-10%
		Car 1	61.979	61.979	0%	347.86	340.16	-2%	21.560.430	14.884.961	-6.675.479	-31%
		Car 2	87.083	87.083	0%	178.38	136.58	-24%	15.620.983	11.883.782	-3.737.191	-24%
		Car 3	124.330	124.330	0%	61.94	71.52	16%	7.683.891	8.891.671	1.207.780	16%
		Car 4	442.185	442.185	0%	43.94	43.68	0%	19.384.914	19.376.439	-8.475	0%
		Car 5	66.057	66.057	0%	18.58	43.68	135%	1.227.381	2.085.636	1.658.255	135%
		Car 6	1	1	0%	25.06	43.68	60%	17	20	3	18%
		Gasoline total	794.688	794.688	0%	92.69	81.65	-11%	73.165.851	64.851.551	-8.314.300	-11%
	Diesel Oil	pre-Cars	1.171	1.171	0%	513.80	443.19	-14%	182.214	160.373	-21.841	-12%
		Car 1	8.426	8.426	0%	297.32	246.65	-17%	2.585.115	2.299.987	-285.118	-11%
		Car 2	42.514	42.514	0%	407.93	279.27	-32%	17.384.549	9.321.916	-8.062.633	-46%
		Car 3	121.429	121.429	0%	555.36	170.55	-69%	67.437.053	21.681.386	-45.755.667	-69%
		Car 4	264.943	264.943	0%	388.88	143.48	-63%	182.817.881	30.089.755	-152.728.126	-84%
		Car 5	113.047	113.047	0%	435.12	143.48	-67%	49.536.960	16.332.974	-33.203.986	-67%
		Car 6	685	685	0%	259.59	143.48	-45%	180.582	99.754	-80.828	-45%
		Diesel oil total	553.564	553.564	0%	434.12	159.92	-63%	249.713.791	88.138.959	-161.574.832	-63%
		Flx Total	1.348.252	1.348.252	0%	232.52	153.47	-51%	213.889.646	152.990.506	-60.899.140	-29%
1.A.3.a.ii. Light Duty Vehicles (LDV)	Gasoline	pre-Cars	1.084	1.084	0%	625.25	645.95	6%	682.274	780.373	98.099	15%
		Car 1	2.883	2.883	0%	858.74	384.47	-55%	243.289	86.150	-157.139	-65%
		Car 2	1.154	1.154	0%	206.06	187.30	-9%	319.525	223.189	-96.336	-30%
		Car 3	783	783	0%	88.97	36.79	-59%	87.320	74.789	-12.531	-14%
		Car 4	2.562	2.562	0%	37.38	46.51	24%	95.786	119.152	23.376	24%
		Car 5	241	241	0%	16.13	46.51	180%	3.082	11.190	7.308	180%
		Car 6	0	0	0%	16.33	46.51	283%	1	3	2	203%
		Gasoline total	6.110	6.110	0%	249.35	180.52	-51%	1.483.081	1.243.716	-239.365	-16%
	Diesel Oil	pre-Cars	3.995	3.995	0%	425.99	398.79	-6%	1.689.280	1.225.662	-472.598	-28%
		Car 1	4.187	4.187	0%	395.71	275.24	-30%	1.984.390	1.030.425	-953.965	-48%
		Car 2	10.010	10.010	0%	336.90	193.29	-42%	3.644.582	2.091.083	-1.553.500	-43%
		Car 3	20.935	20.935	0%	541.53	180.54	-67%	18,027.418	4.348.078	-13,679.340	-76%
		Car 4	6.832	6.832	0%	40.82	89.25	42%	30,029.914	5,420.811	-24,609.104	-82%
		Car 5	6.609	6.609	0%	148.05	89.25	-40%	2,930.190	584.364	-2,345.826	-80%
		Car 6	0	0	0%	154.21	89.25	-43%	11	8	-4	-43%
		Diesel oil total	115.967	115.967	0%	405.50	186.92	-74%	55.844.558	15.718.142	-40.126.376	-74%
		LDVs Total	122.085	122.085	0%	404.92	130.55	-74%	57.347.599	15,932.898	-41.414.697	-74%
1.A.3.a.iii. Heavy Duty Trucks & Buses	Diesel Oil	pre-Cars	2.620	2.620	0%	1002.69	1019.78	6%	2.836.189	2.671.331	-164.778	-6%
		Car 1	2.258	2.258	0%	752.91	514.40	-32%	1.639.187	1.036.297	-602.890	-37%
		Car 2	9.024	9.024	0%	874.13	643.36	-26%	7.291.125	5.037.559	-2.253.566	-31%
		Car 3	14.087	14.087	0%	523.16	457.78	-12%	9,425.080	6.889.054	-2.536.027	-28%
		Car 4	5.131	5.131	0%	448.88	351.81	-21%	2,363.330	1.688.274	-675.056	-29%
		Car 5	13.396	13.396	0%	336.60	182.62	-46%	4,589.052	2,486.399	-2,092.653	-46%
		Car 6	0	0	0%	0	0	0%	0	0	0	0%
		Buses Total	47.365	47.365	0%	592.65	448.99	-24%	28,071.221	21,286.323	-6,784.898	-24%
	Diesel Oil	pre-Cars	8.044	8.044	0%	1030.67	783.88	-26%	8.365.423	6.144.933	-2.210.491	-26%
		Car 1	4.384	4.384	0%	758.16	574.04	-23%	3,288.422	2,256.237	-1,032.184	-32%
		Car 2	29.277	29.277	0%	817.37	550.51	-32%	23,947.723	15,535.372	-8,412.351	-35%
		Car 3	121.584	121.584	0%	636.56	472.83	-26%	77,271.620	45,312.423	-31,959.197	-41%
		Car 4	58.430	58.430	0%	263.35	289.43	10%	32,977.784	15,969.685	-16,988.099	-49%
		Car 5	342.175	342.175	0%	270.12	142.03	-48%	96,589.479	52,019.687	-44,569.792	-45%
		Car 6	0	0	0%	0	0	0%	0	0	0	0%
		Trucks Total	563.891	563.891	0%	418.38	244.97	-46%	215,471.291	136,136.342	-81,337.929	-46%
		Motorized Two-Wheelers (M2W)	pre-Cars	7.389	7.389	0%	122.96	150.24	22%	969.580	1.110.170	201.589
Car 1	4.085		4.085	0%	124.72	108.26	-13%	599.299	880.547	299.248	35%	
Car 2	2.544		2.544	0%	137.85	134.58	-4%	488.552	688.693	201.851	41%	
Car 3	3.560		3.560	0%	39.59	134.58	362%	160.553	688.693	528.140	362%	
Car 4	0		0	0%	0	0	0%	0	0	0	0%	
Car 5	0		0	0%	0	0	0%	0	0	0	0%	
M2Ws Total	19.289	19.289	0%	119.78	171.64	54%	2.137.082	3,299.162	1,162.100	54%		
1.A.3.b. Road Transport	Total	2.160.883	2.160.883	0%	304.90	157.85	-49%	632.365.736	321,625.655	-310.740.081	-49%	

Adjustment details for 2023												
NFR Code	Fuel	Activity Data			Implied Emission Factor			NO _x Emissions				
		current	adjusted	difference	current	adjusted	difference	current	adjusted	adjustment	difference	
		in [t]	in [t]	in [%]	in [g/t]	in [g/t]	in [%]	in [kg]	in [kg]	in [kg]	in [%]	
1.A.3.a.i. Passenger Cars	Gasoline	pre-Euro	11,561	11,561	0%	607.72	635.39	-2%	7,026,041	6,189,785	-836,256	-12%
		Euro 1	47,487	47,487	0%	348.56	341.62	-2%	16,571,746	11,426,129	-5,145,617	-31%
		Euro 2	72,781	72,781	0%	194.27	172.82	-25%	13,487,749	10,039,380	-3,452,369	-26%
		Euro 3	189,443	189,443	0%	63.89	72.62	14%	6,927,963	7,875,172	947,209	14%
		Euro 4	489,541	489,541	0%	45.39	45.13	-1%	18,541,881	18,436,736	-105,145	-1%
		Euro 5	181,961	181,961	0%	18.61	45.13	142%	1,897,355	4,681,311	2,793,956	142%
	Euro 6	282	282	0%	25.06	45.13	74%	7,339	12,736	5,399	74%	
	Gasoline total	790,957	790,957	0%	85.73	78.89	-8%	64,379,964	58,577,229	-5,802,735	-9%	
	Diesel Oil	pre-Euro	1,487	1,487	0%	311.98	284.56	-9%	463,963	383,872	-80,091	-17%
		Euro 1	6,660	6,660	0%	267.79	246.44	-11%	1,980,364	1,771,787	-208,577	-11%
		Euro 2	33,967	33,967	0%	406.82	279.27	-49%	13,987,432	7,445,646	-6,541,787	-48%
		Euro 3	183,539	183,539	0%	564.82	176.63	-69%	58,399,037	18,434,837	-39,964,200	-69%
		Euro 4	234,943	234,943	0%	398.41	146.46	-63%	91,724,195	34,488,997	-57,235,198	-62%
		Euro 5	173,112	173,112	0%	434.89	146.46	-66%	75,284,364	25,353,375	-49,930,989	-66%
	Euro 6	1,557	1,557	0%	239.84	146.46	-44%	484,664	220,086	-264,578	-54%	
Diesel oil total	555,245	555,245	0%	415.96	158.66	-62%	242,962,986	88,096,639	-154,866,347	-64%		
FCs Total	1,346,202	1,346,202	0%	234.61	115.29	-51%	386,442,896	146,673,867	-239,769,029	-62%		
1.A.3.b.i. Light Duty Vehicles (LDVs)	Gasoline	pre-Euro	962	962	0%	632.39	645.95	2%	967,779	921,160	-46,619	-5%
		Euro 1	232	232	0%	803.24	383.22	-52%	199,985	70,295	-129,690	-60%
		Euro 2	989	989	0%	271.16	195.74	-28%	269,134	133,538	-135,596	-50%
		Euro 3	835	835	0%	89.38	98.33	10%	74,623	82,092	7,469	10%
		Euro 4	2,030	2,030	0%	38.49	47.58	24%	78,155	96,691	18,536	24%
		Euro 5	610	610	0%	16.36	47.58	182%	9,941	29,011	19,069	182%
	Euro 6	0	0	0%	16.37	47.58	210%	2	6	4	210%	
	Gasoline total	5,657	5,657	0%	218.93	193.15	-12%	1,238,520	1,092,662	-145,858	-12%	
	Diesel Oil	pre-Euro	3,281	3,281	0%	424.46	386.79	-9%	1,368,754	982,093	-376,661	-28%
		Euro 1	3,666	3,666	0%	399.34	276.24	-49%	1,445,980	787,634	-658,346	-46%
		Euro 2	8,479	8,479	0%	336.40	133.39	-59%	2,852,325	1,639,772	-1,212,553	-43%
		Euro 3	23,785	23,785	0%	558.53	150.44	-73%	13,050,281	3,546,082	-9,504,199	-73%
		Euro 4	59,485	59,485	0%	494.22	89.85	-82%	29,369,070	5,337,395	-24,031,675	-82%
		Euro 5	15,964	15,964	0%	442.70	89.85	-80%	7,040,451	1,420,906	-5,619,545	-80%
	Euro 6	1	1	0%	151.94	89.85	-41%	122	72	-50	-41%	
Diesel oil total	114,350	114,350	0%	485.91	120.17	-75%	55,186,382	13,741,354	-41,445,028	-75%		
LDVs Total	129,008	129,008	0%	469.51	123.61	-74%	66,344,963	14,834,656	-51,510,307	-74%		
1.A.3.b.ii. Heavy Duty Vehicles (HDVs)	Diesel Oil	pre-Euro	1,326	1,326	0%	1093.46	1919.46	4%	1,410,640	1,352,283	-58,357	-4%
		Euro 1	1,246	1,246	0%	727.34	731.15	1%	987,476	1,017,184	29,708	3%
		Euro 2	7,788	7,788	0%	703.46	643.34	-9%	6,085,091	4,997,478	-1,087,613	-18%
		Euro 3	14,483	14,483	0%	629.94	437.61	-31%	9,073,197	6,089,744	-2,983,453	-33%
		Euro 4	5,331	5,331	0%	468.10	361.86	-23%	2,642,179	1,675,777	-966,402	-37%
		Euro 5	20,752	20,752	0%	347.84	182.99	-47%	7,219,563	3,787,467	-3,432,096	-49%
	Euro 6	73	73	0%	64.52	182.99	286%	3,961	13,296	9,334	236%	
	Diesel Total	50,962	50,962	0%	533.22	384.33	-28%	27,141,913	19,945,288	-7,196,625	-27%	
	Trucks Total	589,585	589,585	0%	385.33	224.69	-41%	224,829,180	132,064,753	-92,764,428	-41%	
	Gasoline	pre-Euro	6,180	6,180	0%	122.76	151.03	23%	822,530	1,011,520	189,301	23%
		Euro 1	4,386	4,386	0%	134.61	171.39	28%	536,615	738,050	201,435	38%
		Euro 2	3,267	3,267	0%	136.22	184.56	35%	445,087	636,853	191,766	43%
		Euro 3	3,984	3,984	0%	38.66	184.56	382%	18,386	778,616	760,230	382%
		Euro 4	0	0	0%	0	0	0%	0	0	0	0%
		Euro 5	0	0	0%	0	0	0%	0	0	0	0%
MGNs Total	18,268	18,268	0%	107.43	173.28	61%	1,982,546	3,165,439	1,182,893	61%		
1.A.3.b. Road Transport	Total	2,084,964	2,084,964	0%	295.79	151.71	-49%	616,721,438	396,381,343	-220,340,094	-40%	

Adjustment details for 2023												
NFR Code	Fuel	Activity Data			Implied Emission Factor			NO _x Emissions				
		current	adjusted	difference	current	adjusted	difference	current	adjusted	adjustment	difference	
		in [t]	in [t]	in [%]	in [g/t]	in [g/t]	in [%]	in [kg]	in [kg]	in [kg]	in [%]	
1.A.3.a.i. Passenger Cars	Gasoline	pre-Euro	11,680	11,680	0%	618.27	649.35	5%	7,011,541	6,967,452	-44,089	-1%
		Euro 1	37,743	37,743	0%	353.78	341.68	-3%	13,362,966	9,129,495	-4,233,471	-32%
		Euro 2	62,680	62,680	0%	188.93	139.33	-27%	11,889,922	8,722,244	-3,167,678	-27%
		Euro 3	97,782	97,782	0%	66.38	73.19	10%	6,481,618	7,156,920	675,302	10%
		Euro 4	397,911	397,911	0%	47.22	46.52	-1%	18,790,345	18,589,937	-200,407	-1%
		Euro 5	138,063	138,063	0%	18.60	46.52	150%	2,583,150	6,439,691	3,856,541	150%
		Euro 6	2,714	2,714	0%	25.99	46.52	79%	70,526	126,237	55,711	79%
		Gasoline total	748,116	748,116	0%	88.35	74.85	-16%	68,090,687	56,671,737	-11,418,950	-17%
	Diesel Oil	pre-Euro	1,389	1,389	0%	312.32	284.56	-9%	463,963	386,139	-77,824	-17%
		Euro 1	6,625	6,625	0%	268.42	246.79	-8%	1,979,472	1,580,680	-398,792	-20%
		Euro 2	29,437	29,437	0%	406.84	279.91	-32%	13,987,432	6,253,531	-7,733,901	-55%
		Euro 3	182,795	182,795	0%	574.33	176.67	-69%	58,249,036	18,434,837	-39,814,199	-68%
		Euro 4	222,583	222,583	0%	393.55	149.27	-62%	87,589,471	33,225,566	-54,363,905	-62%
		Euro 5	233,786	233,786	0%	435.42	149.27	-66%	101,787,275	34,884,788	-66,902,487	-66%
		Euro 6	4,536	4,536	0%	219.53	149.27	-32%	1,177,151	677,045	-500,106	-42%
		Diesel oil total	589,131	589,131	0%	437.14	158.71	-64%	257,533,128	83,899,619	-173,633,509	-64%
		FCs Total	1,337,247	1,337,247	0%	237.49	111.77	-53%	317,723,735	146,571,356	-171,152,379	-54%
	Gasoline	pre-Euro	981	981	0%	633.81	645.95	2%	968,320	929,283	-39,037	-4%
		Euro 1	194	194	0%	803.50	389.27	-51%	197,281	59,326	-137,955	-69%
		Euro 2	836	836	0%	274.42	191.18	-31%	229,520	180,285	-49,235	-21%
		Euro 3	784	784	0%	89.96	101.79	13%	72,691	79,780	7,089	10%
		Euro 4	1,889	1,889	0%	40.70	48.89	20%	77,284	92,833	15,549	20%
		Euro 5	965	965	0%	16.57	48.89	183%	15,187	47,268	32,081	183%
		Euro 6	1	1	0%	17.60	48.89	176%	26	72	46	176%
		Gasoline total	5,578	5,578	0%	262.86	184.67	-30%	1,137,299	1,092,727	-44,572	-4%
	Diesel Oil	pre-Euro	2,744	2,744	0%	424.37	386.79	-9%	1,368,754	982,093	-376,661	-28%
		Euro 1	1,054	1,054	0%	727.68	731.15	1%	987,476	1,017,184	29,708	3%
		Euro 2	6,982	6,982	0%	336.92	155.35	-54%	2,346,147	1,350,014	-996,133	-42%
Light Duty Vehicles (LDV)	Euro 3	20,424	20,424	0%	558.32	150.37	-73%	11,437,998	8,025,848	-3,412,150	-30%	
	Euro 4	55,087	55,087	0%	407.72	90.45	-42%	27,776,440	5,040,454	-22,735,986	-82%	
	Euro 5	29,024	29,024	0%	441.97	90.45	-40%	13,181,325	2,687,954	-10,493,371	-80%	
	Euro 6	41	41	0%	161.20	90.45	-44%	6,160	3,688	-2,472	-40%	
	Diesel oil total	118,777	118,777	0%	488.60	154.83	-68%	57,083,513	13,856,480	-43,227,033	-76%	
	LDVs Total	124,934	124,934	0%	488.14	156.03	-69%	58,214,142	14,677,219	-43,537,923	-78%	
	Diesel Oil	pre-Euro	1,172	1,172	0%	1098.69	1019.23	-7%	1,249,028	1,134,143	-114,885	-9%
		Euro 1	1,054	1,054	0%	727.68	735.19	1%	987,476	971,181	-16,295	-2%
Euro 2		6,984	6,984	0%	764.97	645.48	-16%	3,324,968	4,379,371	1,054,403	32%	
Euro 3		13,187	13,187	0%	638.43	475.65	-25%	6,262,880	5,998,226	-2,654,757	-27%	
Euro 4		4,946	4,946	0%	460.55	351.71	-24%	2,278,061	1,739,736	-538,324	-24%	
Euro 5		26,096	26,096	0%	848.98	183.48	-40%	8,435,583	4,240,743	-4,194,761	-50%	
Euro 6		537	537	0%	44.76	183.48	310%	24,047	86,672	62,625	260%	
Diesel Total		51,716	51,716	0%	508.54	340.06	-29%	25,369,989	16,620,843	-7,749,146	-30%	
Heavy Duty Vehicles (HDV)	pre-Euro	5,983	5,983	0%	1030.72	737.35	-29%	6,072,170	4,322,888	-1,749,282	-29%	
	Euro 1	2,944	2,944	0%	748.27	583.27	-22%	2,176,946	1,650,960	-525,987	-24%	
	Euro 2	16,885	16,885	0%	818.17	510.45	-37%	10,080,881	6,949,975	-3,130,906	-31%	
	Euro 3	45,517	45,517	0%	633.52	387.73	-39%	47,587,448	27,081,147	-20,506,286	-43%	
	Euro 4	42,781	42,781	0%	356.90	287.27	-20%	16,936,867	12,289,770	-4,647,097	-27%	
	Euro 5	436,980	436,980	0%	261.70	152.65	-41%	123,181,324	66,796,436	-56,384,888	-46%	
	Euro 6	18,020	18,020	0%	913.87	183.48	-20%	913,082	2,750,630	1,837,548	201%	
	Trucks Total	680,139	680,139	0%	353.96	287.53	-21%	218,587,511	124,188,469	-94,399,042	-43%	
Motorized Two-Wheelers (MOW)	pre-Euro	6,352	6,352	0%	123.97	151.79	23%	781,730	964,170	182,443	23%	
	Euro 1	4,013	4,013	0%	125.91	173.15	39%	582,073	634,880	52,807	9%	
	Euro 2	3,362	3,362	0%	132.24	158.58	40%	436,688	648,894	212,206	49%	
	Euro 3	4,562	4,562	0%	39.81	158.58	301%	181,610	882,175	700,565	389%	
	Euro 4	0	0	0%	0	0	0%	0	0	0	0%	
	Euro 5	0	0	0%	0	0	0%	0	0	0	0%	
	Euro 6	0	0	0%	0	0	0%	0	0	0	0%	
	MOWs Total	18,229	18,229	0%	104.34	175.38	68%	1,962,088	3,197,038	1,234,951	63%	
1.A.3.b. Road Transport		2,132,083	2,132,083	0%	268.88	187.53	-50%	616,073,963	310,854,371	-305,219,592	-50%	

Adjustment details for 2024												
NFR Code	Fuel	Activity Data			Implied Emission Factor			NO _x Emissions				
		current	adjusted	difference	current	adjusted	difference	current	adjusted	adjustment	difference	
		in [t]	in [t]	in [%]	in [g/t]	in [g/t]	in [%]	in [kg]	in [kg]	in [kg]	in [kg]	
1.A.3.a.i. - Passenger Cars	Gasoline	pre-Cars	11.647	11.647	0%	812.37	844.11	-11%	7.132.688	6.327.484	-796.844	-11%
		Car 1	30.667	30.667	0%	368.77	343.93	-32%	11.082.246	7.480.641	-3.621.706	-32%
		Car 2	53.486	53.486	0%	198.58	140.31	-29%	10.514.477	7.584.432	-3.018.844	-29%
		Car 3	87.374	87.374	0%	65.31	73.93	7%	6.955.589	6.459.797	-494.218	7%
		Car 4	387.759	387.759	0%	45.16	47.80	-3%	19.093.585	19.536.099	-523.557	-3%
		Car 5	171.270	171.270	0%	18.59	47.80	151%	3.183.282	0.187.581	5.004.299	151%
		Car 6	10.315	10.315	0%	25.97	47.80	84%	267.855	433.096	-225.245	84%
		Gasoline total	752.426	752.426	0%	76.40	73.89	4%	57.215.533	54.598.501	2.616.612	4%
	Diesel Oil	pre-Cars	1.341	1.341	0%	311.73	284.66	-5%	417.947	364.246	-42.722	-5%
		Car 1	4.892	4.892	0%	298.92	267.28	-11%	1.482.284	1.387.643	-156.951	-11%
		Car 2	23.934	23.934	0%	408.71	320.45	-49%	9.734.484	5.276.480	4.458.004	-49%
		Car 3	82.749	82.749	0%	585.53	176.81	-69%	48.451.830	14.796.245	33.655.585	-69%
		Car 4	211.237	211.237	0%	297.27	151.77	-62%	83.917.680	32.059.973	51.857.706	-62%
		Car 5	285.011	285.011	0%	436.38	151.77	-65%	124.721.396	43.370.300	81.343.896	-65%
		Car 6	16.081	16.081	0%	259.34	151.77	-41%	4.170.580	2.440.686	-1.729.814	-41%
		Diesel oil total	626.045	626.045	0%	415.87	159.12	-62%	272.876.061	99.613.892	173.262.169	-62%
		Pkcs Total	1.338.571	1.338.571	0%	298.44	152.15	-53%	138.091.584	154.652.853	-175.478.269	-53%
	Gasoline	pre-Cars	986	986	0%	632.44	645.95	-2%	1463.683	1276.124	187.844	-2%
		Car 1	173	173	0%	968.27	989.98	-64%	150.074	53.575	96.499	-64%
		Car 2	748	748	0%	204.73	287.11	-21%	212.888	154.839	-58.829	-21%
		Car 3	771	771	0%	98.62	185.21	7%	75.982	81.070	-5.078	7%
		Car 4	1.087	1.087	0%	43.47	50.15	15%	81.139	83.618	-2.479	15%
		Car 5	1.374	1.374	0%	17.11	50.15	183%	23.517	68.918	-45.401	183%
		Car 6	17	17	0%	18.06	50.15	179%	212	670	-657	179%
		Gasoline total	5.845	5.845	0%	598.34	176.49	-7%	1.112.584	1.031.852	88.732	-7%
1.A.3.b.i. - Light Duty Vehicles (LDVs)	Gasoline	pre-Cars	2.537	2.537	0%	428.16	386.79	-21%	1.985.919	1.76.259	-257.659	-21%
		Car 1	2.588	2.588	0%	393.82	276.25	-40%	987.136	639.898	-347.328	-40%
		Car 2	6.087	6.087	0%	338.91	133.25	-42%	1.385.995	1.180.889	-205.126	-42%
		Car 3	18.220	18.220	0%	571.75	150.58	-74%	10.417.076	2.742.656	7.674.828	-74%
		Car 4	52.361	52.361	0%	498.70	91.69	-82%	26.164.486	4.703.746	21.394.748	-82%
		Car 5	46.749	46.749	0%	438.44	91.69	-79%	20.696.234	4.258.626	16.237.709	-79%
	Diesel Oil	pre-Cars	187	187	0%	151.18	91.69	-40%	29.829	17.974	-11.855	-40%
		Car 1	187	187	0%	151.18	91.69	-40%	29.829	17.974	-11.855	-40%
		Car 2	187	187	0%	151.18	91.69	-40%	29.829	17.974	-11.855	-40%
		Car 3	187	187	0%	151.18	91.69	-40%	29.829	17.974	-11.855	-40%
		Car 4	187	187	0%	151.18	91.69	-40%	29.829	17.974	-11.855	-40%
		Car 5	187	187	0%	151.18	91.69	-40%	29.829	17.974	-11.855	-40%
		Diesel oil total	187.528	187.528	0%	415.56	170.94	-77%	61.146.575	14.267.237	46.879.338	-77%
		LDVs Total	134.423	134.423	0%	463.56	153.81	-75%	62.299.160	15.298.849	46.998.311	-75%
1.A.3.b.ii. - Heavy Duty Vehicles (HDVs)	Gasoline	pre-Cars	984	984	0%	1099.48	1919.23	-5%	1.062.384	1.062.921	-48.443	-5%
		Car 1	837	837	0%	728.12	130.99	3%	659.232	628.359	18.127	3%
		Car 2	5.586	5.586	0%	704.30	643.67	-9%	4.284.320	3.683.441	-598.887	-9%
		Car 3	11.221	11.221	0%	621.20	458.38	-21%	7.082.740	5.143.628	-1.939.228	-21%
		Car 4	4.270	4.270	0%	461.10	361.79	-24%	1.972.610	1.584.978	-467.632	-24%
		Car 5	22.042	22.042	0%	368.55	183.99	-49%	7.726.921	4.065.632	-3.671.389	-49%
	Diesel Oil	pre-Cars	4.182	4.182	0%	42.78	183.99	330%	178.913	789.476	-610.563	330%
		Car 1	4.182	4.182	0%	42.78	183.99	330%	178.913	789.476	-610.563	330%
		Car 2	4.182	4.182	0%	42.78	183.99	330%	178.913	789.476	-610.563	330%
		Car 3	4.182	4.182	0%	42.78	183.99	330%	178.913	789.476	-610.563	330%
		Car 4	4.182	4.182	0%	42.78	183.99	330%	178.913	789.476	-610.563	330%
		Car 5	4.182	4.182	0%	42.78	183.99	330%	178.913	789.476	-610.563	330%
		Diesel oil total	49.143	49.143	0%	468.37	339.99	-27%	23.017.115	16.788.234	6.228.881	-27%
		Trucks Total	572.754	572.754	0%	314.85	196.65	-38%	179.874.133	112.285.562	67.588.571	-38%
1.A.3.b.iii. - Motorised Two-Wheelers (MTWs)	Gasoline	pre-Cars	6.185	6.185	0%	122.85	158.64	29%	795.185	974.388	-218.182	29%
		Car 1	3.037	3.037	0%	124.71	174.84	40%	478.514	670.859	-192.346	40%
		Car 2	3.365	3.365	0%	128.94	186.25	52%	433.874	680.370	-246.504	52%
		Car 3	5.385	5.385	0%	38.53	186.25	386%	299.722	1.041.189	-821.467	386%
		Car 4	0	0	0%	0	0	0%	0	0	0	0%
		Car 5	0	0	0%	0	0	0%	0	0	0	0%
		MTWs Total	18.673	18.673	0%	108.59	179.94	78%	1.878.294	3.386.734	-1.508.439	78%
		1.A.3.b. - Road Transport	2.153.563	2.153.563	0%	277.27	140.35	-49%	597.120.297	362.252.271	234.868.025	-49%

Adjustment details for 2025													
NFR Code	Fuel	Activity Data			Implied Emission Factor			NO _x Emissions					
		current	adjusted	difference	current	adjusted	difference	current	adjusted	adjustment	difference		
		in [T]	in [T]	in [%]	in [g/t]	in [g/t]	in [%]	in [kg]	in [kg]	in [kg]	in [%]		
1.A.3.a.i. - Passenger Cars	Gasoline	pre-Cars	11.380	11.380	0%	833.37	844.11	-14%	7.266.112	6.191.842	-1.074.168	-14%	
		Car 1	34.112	34.112	0%	371.34	345.71	-34%	8.963.681	5.924.674	-3.029.228	-34%	
		Car 2	42.925	42.925	0%	297.78	142.69	-32%	8.918.785	6.099.659	-2.819.648	-32%	
		Car 3	72.871	72.871	0%	73.86	74.74	1%	5.381.361	5.448.237	-64.897	1%	
		Car 4	363.474	363.474	0%	52.36	49.62	-6%	18.485.637	17.326.221	-1.159.416	-6%	
		Car 5	180.783	180.783	0%	19.11	49.62	157%	3.454.481	0.881.456	5.406.375	157%	
		Car 6	29.612	29.612	0%	25.70	49.62	84%	790.781	1.451.433	-658.752	84%	
		Gasoline total	715.156	715.156	0%	76.38	71.73	4%	53.196.787	51.280.983	1.899.805	4%	
	Diesel Oil	pre-Cars	1.282	1.282	0%	317.31	284.66	-5%	367.917	339.733	-28.184	-5%	
		Car 1	4.279	4.279	0%	298.14	267.84	-9%	1.261.930	1.129.989	-132.821	-9%	
		Car 2	19.689	19.689	0%	407.80	320.36	-49%	8.913.687	4.338.719	4.574.968	-49%	
		Car 3	71.044	71.044	0%	595.91	179.64	-70%	42.271.648	12.719.962	29.551.686	-70%	
		Car 4	182.410	182.410	0%	401.42	154.67	-62%	77.237.655	29.644.450	47.593.206	-62%	
		Car 5	364.346	364.346	0%	434.67	154.67	-65%	132.290.433	46.090.424	86.400.959	-65%	
		Car 6	62.576	62.576	0%	259.76	154.67	-41%	13.657.082	0.180.384	13.476.698	-41%	
		Diesel oil total	645.565	645.565	0%	426.19	159.88	-63%	275.138.233	183.163.591	91.964.732	-63%	
		Pkcs Total	1.368.721	1.368.721	0%	245.26	153.52	-53%	138.307.020	154.444.484	-173.856.536	-53%	
1.A.3.b.i. - Heavy Duty Vehicles (HDVs)	Gasoline	pre-Cars	679	679	0%	664.37	645.95	1%	575.360	561.877	-13.483	1%	
		Car 1	150	150	0%	895.63	311.93	-65%	134.523	46.851	87.672	-65%	
		Car 2	629	629	0%	298.27	212.94	-29%	187.533	133.879	-53.654	-29%	
		Car 3	781	781	0%	105.50	186.62	3%	73.969	76.155	-2.186	3%	
		Car 4	1.720	1.720	0%	47.06	51.30	9%	80.950	80.240	7.290	9%	
		Car 5	1.620	1.620	0%	18.41	51.30	179%	29.912	83.086	-53.274	179%	
		Car 6	94	94	0%	18.71	51.30	174%	1.752	4.884	-3.132	174%	
		Gasoline total	5.793	5.793	0%	597.57	172.88	-8%	1.083.507	1.080.999	25.508	-8%	
	Diesel Oil	pre-Cars	2.323	2.323	0%	418.91	386.79	-26%	966.185	712.531	253.654	-26%	
1.A.3.a.ii. - Heavy Duty Vehicles (HDVs)	Gasoline	pre-Cars	2.186	2.186	0%	391.47	215.25	-45%	824.270	453.227	371.043	-45%	
		Car 1	5.025	5.025	0%	324.81	193.29	-40%	632.296	311.296	321.000	-40%	
		Car 2	15.112	15.112	0%	250.63	150.67	-24%	1.924.414	823.365	1.099.049	-24%	
		Car 3	47.480	47.480	0%	50.73	91.76	-82%	23.782.392	6.430.296	17.352.096	-82%	
		Car 4	62.146	62.146	0%	436.13	91.76	-79%	27.090.214	6.080.295	21.009.919	-79%	
		Car 5	635	635	0%	154.91	91.76	-40%	87.768	62.230	25.538	-40%	
		Diesel oil total	135.366	135.366	0%	408.35	187.96	-77%	63.565.843	14.681.490	48.884.353	-77%	
		LDVs Total	141.098	141.098	0%	476.76	170.62	-66%	64.589.370	15.688.490	48.888.881	-66%	
	1.A.3.b.ii. - Heavy Duty Vehicles (HDVs)	Diesel Oil	pre-Cars	979	979	0%	1070.34	1019.23	-5%	1.048.372	990.256	-58.116	-5%
			Car 1	747	747	0%	738.26	571.91	-3%	547.471	581.836	-18.365	3%
			Car 2	5.211	5.211	0%	767.42	594.45	-4%	4.103.687	3.359.648	744.039	-4%
			Car 3	11.282	11.282	0%	633.90	458.07	-30%	7.141.732	2.174.909	4.966.823	-30%
			Car 4	4.586	4.586	0%	468.70	351.99	-30%	2.154.006	1.614.177	539.829	-30%
			Car 5	26.257	26.257	0%	318.77	184.59	-49%	8.737.680	4.477.641	4.260.037	-49%
			Car 6	5.224	5.224	0%	63.13	184.59	247%	277.542	964.226	-686.684	247%
			Buses Total	52.287	52.287	0%	438.96	327.99	-29%	23.997.871	17.149.448	6.848.319	-29%
		1.A.3.b.iii. - Heavy Duty Vehicles (HDVs)	Diesel Oil	pre-Cars	4.319	4.319	0%	1034.69	717.35	-29%	4.488.571	3.184.420	1.294.143
Car 1	11.883			11.883	0%	748.71	553.48	-40%	3.387.291	1.625.551	1.761.740	-40%	
Car 2	11.082			11.082	0%	817.36	588.94	-30%	3.072.940	2.643.600	429.340	-30%	
Car 3	43.481			43.481	0%	765.42	561.65	-42%	27.480.779	16.724.421	10.756.358	-42%	
Car 4	39.233			39.233	0%	356.86	283.72	-30%	11.572.860	6.294.190	5.278.670	-30%	
Car 5	308.736			308.736	0%	264.17	153.49	-46%	63.413.973	50.656.436	12.757.537	-46%	
Car 6	179.787			179.787	0%	67.49	153.49	167%	9.913.364	26.282.637	-16.369.264	167%	
Trucks Total	589.431			589.431	0%	268.69	153.49	-36%	157.189.675	110.520.783	46.668.893	-36%	
1.A.3.b.iv. - Miscellaneous Two-Wheelers (MOWs)	Gasoline		pre-Cars	5.744	5.744	0%	125.41	157.28	25%	720.441	963.470	-183.028	25%
		Car 1	3.517	3.517	0%	127.40	176.22	39%	444.086	670.819	-171.733	39%	
		Car 2	3.382	3.382	0%	127.35	196.53	55%	430.660	666.965	-236.306	55%	
		Car 3	5.911	5.911	0%	41.29	196.53	390%	234.136	1.641.416	-1.407.280	390%	
		Car 4	4	0	0%	16.96		-180%	69	888	-735	169%	
		Car 5	0	0	0%			0%	0	0	0	0%	
		MOWs Total	18.499	18.499	0%	98.52	180.65	80%	1.833.382	5.334.472	1.501.890	80%	
		1.A.3.b. Road Transport	Total	2.161.502	2.161.502	0%	265.42	129.45	-80%	575.921.265	381.697.596	194.223.669	-80%

Adjustment details for 2026												
NFR Code	Fuel	Activity Data			Implied Emission Factor			NO _x Emissions				
		current	adjusted	difference	current	adjusted	difference	current	adjusted	adjustment	difference	
1.A.3.a.i. Passenger Cars												
	pre-Cars	15 782	15 782	0%	636.75	648.11	-14%	7 670 916	6 410 967	-1 657 867	-14%	
	Car 1	20 270	20 270	0%	372.25	268.68	-30%	7 545 483	4 986 888	-2 548 595	-34%	
	Car 2	36 062	36 062	0%	212.73	143.11	-33%	7 671 581	5 180 897	-2 516 693	-33%	
	Car 3	83 039	83 039	0%	76.17	75.50	-1%	4 881 482	4 759 259	-42 233	-1%	
	Car 4	334 413	334 413	0%	53.74	50.17	-7%	17 363 364	16 777 445	-1 192 468	-7%	
	Car 5	183 374	183 374	0%	19.09	50.17	163%	3 580 745	9 189 834	5 609 089	163%	
	Car 6	65 332	65 332	0%	25.67	50.17	89%	1 768 917	3 327 855	1 558 938	89%	
	Gasoline total	715 272	715 272	0%	78.93	70.65	-9%	58 736 267	50 535 049	-8 201 218	-9%	
	pre-Cars	1 280	1 280	0%	368.76	264.56	-28%	365 262	239 173	-126 089	-31%	
	Car 1	3 749	3 749	0%	298.36	269.66	-9%	1 122 449	1 011 626	-111 425	-10%	
	Car 2	16 584	16 584	0%	407.19	221.43	-46%	6 720 132	3 663 964	-3 056 168	-46%	
	Car 3	81 398	81 398	0%	802.50	179.24	-78%	36 981 999	11 085 409	-25 896 590	-70%	
	Car 4	175 040	175 040	0%	405.76	156.24	-61%	71 362 220	27 474 086	-43 878 214	-61%	
	Car 5	299 054	299 054	0%	433.34	156.24	-64%	130 032 044	46 019 229	-83 212 815	-64%	
	Car 6	116 034	116 034	0%	268.75	156.24	-41%	30 427 555	10 232 785	-19 194 770	-60%	
	Diesel oil total	625 119	625 119	0%	418.36	160.76	-61%	277 947 660	188 535 230	-89 408 430	-61%	
	Pkcs Total	1 386 391	1 386 391	0%	235.75	154.41	-35%	527 778 627	199 070 280	-328 708 347	-59%	
	pre-Cars	910	910	0%	602.79	645.35	-11%	593 186	547 543	-45 643	-8%	
	Car 1	136	136	0%	908.31	312.78	-66%	122 126	42 425	-79 708	-66%	
	Car 2	540	540	0%	308.39	217.84	-29%	162 311	117 737	-44 574	-27%	
	Car 3	650	650	0%	108.43	111.57	3%	70 432	72 731	2 299	3%	
	Car 4	1 684	1 684	0%	43.06	52.36	21%	78 714	84 003	5 289	7%	
	Car 5	1 724	1 724	0%	19.82	52.36	164%	34 157	80 258	46 108	164%	
	Car 6	363	363	0%	19.85	52.36	181%	6 764	18 992	12 228	181%	
	Gasoline total	5 506	5 506	0%	588.27	171.66	-70%	1 068 292	1 013 678	-54 614	-5%	
	pre-Cars	2 189	2 189	0%	414.81	386.73	-7%	899 549	885 433	-14 116	-2%	
	Car 1	1 780	1 780	0%	391.89	276.25	-29%	780 189	585 371	-194 798	-24%	
	Car 2	4 223	4 223	0%	323.43	153.31	-53%	1 365 594	676 452	-689 142	-50%	
	Car 3	13 582	13 582	0%	588.91	150.77	-74%	8 064 323	2 040 233	-6 024 090	-74%	
	Car 4	43 141	43 141	0%	504.48	32.40	-93%	21 783 989	3 986 141	-17 777 788	-82%	
	Car 5	74 231	74 231	0%	434.16	32.40	-92%	32 223 283	6 658 780	-25 564 503	-79%	
	Car 6	4 921	4 921	0%	113.49	32.40	-71%	755 285	454 676	-300 609	-40%	
	Diesel oil total	148 068	148 068	0%	456.12	185.62	-59%	65 712 732	15 256 007	-50 456 726	-77%	
	LDVs Total	149 594	149 594	0%	445.23	188.29	-57%	66 781 025	16 229 684	-50 551 348	-76%	
	pre-Cars	891	891	0%	1076.81	1319.23	-24%	964 197	988 234	24 037	3%	
	Car 1	583	583	0%	731.36	732.67	0%	433 675	446 236	12 568	3%	
	Car 2	4 375	4 375	0%	788.25	645.03	-18%	3 440 614	2 822 621	-617 993	-18%	
	Car 3	10 333	10 333	0%	632.87	458.91	-27%	6 530 364	4 741 827	-1 788 536	-27%	
	Car 4	4 449	4 449	0%	475.90	382.29	-20%	2 117 219	1 586 881	-530 338	-25%	
	Car 5	34 380	34 380	0%	366.36	185.22	-49%	8 935 974	4 517 517	-4 418 457	-49%	
	Car 6	9 126	9 126	0%	62.79	185.22	196%	573 066	1 680 431	1 107 365	196%	
	HDVs Total	54 157	54 157	0%	404.73	388.24	-2%	23 082 189	16 885 117	-6 197 072	-27%	
	pre-Cars	3 933	3 933	0%	1034.81	737.35	-29%	4 087 249	2 980 379	-1 106 870	-29%	
	Car 1	1 555	1 555	0%	748.16	587.92	-22%	1 163 482	789 813	-373 669	-32%	
	Car 2	8 876	8 876	0%	817.75	585.52	-28%	7 258 046	4 486 626	-2 771 419	-38%	
	Car 3	34 167	34 167	0%	638.91	588.04	-9%	21 553 280	12 251 155	-9 302 125	-43%	
	Car 4	34 287	34 287	0%	396.94	281.86	-29%	9 640 384	6 885 621	-2 754 803	-29%	
	Car 5	269 735	269 735	0%	287.22	153.60	-46%	74 680 233	39 976 610	-34 703 623	-46%	
	Car 6	261 480	261 480	0%	61.77	153.60	149%	16 149 288	40 284 036	24 094 748	149%	
	Trucks Total	584 013	584 013	0%	226.31	180.97	-20%	134 431 899	101 496 262	-32 935 637	-24%	
	pre-Cars	5 543	5 543	0%	125.59	155.78	24%	696 072	883 289	187 218	24%	
	Car 1	3 360	3 360	0%	127.11	177.29	39%	427 113	585 796	158 682	39%	
	Car 2	3 375	3 375	0%	125.94	187.68	50%	421 961	687 078	265 127	50%	
	Car 3	6 443	6 443	0%	48.36	187.68	381%	209 627	1 273 571	1 063 943	381%	
	Car 4	65	65	0%	17.47	187.68	1031%	1 134	12 632	11 498	1031%	
	Car 5	0	0	0%	0	0	0%	0	0	0	0%	
	MOWs Total	16 185	16 185	0%	96.14	181.68	89%	1 885 897	3 452 476	1 566 579	89%	
	pre-Cars	2 267 339	2 267 339	0%	258.89	137.22	-45%	553 799 598	362 981 620	-190 817 978	-45%	

Adjustment details for 2018													
NFR Code	Fuel	Activity Data				Implied Emission Factor				NO _x Emissions			
		current	adjusted	difference	in [%]	current	adjusted	difference	in [%]	current	adjusted	adjustment	difference
1.A.3.a.i - Passenger Cars	Gasoline	pre-Cars	12 219	12 219	0%	637.58	644.11	-10%	7 770 965	6 648 721	-1 122 234	-15%	
		Car 1	14 362	14 362	0%	374.24	341.68	-9%	5 371 161	3 448 643	-1 922 518	-36%	
		Car 2	34 285	34 285	0%	221.87	111.68	-50%	5 360 977	2 688 163	-2 672 814	-50%	
		Car 3	43 642	43 642	0%	88.16	76.96	-13%	3 487 781	3 388 617	-99 164	-3%	
		Car 4	278 738	278 738	0%	55.98	52.30	-7%	15 683 488	14 576 755	-1 106 733	-7%	
		Car 5	186 830	186 830	0%	19.35	52.30	170%	3 228 282	8 725 688	5 497 406	170%	
		Car 6	189 041	189 041	0%	6.00	52.30	788%	4 190 422	6 718 250	2 527 828	60%	
		Gasoline total	689 027	689 027	0%	64.42	68.36	-6%	45 032 296	47 186 817	2 154 521	5%	
	Diesel Oil	pre-Cars	1 363	1 363	0%	303.16	264.96	-13%	171 676	146 173	-25 503	-15%	
		Car 1	2 949	2 949	0%	299.17	272.65	-9%	962 432	775 166	-187 266	-20%	
		Car 2	10 784	10 784	0%	407.20	222.87	-45%	4 391 383	2 483 536	-1 907 848	-45%	
		Car 3	40 786	40 786	0%	812.49	180.15	-78%	24 932 029	7 333 241	-17 598 788	-71%	
		Car 4	130 534	130 534	0%	414.71	180.40	-56%	54 133 837	20 937 329	-33 196 508	-61%	
		Car 5	251 212	251 212	0%	416.25	180.40	-56%	104 585 786	40 293 731	-64 292 055	-61%	
		Car 6	228 685	228 685	0%	254.87	180.40	-30%	58 284 140	35 680 446	-22 603 694	-39%	
		Diesel oil total	646 074	646 074	0%	375.66	163.38	-56%	247 596 063	188 748 684	-58 847 379	-24%	
		Pkcs Total	1 363 181	1 363 181	0%	214.34	154.68	-28%	262 588 360	156 555 421	-106 032 939	-40%	
1.A.3.b.i - Light Duty Vehicles (LDVs)	Gasoline	pre-Cars	911	911	0%	944.51	645.95	-32%	596 851	582 662	-14 189	-2%	
		Car 1	188	188	0%	911.58	312.78	-66%	98 528	33 895	-64 633	-66%	
		Car 2	377	377	0%	303.84	224.45	-26%	114 682	84 713	-29 969	-26%	
		Car 3	511	511	0%	111.92	116.84	5%	57 282	60 739	3 457	6%	
		Car 4	1 275	1 275	0%	52.02	54.36	4%	65 290	69 278	3 988	6%	
		Car 5	1 483	1 483	0%	23.70	54.36	129%	35 160	80 626	45 466	129%	
		Car 6	1 643	1 643	0%	19.18	54.36	182%	39 550	89 326	49 776	182%	
		Gasoline total	6 315	6 315	0%	154.22	160.11	4%	999 199	1 011 138	11 939	1%	
	Diesel Oil	pre-Cars	1 872	1 872	0%	411.51	386.79	-6%	771 337	674 742	-96 595	-13%	
		Car 1	1 285	1 285	0%	389.84	276.28	-29%	483 128	272 286	-210 842	-44%	
		Car 2	2 942	2 942	0%	318.56	193.88	-39%	965 389	556 789	-408 600	-42%	
		Car 3	9 383	9 383	0%	598.10	150.74	-75%	5 689 152	1 411 299	-4 277 853	-75%	
		Car 4	33 232	33 232	0%	508.42	93.81	-82%	16 929 185	3 117 457	-13 811 728	-82%	
		Car 5	66 283	66 283	0%	432.92	93.81	-78%	28 684 080	6 217 860	-22 466 220	-78%	
		Car 6	39 482	39 482	0%	158.79	93.81	-41%	5 941 615	3 686 228	-2 255 387	-38%	
		Diesel oil total	154 259	154 259	0%	384.71	182.69	-53%	59 344 525	15 880 316	-43 464 210	-73%	
		LDVs Total	180 574	180 574	0%	375.80	184.94	-52%	69 343 125	16 851 449	-52 491 676	-76%	
1.A.3.b.ii - Heavy Duty Vehicles (HDVs)	Diesel Oil	pre-Cars	547	547	0%	1078.16	1919.23	-45%	585 267	557 147	-28 120	-5%	
		Car 1	237	237	0%	732.78	132.57	-82%	173 676	178 368	4 692	3%	
		Car 2	2 270	2 270	0%	787.83	646.33	-18%	1 780 686	1 487 437	-293 249	-16%	
		Car 3	6 757	6 757	0%	638.89	459.32	-29%	4 262 734	3 183 482	-1 079 252	-25%	
		Car 4	3 043	3 043	0%	473.16	382.73	-19%	1 439 790	1 073 333	-366 457	-25%	
		Car 5	18 189	18 189	0%	362.42	186.37	-49%	6 463 265	3 376 016	-3 087 249	-48%	
		Car 6	20 670	20 670	0%	64.89	186.37	289%	1 176 026	3 682 314	2 506 288	214%	
		Diesels Total	51 634	51 634	0%	309.75	283.53	-9%	15 993 546	13 687 186	-2 306 360	-15%	
	Trucks & Lorries	pre-Cars	3 262	3 262	0%	1034.82	737.35	-29%	3 375 359	2 485 071	-890 288	-26%	
		Car 1	1 094	1 094	0%	747.82	488.39	-35%	918 052	512 378	-405 674	-44%	
		Car 2	5 544	5 544	0%	817.44	581.68	-29%	4 632 180	2 781 516	-1 850 664	-40%	
		Car 3	20 583	20 583	0%	629.54	563.68	-11%	12 367 751	7 277 279	-5 090 472	-41%	
		Car 4	15 912	15 912	0%	358.89	276.23	-23%	6 334 421	4 386 424	-1 947 997	-31%	
		Car 5	154 983	154 983	0%	292.40	154.68	-47%	45 964 153	24 283 389	-21 680 764	-47%	
		Car 6	381 799	381 799	0%	68.78	154.68	125%	26 251 482	69 665 886	43 414 404	165%	
		Trucks Total	585 186	585 186	0%	515.18	172.19	-66%	188 173 537	180 710 889	-7 462 648	-4%	
	Motorised Two-Wheelers (M2Ws)	pre-Cars	4 940	4 940	0%	128.95	188.61	46%	622 666	783 451	160 785	26%	
Car 1		2 966	2 966	0%	128.14	177.79	41%	374 114	527 294	153 180	41%		
Car 2		3 221	3 221	0%	128.33	188.64	46%	387 596	639 833	252 237	65%		
Car 3		6 241	6 241	0%	48.24	188.64	384%	251 126	1 239 688	988 562	394%		
Car 4		1 130	1 130	0%	58.41	188.64	324%	23 066	224 682	201 616	874%		
Car 5		0	0	0%	0.00	188.64	0%	0	0	0	0%		
M2Ws Total		18 497	18 497	0%	85.86	188.61	198%	1 658 558	3 454 167	1 795 609	108%		
1.A.3.b - Road Transport	Total	2 180 983	2 180 983	0%	215.85	133.49	-38%	478 758 286	291 129 652	-187 628 634	-39%		

Adjustment details for 2019													
NFR Code	Fuel	Activity Data				Implied Emission Factor				NO _x Emissions			
		current	adjusted	difference	in [%]	current	adjusted	difference	in [%]	current	adjusted	adjustment	difference

	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Adjustment 2014 (accepted)	-105.6	-101.3	-95.7	-91.7						
Adjustment 2015 (accepted)	-100.3	-95.5	-89.9	-85.1						
Adjustment 2016 (accepted)	-151.3	-146.9	-145.1	-142.5	-128.1					
Adjustment 2017 (accepted)	-151.3	-146.8	-145.0	-142.4	-127.2	-100.9				
Adjustment 2018 (accepted)	-172.3	-174.5	-177.4	-180.4	-171.5	-148.9	-123.2			
Adjustment 2019 (accepted)	-172.3	-174.5	-177.4	-180.3	-171.4	-148.8	-123.3	93.7		
Adjustment 2020 (accepted)	-297.8	-302.3	-301.3	-306.1	-294.5	-269.0	-244.3	-214.9	-174.6	
Adjustment 2021 (proposal)	-296.1	-300.7	-300.4	-305.2	-294.9	-274.9	-250.9	-221.1	-179.6	-144.8
Change against Adjustment 2020	1.7	1.6	0.9	0.9	-0.4	-5.9	-6.6	-6.2	-5.0	

The noticeable differences between the 2017 and 2018 adjustment proposals resulted from an ad-hoc revision of the *Handbook Emission Factors for Road Transport* (HBEFA, version 3.3) in the aftermath of the so-called "Diesel-gate".⁸⁾

The even bigger changes between adjustment 2019 and adjustment proposal 2020 result from an additional rather fundamental revision of the *Handbook Emission Factors for Road Transport* now available in version 4.1 >⁹⁾ strongly effecting the TREMOD model underlying Germany's emission reporting for road transport and hence any adjustments of NO_x emissions.

With such major model revision between submissions 2019 and 2020, the current adjustment proposal differs significantly from the adjustment applied for and accepted in 2019.

Adjustment description as provided in IIRs 2014 and 2015:

[image Description%20Adjustment%20DE-A%20-%20NOx%20from%201.A.3.b%20Road%20transport%20-%20IIRs%202014%20%26%202015.pdf](#)

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