

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

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

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 TREMOD, 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 2002 ⁶⁾, 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.

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cf. Also related columns in the Excel table “Annex_VII_Adjustments_summary_template_extended2_V2_Aprill15.xlsx” for road transport).

Table: Aggregated impact of adjustments on NO_x emissions from NFR 1.A.3.b

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Table 1: Resulting adjustment proposal 2020

> for year	= 2010	= 2011	= 2012	= 2013	= 2014	= 2015	= 2016	= 2017	= 2018									
~ proposed adjustment	~##red	-297.8##	~##red	-302.3##	~##red	-301.3##	~##red	-306.1##	~##red	-294.5##	~##red	-269.0##	~##red	-244.3##	~##red	-214.9##	~##red	-174.6##

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

NFR 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	84.99	-13%	77.64.842	67.690.906	9.993.935	-13%
1.A.3.b.i	diesel oil		629.380	629.380	0%	429.45	160.51	-63%	227.341.096	84.970.461	142.370.635	-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	gasoline		48.844	48.844	0%	823.00	482.55	-42%	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	64.851.951	8.333.900	-11%
1.A.3.b.i	diesel oil		553.564	553.564	0%	434.12	159.22	-63%	240.313.791	88.138.909	152.174.832	-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	gasoline		47.355	47.355	0%	592.65	448.99	-24%	28.071.221	21.268.323	6.804.898	-24%
1.A.3.b.iii	diesel oil		563.891	563.891	0%	410.38	244.97	-40%	231.410.271	138.135.342	93.273.929	-40%
1.A.3.b.iv	gasoline		19.289	19.289	0%	110.79	171.60	54%	2.137.002	3.299.162	-1.162.160	54%
1.A.3.b TOTAL	2011		2.106.883	2.106.883	0%			0%	632.365.736	331.625.695	300.740.041	-48%
1.A.3.b.i	gasoline		750.957	750.957	0%	85.73	78.00	-9%	64.379.994	58.677.229	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%	55.106.362	13.741.354	41.365.028	-75%
1.A.3.b.iii	gasoline		50.902	50.902	0%	533.22	384.33	-28%	27.141.913	19.563.200	7.578.704	-28%
1.A.3.b.iii	diesel oil		589.585	589.585	0%	381.33	224.00	-41%	234.829.180	132.064.753	102.764.428	-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	300.429.094	-49%
1.A.3.b.i	gasoline		749.114	749.114	0%	89.35	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%	257.633.728	93.499.010	164.134.718	-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		118.777	118.777	0%	480.60	114.93	-76%	57.083.533	13.690.488	43.433.045	-76%
1.A.3.b.iii	gasoline		51.716	51.716	0%	509.64	360.06	-29%	26.350.969	18.620.843	7.730.126	-29%
1.A.3.b.iii	diesel oil		600.139	600.139	0%	353.06	287.93	-19%	211.887.531	124.788.469	87.099.062	-41%
1.A.3.b.iv	gasoline		18.229	18.229	0%	104.34	175.38	68%	1.902.688	3.197.038	-1.294.351	68%
1.A.3.b TOTAL	2013		2.132.683	2.132.683	0%			0%	616.079.063	316.854.371	300.224.692	-50%
1.A.3.b.i	gasoline		752.526	752.526	0%	76.03	73.09	-4%	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	95.613.892	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	gasoline		49.143	49.143	0%	468.37	339.99	-27%	23.017.115	16.708.234	6.308.881	-27%
1.A.3.b.iii	diesel oil		572.754	572.754	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	3.345.794	-1.467.499	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		645.555	645.555	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		135.386	135.386	0%	489.35	187.96	-77%	63.605.443	14.607.490	48.997.953	-77%
1.A.3.b.iii	gasoline		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%	157.189.675	110.620.703	46.568.973	-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		2.161.376	2.161.376	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	76.65	-4%	50.736.367	50.535.049	201.318	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%	180.27	171.05	-5%	1.068.292	1.013.678	54.614	-5%
1.A.3.b.ii	diesel oil		144.068	144.068	0%	456.12	185.62	-77%	65.712.732	15.216.007	50.496.725	-77%
1.A.3.b.iii	gasoline		54.157	54.157	0%	424.73	388.24	-7%	23.002.109	16.683.117	6.308.992	-27%
1.A.3.b.iii	diesel oil		594.013	594.013	0%	226.31	180.97	-20%	134.431.699	107.496.262	26.935.437	-20%
1.A.3.b.iv	gasoline		18.785	18.785	0%	95.14	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%	553.790.558	302.901.820	250.897.738	-45%
1.A.3.b.i	gasoline		724.571	724.571	0%	67.66	69.88	3%	49.026.874	50.634.714	-1.607.840	3%
1.A.3.b.i	diesel oil		696.592	696.592	0%	390.65	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		153.284	153.284	0%	424.66	183.89	-76%	65.093.930	15.925.216	49.168.714	-76%
1.A.3.b.iii	gasoline		53.382	53.382	0%	379.80	286.71	-23%	19.793.901	15.304.828	4.489.073	-23%
1.A.3.b.iii	diesel oil		596.263	596.263	0%	195.02	175.92	-10%	116.671.141	106.246.508	11.424.633	-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	304.469.986	221.079.424	-42%
1.A.3.b.i	gasoline		699.027	699.027	0%	64.42	68.36	6%	45.032.566	47.786.817	-2.753.820	6%
1.A.3.b.i	diesel oil		666.074	666.074	0%	371.66	163.30	-56%	247.556.063	108.768.604	138.787.459	-56%
1.A.3.b.ii	gasoline		6.315	6.315	0%	158.22	160.11	1%	999.159	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	gasoline		51.634	51.634	0%	309.75	263.53	-15%	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%	180.173.337	180.710.869	-537.532	1%
1.A.3.b.iv	gasoline		18.497	18.497	0%	89.66	184.61	106%	1.658.588	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		663.841	663.841	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	1.034.150	-57.931	5%
1.A.3.b.ii	diesel oil		159.183	159.183	0%	347.42	181.90	-71%	55.303.535	16.221.445	39.082.090	-71%
1.A.3.b.iii	gasoline		52.939	52.939	0%	274.41	247.81	-10%	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%	91.380.760	106.809.376	-15.428.616	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		2.202.899	2.202.899	0%			0%	437.268.744	292.497.697	144.771.048	-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	6,996,917	-958,143	-12%	
		Car 1	36,541	36,541	0%	338.50	297.71	-10%	25,915,925	19,189,262	-7,716,663	-30%	
		Car 2	96,425	96,425	0%	172.95	135.03	-22%	16,580,020	13,020,026	-3,559,994	-22%	
		Car 3	133,139	133,139	0%	58.51	70.18	20%	7,790,384	9,343,433	1,553,029	20%	
		Car 4	444,991	444,991	0%	42.27	42.19	0%	18,911,389	18,773,529	-137,859	0%	
		Car 5	31,234	31,234	0%	18.61	42.19	127%	581,142	1,317,737	736,595	127%	
	Gasoline total	795,957	795,957	0%	92.55	84.39	-9%	77,646,642	67,656,596	-9,990,045	-13%		
	Diesel Oil	pre-Cars	1,915	1,915	0%	318.13	264.95	-17%	583,760	527,256	-56,504	-10%	
		Car 1	10,339	10,339	0%	294.42	245.17	-17%	3,044,428	2,741,387	-303,041	-10%	
		Car 2	50,088	50,088	0%	406.90	279.19	-40%	20,372,795	10,974,210	-9,398,584	-46%	
Car 3		134,025	134,025	0%	542.94	170.54	-69%	72,645,173	23,929,276	-48,715,897	-67%		
1.A.3.b.i. Light Duty Vehicles (LDVs)	Gasoline	Car 4	279,154	279,154	0%	304.37	140.58	-53%	107,299,180	39,243,811	-68,055,369	-63%	
		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%	
		Gasoline total	529,380	529,380	0%	429.45	160.55	-63%	227,347,096	84,970,461	-142,376,635	-63%	
		PHEV total	1,325,337	1,325,337	0%	238.12	155.14	-36%	364,985,938	152,627,367	-212,358,571	-58%	
		Diesel Oil	pre-Cars	1,249	1,249	0%	627.99	540.95	-10%	783,320	696,871	-86,449	-11%
	Car 1		3,917	3,917	0%	361.95	297.39	-18%	368,969	186,620	-182,349	-50%	
	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	30.63	-63%	70,631	77,625	6,994	10%	
	1.A.3.b.ii. Heavy Duty Vehicles (HDVs)	Diesel Oil	Car 4	2,420	2,420	0%	36.32	44.90	24%	87,987	188,679	100,692	114%
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			4,345	4,345	0%	255.87	254.75	-0%	1,478,832	1,358,128	-120,704	-8%	
LDVs Total			pre-Cars	4,876	4,876	0%	425.99	386.79	-9%	2,077,142	1,436,983	-640,159	-31%
			Car 1	9,989	9,989	0%	398.18	276.24	-30%	2,389,095	1,289,636	-1,099,459	-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%	17,655,883	5,085,760	-12,570,123	-72%	
1.A.3.b.iii. Heavy Duty Trucks & Lorries		Diesel Oil	Car 4	54,581	54,581	0%	491.42	80.69	-84%	26,021,036	4,940,722	-21,080,314	-81%
			Car 5	1,629	1,629	0%	427.50	80.69	-79%	696,296	144,434	-551,862	-79%
	Car 6		0	0	0%	151.73	80.69	-47%	7	4	-3	-43%	
	Diesel oil total		113,450	113,450	0%	476.34	134.94	-72%	54,043,533	15,351,584	-38,691,949	-72%	
	Trucks Total		pre-Cars	119,775	119,775	0%	464.70	139.18	-70%	55,658,966	16,688,913	-38,969,953	-70%
			Car 1	3,382	3,382	0%	1096.25	1028.78	-6%	3,674,087	3,432,644	-241,443	-7%
		Car 2	2,826	2,826	0%	749.41	732.14	-2%	2,117,871	2,125,595	7,723	0%	
		Car 3	10,122	10,122	0%	801.96	643.47	-20%	8,140,119	6,532,213	-1,607,906	-20%	
	1.A.3.b.iv. Motorised Two-Wheelers (MOWs)	Gasoline	Car 4	15,090	15,090	0%	633.22	437.25	-30%	10,065,776	7,289,299	-2,776,477	-28%
			Car 5	5,461	5,461	0%	448.63	351.65	-22%	2,650,016	1,921,527	-728,489	-28%
Car 6			10,326	10,326	0%	327.28	182.33	-44%	3,882,417	1,882,644	-1,999,773	-51%	
Car 6			0	0	0%	0	0	0%	0	0	0	0%	
Trucks Total			48,044	48,044	0%	623.80	482.55	-23%	29,931,266	23,183,732	-6,747,534	-23%	
Trucks Total			pre-Cars	10,185	10,185	0%	1040.16	787.37	-24%	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	38,508	38,508	0%	817.62	524.79	-35%	31,525,526	20,234,619	-11,290,907	-36%	
		Car 3	169,023	169,023	0%	626.28	274.48	-56%	161,136,182	59,617,271	-101,518,911	-63%	
1.A.3.b. Road Transport		Gasoline	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%	276.62	151.65	-45%	78,643,643	43,115,897	-35,527,746	-45%	
	Car 6		0	0	0%	0	0	0%	0	0	0	0%	
	MOWs Total		19,172	19,172	0%	113.68	168.43	48%	2,243,149	3,326,034	1,082,885	48%	
	Total		2,879,688	2,879,688	0%	218.62	168.23	-46%	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 [kg]	
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%	347.96	240.16	-31%	21,540,430	14,844,561	-6,695,870	-31%
		Car 2	87,083	87,083	0%	178.38	136.58	-24%	15,620,983	11,883,782	-3,737,201	-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%
	Gasoline total	794,688	794,688	0%	92.69	81.65	-12%	73,165,851	64,851,551	-8,314,300	-11%	
	Diesel Oil	pre-Cars	1,711	1,711	0%	318.80	264.95	-17%	511,883	453,197	-58,686	-11%
		Car 1	8,426	8,426	0%	297.32	245.17	-17%	2,585,115	2,239,987	-345,128	-13%
		Car 2	42,514	42,514	0%	407.93	299.27	-26%	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	-68%	
1.A.3.b.i. Heavy Duty Vehicles (HDVs)	Gasoline	Car 4	264,943	264,943	0%	388.88	143.48	-63%	162,917,881	30,889,755	-132,028,126	-81%
		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%
		PHEV Total	1,348,252	1,348,252	0%	232.52	153.47	-35%	313,499,642	152,990,590	-160,509,052	-51%
		pre-Cars	1,084	1,084	0%	626.25	540.95	-13%	682,074	598,373	-83,701	-12%
	Diesel Oil	Car 1	283	283	0%	818.74	584.47	-29%	243,289	86,158	-157,131	-65%
		Car 2	1,184	1,184	0%	268.66	191.68	-29%	310,529	223,189	-87,340	-28%
		Car 3	783	783	0%	85.97	35.39	-59%	67,320	74,782	7,462	11%
		Car 4	2,562	2,562	0%	37.38	46.51	24%	95,786	119,162	23,376	24%
1.A.3.b.ii. Light Duty Vehicles (LDVs)	Gasoline	Car 5	241	241	0%	15.13	46.51	180%	3,882	11,190	7,308	180%
		Car 6	0	0	0%	15.13	46.51	203%	1	2	1	203%
		Gasoline total	6,118	6,118	0%	229.35	186.57	-18%	1,483,081	1,254,776	-228,305	-15%
		pre-Cars	3,995	3,995	0%	425.99	386.79	-9%	1,988,280	1,225,682	-762,598	-38%
		Car 1	4,787	4,787	0%	398.71	276.24	-30%	1,984,260	1,030,426	-953,834	-48%
		Car 2	10,816	10,816	0%	336.90	153.18	-54%	3,644,582	2,091,063	-1,553,519	-43%
	Diesel Oil	Car 3	28,876	28,876	0%	541.53	150.54	-72%	15,037,249	4,345,870	-10,691,379	-71%
		Car 4	60,032	60,032	0%	493.82	89.26	-82%	30,629,914	5,429,611	-25,200,303	-82%
		Car 5	6,009	6,009	0%	448.96	89.26	-80%	2,930,198	584,364	-2,345,834	-80%
		Car 6	0	0	0%	154.21	89.26	-42%	14	8	-6	-42%
1.A.3.b.iii. Heavy Duty Vehicles (HDVs)	Diesel Oil	Diesel oil total	115,967	115,967	0%	485.55	126.99	-74%	58,848,598	14,788,142	-44,060,456	-74%
		LDVs total	122,085	122,085	0%	468.92	130.51	-72%	57,247,589	15,532,958	-41,714,631	-72%
		pre-Cars	2,620	2,620	0%	1062.63	1918.76	80%	2,836,189	2,671,331	-164,758	-6%
		Car 1	2,250	2,250	0%	752.91	751.49	0%	1,099,187	1,096,297	-2,810	0%
		Car 2	9,074	9,074	0%	804.17	547.36	-32%	7,287,125	5,537,689	-1,749,436	-23%
		Car 3	16,987	16,987	0%	573.46	417.38	-27%	9,425,090	6,669,064	-2,756,027	-29%
	Diesel Oil	Car 4	51,531	51,531	0%	448.88	351.61	-21%	2,363,338	1,885,374	-477,964	-20%
		Car 5	13,266	13,266	0%	336.60	182.62	-46%	6,569,052	2,446,399	-4,122,653	-63%
		Car 6	0	0	0%	0	0	0%	0	0	0	0%
		Buses Total	47,365	47,365	0%	592.65	448.99	-24%	20,911,221	17,256,323	-3,654,898	-18%
1.A.3.b.iv. Heavy Duty Vehicles (HDVs) & Buses	Diesel Oil	pre-Cars	8,044	8,044	0%	10,618.77	783.88	-26%	8,395,423	6,144,933	-2,250,491	-27%
		Car 1	4,384	4,384	0%	758.16	504.04	-33%	3,288,422	2,516,377	-772,044	-23%
		Car 2	29,277	29,277	0%	817.97	520.51	-36%	23,947,723	15,233,223	-8,714,500	-36%
		Car 3	52,121	52,121	0%	804.17	547.36	-32%	37,271,620	24,342,342	-12,929,278	-35%
		Car 4	68,430	68,430	0%	390.25	289.43	-30%	22,977,784	16,969,686	-6,008,098	-27%
		Car 5	342,175	342,175	0%	278.30	152.03	-45%	96,549,479	62,619,687	-33,929,792	-34%
	Diesel Oil	Car 6	0	0	0%	0	0	0%	0	0	0	0%
		Trucks Total	563,891	563,891	0%	418.38	244.29	-40%	231,631,271	136,136,342	-95,494,929	-40%
		pre-Cars	7,389	7,389	0%	102.58	150.34	22%	965,586	1,110,176	144,590	22%
		Car 1	4,085	4,085	0%	124.72	180.26	32%	599,299	880,547	281,248	32%
1.A.3.b.v. Motorized Two-Wheelers (M2Ws)	Gasoline	Car 2	3,544	3,544	0%	137.85	194.58	41%	448,552	680,633	232,081	41%
		Car 3	3,550	3,550	0%	39.55	194.58	382%	140,563	630,634	490,071	382%
		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	79,819	79,819	0%	118.75	171.64	54%	2,177,082	3,295,152	1,118,070	54%
		1.A.3.b. Road Transport	Total	2,160,883	2,160,883	0%	365.80	157.85	-46%	132,365,736	331,625,655	-200,748,881

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-Cars	11,581	11,581	0%	607.72	635.38	-52%	7,026,041	6,189,785	-836,256	-52%
		Car 1	47,487	47,487	0%	348.56	281.60	-31%	16,571,746	11,426,129	-5,145,617	-31%
		Car 2	72,781	72,781	0%	194.27	137.92	-29%	13,487,749	10,035,380	-3,452,369	-26%
		Car 3	189,443	189,443	0%	63.89	72.62	14%	6,927,963	7,875,172	947,209	14%
		Car 4	489,541	489,541	0%	45.39	45.13	-1%	18,541,881	18,436,736	-105,145	-1%
		Car 5	181,961	181,961	0%	18.61	45.13	142%	1,887,355	4,681,311	2,793,956	142%
	Car 6	282	282	0%	25.05	45.13	74%	7,339	12,735	5,396	74%	
	Gasoline total	750,957	750,957	0%	85.73	78.89	-9%	64,379,964	58,577,229	-5,802,735	-9%	
	Diesel Oil	pre-Cars	1,487	1,487	0%	311.98	284.56	-9%	463,963	383,872	-80,091	-9%
		Car 1	6,660	6,660	0%	267.79	246.44	-11%	1,980,364	1,771,787	-208,577	-11%
		Car 2	33,957	33,957	0%	406.82	279.27	-40%	13,887,432	7,445,646	-6,441,787	-40%
		Car 3	183,539	183,539	0%	564.82	176.63	-69%	58,389,037	18,434,837	-39,954,200	-69%
		Car 4	234,943	234,943	0%	398.41	146.46	-62%	91,724,190	34,488,997	-57,235,193	-62%
		Car 5	173,112	173,112	0%	434.89	146.46	-66%	75,284,364	25,353,375	-49,930,989	-66%
Car 6	1,557	1,557	0%	219.84	146.46	-44%	484,664	220,095	-264,569	-44%		
Diesel oil total	555,245	555,245	0%	455.96	158.66	-64%	242,962,982	88,096,639	-154,866,343	-64%		
FCs Total	1,306,202	1,306,202	0%	234.61	152.29	-54%	386,442,896	146,673,927	-239,768,969	-54%		
1.A.3.b.i. Light Duty Vehicles (LDVs)	Gasoline	pre-Cars	962	962	0%	632.38	645.95	2%	607,779	621,146	13,417	2%
		Car 1	232	232	0%	803.24	183.22	-65%	199,985	70,295	-129,691	-65%
		Car 2	989	989	0%	271.16	195.74	-30%	268,134	133,538	-134,596	-30%
		Car 3	835	835	0%	89.38	98.33	10%	14,623	82,092	7,469	10%
		Car 4	2,030	2,030	0%	38.49	47.58	24%	78,155	96,691	18,536	24%
		Car 5	610	610	0%	16.36	47.58	182%	9,941	29,011	19,069	182%
	Car 6	0	0	0%	15.37	47.58	210%	2	6	4	210%	
	Gasoline total	5,657	5,657	0%	218.93	193.15	-12%	1,238,540	1,092,662	-145,878	-12%	
	Diesel Oil	pre-Cars	3,281	3,281	0%	424.46	386.79	-29%	1,368,754	982,093	-386,661	-29%
		Car 1	3,666	3,666	0%	398.34	276.24	-30%	1,445,980	787,634	-658,346	-46%
		Car 2	8,479	8,479	0%	336.40	133.39	-42%	2,852,325	1,639,772	-1,212,553	-43%
		Car 3	23,785	23,785	0%	558.53	150.44	-73%	13,050,281	3,546,082	-9,504,199	-73%
		Car 4	59,485	59,485	0%	494.22	89.85	-82%	29,369,070	5,337,395	-24,031,675	-82%
		Car 5	15,964	15,964	0%	442.70	89.85	-80%	7,040,461	1,420,906	-5,619,555	-80%
Car 6	1	1	0%	15.14	89.85	-61%	122	72	-50	-61%		
Diesel oil total	114,350	114,350	0%	485.91	126.17	-79%	55,186,382	13,741,354	-41,445,028	-79%		
LCVs Total	129,008	129,008	0%	489.51	123.61	-74%	56,344,903	14,834,696	-41,510,207	-74%		
1.A.3.b.ii. Heavy Duty Vehicles Buses	Gasoline	pre-Cars	1,326	1,326	0%	1091.46	1918.45	4%	1,410,640	1,352,283	-58,357	-4%
		Car 1	1,245	1,245	0%	727.34	731.15	1%	1,017,476	1,017,184	-292	-1%
		Car 2	7,789	7,789	0%	703.46	643.34	-9%	5,085,091	4,597,478	-487,613	-9%
		Car 3	14,483	14,483	0%	629.94	437.61	-31%	9,073,137	6,089,744	-2,983,393	-31%
		Car 4	5,331	5,331	0%	468.10	361.85	-23%	2,642,179	1,677,777	-964,402	-23%
		Car 5	20,752	20,752	0%	347.84	182.99	-47%	7,219,563	3,787,467	-3,432,096	-47%
		Car 6	73	73	0%	64.52	182.99	236%	3,961	13,295	9,334	236%
		Buses Total	50,962	50,962	0%	533.22	384.33	-28%	27,141,913	19,945,298	-7,196,615	-28%
	Diesel Oil	pre-Cars	6,922	6,922	0%	1036.95	758.82	-27%	7,107,543	5,252,345	-1,855,198	-27%
		Car 1	3,630	3,630	0%	743.70	570.57	-24%	2,721,326	2,071,111	-650,215	-24%
		Car 2	23,577	23,577	0%	818.27	516.43	-37%	19,262,253	12,175,855	-7,086,398	-37%
		Car 3	96,735	96,735	0%	634.65	370.21	-42%	61,387,137	35,888,665	-25,498,472	-42%
		Car 4	50,550	50,550	0%	356.50	288.44	-19%	19,962,680	14,880,877	-5,081,723	-27%
		Car 5	485,981	485,981	0%	261.24	152.32	-42%	116,149,955	61,626,577	-54,523,378	-42%
Car 6	2,380	2,380	0%	188.487	360.323	345%	188,487	360,323	171,836	223%		
Trucks Total	589,585	589,585	0%	385.33	224.69	-41%	224,829,180	132,064,153	-92,765,027	-41%		
1.A.3.b.iii. Heavy Duty Vehicles Trucks & Lorries	Gasoline	pre-Cars	6,780	6,780	0%	122.76	151.03	23%	822,530	1,011,520	188,991	23%
		Car 1	4,386	4,386	0%	124.61	171.39	39%	536,615	738,050	201,435	39%
		Car 2	3,287	3,287	0%	136.22	184.56	43%	445,087	636,853	191,766	43%
		Car 3	3,984	3,984	0%	38.66	184.56	382%	18,386	778,616	760,230	382%
		Car 4	0	0	0%	0	0	0%	0	0	0	0%
		Car 5	0	0	0%	0	0	0%	0	0	0	0%
		LCVs 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	2,084,964	2,084,964	0%	295.79	151.71	-49%	616,721,438	396,381,343	-220,340,094	-49%

Adjustment details for 2023

NFR Code	Fuel	Activity Data			Implied Emission Factor			NO _x Emissions				
		current	adjusted	difference	current	adjusted	difference	current	adjusted	difference		
		in [t]	in [t]	in [%]	in [g/t]	in [g/t]	in [%]	in [kg]	in [kg]	in [%]		
1.A.3.a.i. Passenger Cars	Gasoline	pre-Cars	11,680	11,680	0%	618.27	649.35	-5%	7,011,641	5,967,452	-1,044,189	-5%
		Car 1	37,743	37,743	0%	353.78	341.68	-32%	13,362,966	9,129,436	-4,233,530	-32%
		Car 2	62,680	62,680	0%	188.93	139.33	-27%	11,889,922	8,722,244	-3,167,678	-27%
		Car 3	97,782	97,782	0%	66.38	73.19	10%	6,481,618	7,156,920	675,302	10%
		Car 4	397,911	397,911	0%	47.22	46.52	-1%	18,790,345	18,589,937	-200,407	-1%
		Car 5	138,063	138,063	0%	18.60	46.52	150%	2,583,150	6,439,691	3,856,541	150%
		Car 6	2,714	2,714	0%	25.99	46.52	79%	70,526	126,237	55,711	79%
		Gasoline total	748,114	748,114	0%	88.35	74.85	-16%	69,190,687	56,671,737	-12,518,950	-16%
	Diesel Oil	pre-Cars	1,389	1,389	0%	312.32	284.56	-9%	433,081	368,136	-64,945	-9%
		Car 1	5,625	5,625	0%	298.42	246.79	-17%	1,678,472	1,340,688	-337,784	-17%
		Car 2	28,437	28,437	0%	406.84	279.91	-40%	11,563,522	6,253,531	-5,309,991	-40%
		Car 3	92,795	92,795	0%	574.33	176.67	-69%	53,284,956	16,579,373	-36,705,583	-69%
		Car 4	222,583	222,583	0%	393.55	149.27	-62%	87,598,471	33,225,566	-54,372,905	-62%
		Car 5	233,786	233,786	0%	435.42	149.27	-66%	101,787,275	34,884,788	-66,902,487	-66%
		Car 6	4,536	4,536	0%	259.53	149.27	-42%	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	1,338,245	1,338,245	0%	237.40	111.77	-53%	317,723,735	146,571,356	-171,152,379	-53%		
Gasoline	pre-Cars	981	981	0%	633.81	645.95	2%	568,320	575,293	6,973	2%	
	Car 1	184	184	0%	803.50	183.22	-65%	187,281	59,328	-127,953	-65%	
	Car 2	836	836	0%	274.42	291.18	21%	229,520	188,285	-41,235	-21%	
	Car 3	784	784	0%	52.66	191.79	10%	72,691	79,780	7,089	10%	
	Car 4	1,089	1,089	0%	43.70	48.89	20%	77,284	82,833	5,549	20%	
	Car 5	965	965	0%	16.67	48.89	183%	16,187	47,268	31,081	183%	
	Car 6	1	1	0%	17.66	48.89	176%	26	72	46	176%	
	Gasoline total	5,578	5,578	0%	262.86	184.67	-3%	1,131,299	1,696,727	565,428	3%	
Diesel Oil	pre-Cars	2,744	2,744	0%	424.37	386.79	-9%	1,168,757	944,928	-223,829	-9%	
	Car 1	2,945	2,945	0%	398.34	276.24	-30%	1,166,782	634,566	-532,216	-46%	
	Car 2	6,982	6,982	0%	336.92	133.39	-42%	2,340,147	1,350,674	-989,473	-42%	
	Car 3	20,421	20,421	0%	568.12	150.38	-73%	11,437,995	3,070,913	-8,367,082	-73%	
	Car 4	55,087	55,087	0%	497.72	90.46	-82%	27,776,440	5,048,416	-22,728,024	-82%	
	Car 5	29,024	29,024	0%	14,971	90.46	-80%	13,911,325	2,687,964	-10,823,361	-80%	
	Car 6	41	41	0%	51.26	90.46	-40%	6,160	2,688	-3,472	-40%	
	Diesel oil total	118,777	118,777	0%	488.66	154.93	-76%	47,083,533	13,656,488	-33,427,045	-76%	
LBVs total	124,354	124,354	0%	484.14	148.03	-76%	18,714,547	5,617,275	-13,097,272	-76%		
1.A.3.a.ii. Heavy Duty Vehicles: Buses	Diesel Oil	pre-Cars	1,172	1,172	0%	1096.89	1118.23	-4%	1,249,028	1,184,143	-64,885	-4%
		Car 1	1,004	1,004	0%	727.95	170.88	-76%	766,620	791,181	24,561	3%
		Car 2	6,084	6,084	0%	764.37	643.48	-16%	5,326,969	4,576,271	-750,697	-14%
		Car 3	13,167	13,167	0%	628.43	457.65	-27%	8,262,880	5,988,206	-2,264,675	-27%
		Car 4	4,945	4,945	0%	485.55	351.71	-27%	2,270,611	1,739,796	-530,815	-24%
		Car 5	26,096	26,096	0%	388.88	183.48	-40%	8,435,683	4,420,733	-4,014,950	-40%
		Car 6	537	537	0%	44.76	183.48	319%	34,047	86,572	52,525	154%
		Buses Total	51,776	51,776	0%	509.54	380.06	-26%	28,760,969	18,620,483	-7,738,126	-26%
1.A.3.a.ii. Heavy Duty Vehicles: Trucks & Lorries	Diesel Oil	pre-Cars	9,183	9,183	0%	1036.72	737.35	-29%	6,072,150	4,322,888	-1,749,262	-29%
		Car 1	2,985	2,985	0%	743.27	585.27	-21%	1,150,849	1,065,909	-84,939	-7%
		Car 2	16,444	16,444	0%	918.17	610.47	-34%	10,989,081	9,440,953	-1,548,128	-14%
		Car 3	78,750	78,750	0%	823.53	587.53	-29%	47,837,440	27,587,440	-20,250,000	-47%
		Car 4	42,781	42,781	0%	356.96	287.27	-27%	16,936,987	12,989,770	-3,947,217	-24%
		Car 5	436,969	436,969	0%	261.70	152.65	-42%	193,161,304	86,786,496	-106,374,807	-45%
		Car 6	18,020	18,020	0%	58.67	152.65	261%	913,082	2,750,630	1,837,548	201%
		Trucks Total	687,739	687,739	0%	353.86	287.20	-21%	211,087,531	124,188,949	-86,898,582	-41%
1.A.3.b.i. Two-Wheelers (MOPV)	Gasoline	pre-Cars	6,362	6,362	0%	123.07	119.79	-2%	181,736	164,179	-17,557	-10%
		Car 1	4,013	4,013	0%	103.13	173.15	30%	562,073	694,880	132,807	30%
		Car 2	3,362	3,362	0%	132.24	195.58	40%	435,668	645,804	209,136	40%
		Car 3	4,562	4,562	0%	39.81	195.58	391%	181,610	882,175	700,565	391%
		Car 4	0	0	0%	0	0	0%	0	0	0	0%
		Car 5	0	0	0%	0	0	0%	0	0	0	0%
MOPVs total	18,929	18,929	0%	104.34	175.38	68%	1,962,088	3,187,618	1,294,951	68%		
1.A.3.b. Road Transport		2,132,683	2,132,683	0%	208.88	145.76	-56%	616,079,063	390,854,371	-395,224,692	-56%	

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.b.i. - Passenger Cars	Gasoline	pre-Cars	11,647	11,647	0%	812.37	644.11	-11%	7,132,688	6,337,484	-795,844	-11%
		Car 1	30,667	30,667	0%	368.77	263.93	-32%	11,082,246	7,480,541	-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%	6,955,585	6,459,757	-494,828	-7%
		Car 4	387,759	387,759	0%	45.16	47.80	-3%	19,093,585	19,536,009	424,539	-3%
		Car 5	171,270	171,270	0%	18.59	47.80	151%	3,183,252	0,187,581	-5,004,393	151%
	Car 6	10,315	10,315	0%	25.97	47.80	84%	267,855	433,096	225,248	84%	
	Gasoline total	752,526	752,526	0%	76.60	73.89	4%	57,215,533	54,998,921	2,216,612	4%	
	Diesel Oil	pre-Cars	1,341	1,341	0%	311.73	284.66	-55%	417,967	365,246	-52,722	-55%
		Car 1	4,992	4,992	0%	298.92	267.29	-11%	1,482,264	1,387,643	-94,621	-11%
Car 2		23,934	23,934	0%	408.71	220.45	-46%	9,734,484	5,276,480	4,458,004	-46%	
Car 3		82,749	82,749	0%	585.53	176.81	-69%	48,451,830	14,796,245	33,655,585	-69%	
1.A.3.b.ii. - Light Duty Vehicles (LDVs)	Gasoline	pre-Cars	2,537	2,537	0%	632.14	645.95	-2%	1,683,683	1,726,124	42,441	-2%
		Car 1	173	173	0%	968.27	399.96	-64%	150,074	53,575	96,499	-64%
		Car 2	748	748	0%	204.73	287.11	-21%	212,888	154,839	-58,029	-21%
		Car 3	771	771	0%	98.62	185.21	7%	75,992	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%	596.34	176.49	-7%	1,112,584	1,031,879	-80,705	-7%	
	Diesel Oil	pre-Cars	2,537	2,537	0%	428.16	386.79	-21%	1,985,919	1,76,259	-257,659	-21%
		Car 1	2,589	2,589	0%	393.82	276.25	-45%	987,136	539,898	-447,328	-45%
Car 2		6,087	6,087	0%	338.91	133.25	-42%	1,385,995	1,180,889	-205,106	-42%	
Car 3		18,220	18,220	0%	571.75	150.58	-74%	10,417,076	2,742,056	-7,675,020	-74%	
1.A.3.b.iii. - Heavy Duty Vehicles (HDVs)	Diesel Oil	Car 4	52,361	52,361	0%	498.70	91.69	-82%	26,164,486	4,703,746	-21,460,740	-82%
		Car 5	46,749	46,749	0%	438.64	91.69	-79%	20,696,234	4,258,626	-16,437,608	-79%
		Car 6	187	187	0%	151.18	91.69	-40%	29,829	17,974	-11,855	-40%
		Diesel oil total	108,556	108,556	0%	475.56	196.66	-77%	55,146,525	14,691,237	-40,455,288	-77%
		LDVs Total	134,423	134,423	0%	463.56	153.81	-75%	62,299,160	15,298,849	-46,998,311	-75%
		HDVs Total	108,556	108,556	0%	475.56	196.66	-77%	55,146,525	14,691,237	-40,455,288	-77%
	Diesel Oil	Car 1	837	837	0%	728.12	130.99	-8%	399,232	628,359	19,127	-8%
		Car 2	5,596	5,596	0%	704.95	643.67	-9%	4,394,320	3,683,441	-710,879	-9%
		Car 3	11,221	11,221	0%	621.20	458.38	-21%	7,082,740	5,143,528	-1,939,212	-21%
		Car 4	4,270	4,270	0%	461.10	361.79	-24%	1,972,610	1,584,978	-387,632	-24%
Car 5		22,042	22,042	0%	368.55	183.99	-49%	7,726,921	4,065,632	-3,661,289	-49%	
Car 6		4,182	4,182	0%	42.78	183.99	330%	178,913	789,476	610,563	330%	
HDVs Total	49,143	49,143	0%	468.37	339.99	-27%	23,017,115	16,788,234	-6,228,881	-27%		
1.A.3.b.iv. - Heavy Duty Vehicles (HDVs) - Trucks & Lorries	Diesel Oil	pre-Cars	4,182	4,182	0%	1034.34	737.35	-29%	4,945,942	3,525,808	-1,420,134	-29%
		Car 1	4,182	4,182	0%	1034.34	737.35	-29%	4,945,942	3,525,808	-1,420,134	-29%
		Car 2	13,623	13,623	0%	817.90	510.38	-38%	11,445,865	6,565,736	-4,880,129	-38%
		Car 3	54,685	54,685	0%	632.52	364.41	-42%	36,589,677	19,927,835	-16,661,841	-42%
		Car 4	34,037	34,037	0%	396.37	285.34	-30%	13,481,158	9,711,896	-3,769,262	-30%
		Car 5	389,263	389,263	0%	282.92	153.66	-46%	110,112,782	59,688,643	-50,424,139	-46%
	Car 6	34,214	34,214	0%	63.96	153.66	189%	3,937,089	11,368,682	7,431,513	189%	
	Trucks Total	572,754	572,754	0%	314.85	196.65	-38%	179,874,133	112,285,562	-67,588,571	-38%	
	Diesel Oil	pre-Cars	6,185	6,185	0%	122.85	158.64	29%	795,185	974,388	179,203	29%
		Car 1	3,037	3,037	0%	124.71	174.84	40%	478,514	670,859	192,345	40%
Car 2		3,365	3,365	0%	128.94	186.25	52%	433,874	680,370	246,496	52%	
Car 3		5,385	5,385	0%	38.53	186.25	380%	289,722	1,611,189	1,321,467	380%	
Car 4		0	0	0%	0	0	0%	0	0	0	0%	
Car 5		0	0	0%	0	0	0%	0	0	0	0%	
HDVs Total	18,673	18,673	0%	108.59	179.24	78%	1,878,294	3,381,734	1,503,440	78%		
1.A.3.b. - Road Transport	Total	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 2026

NFR Code	Fuel	Activity Data			Implied Emission Factor			NO _x Emissions						
		current	adjusted	difference	current	adjusted	difference	current	adjusted	difference				
		in [t]	in [t]	in [%]	in [g/t]	in [g/t]	in [%]	in [t]	in [t]	in [%]				
1.A.3.a.i - Passenger Cars	Gasoline	pre-Cars	11,782	11,782	0%	634.75	644.11	-14%	7,470,914	6,410,967	-1,059,947			
		Car 1	20,270	20,270	0%	372.25	281.68	-30%	7,545,483	4,988,888	-2,556,595			
		Car 2	36,062	36,062	0%	212.73	143.11	-33%	7,671,581	5,180,897	-2,490,684			
		Car 3	83,039	83,039	0%	76.17	75.50	-1%	4,881,482	4,759,259	-122,223			
		Car 4	334,413	334,413	0%	53.74	50.17	-7%	17,369,364	16,777,445	-591,919			
		Car 5	183,374	183,374	0%	19.09	50.17	163%	3,580,745	9,189,834	5,609,089			
		Car 6	66,332	66,332	0%	26.67	50.17	88%	1,768,917	3,327,855	1,558,938			
		Gasoline total	715,272	715,272	0%	78.93	70.65	-10%	58,736,967	50,535,049	-8,201,918			
	Diesel Oil	pre-Cars	1,280	1,280	0%	304.76	264.56	-14%	386,262	339,172	-47,090			
		Car 1	3,749	3,749	0%	1,122.44	1,011.62	-10%	1,122,449	1,011,625	-110,824			
		Car 2	16,584	16,584	0%	407.19	221.43	-46%	6,720,132	3,653,964	-3,066,168			
		Car 3	81,398	81,398	0%	802.50	179.24	-78%	36,991,999	11,085,409	-25,906,590			
		Car 4	175,940	175,940	0%	405.76	156.24	-61%	71,362,220	27,474,086	-43,888,134			
		Car 5	299,654	299,654	0%	433.34	156.24	-64%	130,032,044	46,019,229	-83,912,815			
1.A.3.b.i - Heavy Duty Vehicles - Trucks & Lorries	Gasoline	pre-Cars	116,084	116,084	0%	268.75	156.24	-42%	30,427,555	10,232,785	-20,194,770			
		Diesel oil total	625,119	625,119	0%	418.36	160.76	-61%	277,947,660	188,535,230	-89,412,430			
		Pkx Total	1,386,391	1,386,391	0%	235.75	154.41	-35%	327,736,627	199,070,280	-128,666,347			
		Diesel Oil	pre-Cars	910	910	0%	602.79	645.95	-7%	593,186	587,543	-5,643		
			Car 1	136	136	0%	908.31	312.78	-66%	122,126	42,425	-79,701		
			Car 2	540	540	0%	308.39	217.84	-29%	162,311	117,797	-44,514		
			Car 3	650	650	0%	108.43	111.57	-3%	70,432	72,731	2,299		
			Car 4	1,684	1,684	0%	43.06	52.36	21%	78,714	84,003	5,289		
	Car 5		1,724	1,724	0%	19.82	52.36	164%	34,157	80,258	46,101			
	1.A.3.b.ii - Heavy Duty Vehicles - Buses	Gasoline	pre-Cars	363	363	0%	19.85	52.36	181%	6,764	19,992	13,228		
			Gasoline total	5,506	5,506	0%	588.27	171.66	-7%	1,068,292	1,013,478	-54,814		
			Diesel Oil	pre-Cars	2,189	2,189	0%	414.81	386.79	-7%	899,849	846,433	-53,416	
				Car 1	1,780	1,780	0%	391.89	276.25	-30%	780,189	585,371	-194,818	
				Car 2	4,223	4,223	0%	323.43	153.31	-53%	1,365,994	676,452	-689,542	
Car 3				13,582	13,582	0%	588.91	150.77	-74%	8,064,323	2,940,233	-5,124,090		
Car 4				43,141	43,141	0%	504.48	32.40	-93%	21,783,989	3,986,141	-17,797,848		
Car 5				74,231	74,231	0%	434.16	32.40	-93%	32,223,283	6,688,780	-25,534,503		
1.A.3.b.iii - Heavy Duty Vehicles - Trucks & Lorries		Gasoline	Car 6	4,921	4,921	0%	113.49	32.40	-71%	755,285	454,676	-300,609		
			Diesel oil total	148,068	148,068	0%	454.12	185.62	-59%	65,712,732	15,296,007	-50,416,725		
			100% Total	149,994	149,994	0%	445.21	188.29	-58%	66,781,025	16,298,684	-50,482,341		
			Diesel Oil	pre-Cars	881	881	0%	1076.81	1919.23	-43%	954,197	988,234	34,037	
				Car 1	583	583	0%	731.36	732.67	0%	433,675	446,236	12,561	
				Car 2	4,375	4,375	0%	708.25	645.03	-9%	3,440,614	2,822,621	-617,993	
	Car 3			10,333	10,333	0%	632.87	458.91	-28%	6,539,364	4,741,827	-1,797,537		
	Car 4			4,449	4,449	0%	475.90	382.29	-20%	2,117,219	1,686,881	-430,338		
	Car 5	34,380		34,380	0%	364.36	185.22	-49%	8,935,974	4,517,517	-4,418,457			
	1.A.3.b.iv - Motorized Two-Wheelers (M2W)	Gasoline	Car 6	9,126	9,126	0%	62.79	185.22	196%	573,066	1,680,431	1,107,365		
			Buses Total	54,157	54,157	0%	404.73	388.24	-4%	23,082,189	16,885,117	-6,197,072		
			Diesel Oil	pre-Cars	3,933	3,933	0%	1034.81	737.35	-29%	4,087,249	2,980,379	-1,106,870	
				Car 1	1,555	1,555	0%	748.16	587.92	-22%	1,163,482	789,813	-373,669	
				Car 2	8,876	8,876	0%	817.75	585.42	-28%	7,258,047	4,486,626	-2,771,421	
Car 3				34,167	34,167	0%	638.91	568.04	-11%	21,553,280	12,251,155	-9,302,125		
Car 4				34,287	34,287	0%	394.94	281.86	-28%	9,640,384	6,885,621	-2,754,763		
Car 5				269,735	269,735	0%	287.22	153.60	-46%	74,680,233	39,676,610	-35,003,623		
1.A.3.b.v - Road Transport		Gasoline	Car 6	261,480	261,480	0%	61.77	153.92	149%	16,149,280	40,244,036	24,094,756		
			Trucks Total	594,013	594,013	0%	226.31	180.97	-20%	134,431,899	101,486,262	-32,945,637		
			Diesel Oil	pre-Cars	5,543	5,543	0%	125.59	155.78	24%	696,072	883,289	187,217	
				Car 1	3,360	3,360	0%	127.11	177.29	39%	427,113	585,796	158,683	
				Car 2	3,375	3,375	0%	125.94	187.68	50%	421,961	687,078	265,117	
				Car 3	6,443	6,443	0%	48.36	187.68	281%	209,627	1,273,671	1,064,044	
	Car 4			85	85	0%	17.47	187.68	1031%	1,134	12,632	11,498		
	Car 5			0	0	0%	0	0	0%	0	0	0%		
	1.A.3.b.vi - Road Transport	Gasoline	M2Ws Total	16,185	16,185	0%	96.14	181.68	88%	1,885,897	3,452,476	1,566,579		
			Diesel Oil	pre-Cars	5,543	5,543	0%	125.59	155.78	24%	696,072	883,289	187,217	
				Car 1	3,360	3,360	0%	127.11	177.29	39%	427,113	585,796	158,683	
				Car 2	3,375	3,375	0%	125.94	187.68	50%	421,961	687,078	265,117	
				Car 3	6,443	6,443	0%	48.36	187.68	281%	209,627	1,273,671	1,064,044	
				Car 4	85	85	0%	17.47	187.68	1031%	1,134	12,632	11,498	
Car 5				0	0	0%	0	0	0%	0	0	0%		
Diesel Oil			M2Ws Total	16,185	16,185	0%	96.14	181.68	88%	1,885,897	3,452,476	1,566,579		
		1.A.3.b.vii - Road Transport	Diesel Oil	Total	2,287,339	2,287,339	0%	258.89	137.22	-46%	553,799,598	362,981,620	-190,817,978	
				Diesel Oil	Total	2,287,339	2,287,339	0%	258.89	137.22	-46%	553,799,598	362,981,620	-190,817,978

Adjustment details for 2027

NFR Code	Fuel	Activity Data			Implied Emission Factor			NO _x Emissions			
		current	adjusted	difference	current	adjusted	difference	current	adjusted	difference	
		in [t]	in [t]	in [%]	in [g/t]	in [g/t]	in [%]	in [t]	in [t]	in [%]	
1.A.3.a.i - Passenger Cars	Gasoline	pre-Cars	12,282	12,282	0%	636.73	644.11	-14%	7,914,267	6,480,187	-1,434,080
		Car 1	17,449	17,449	0%	372.96	341.68	-35%	6,588,311	4,217,644	-2,370,667
		Car 2	30,435	30,435	0%	217.43	141.75	-35%	6,617,570	4,714,140	-1,903,430
		Car 3	54,271	54,271	0%	78.48	76.27	-3%	4,254,938	4,139,376	-115,562
		Car 4	315,086	315,086	0%	54.96	51.26	-7%	17,316,320	16,511,881	-804,439
		Car 5	180,240	180,240	0%	19.17	51.26	163%	3,485,382	9,239,815	5,754,433
		Car 6	114,791	114,791	0%	26.66	51.26	92%	3,063,235	5,884,372	2,821,137
		Gasoline total	724,571	724,571	0%	87.66	80.88	-8%	49,604,874	40,534,734	-9,070,140
	Diesel Oil	pre-Cars	1,780	1,780	0%	364.36	254.56	-30%	504,963	347,626	-157,337
		Car 1	3,749	3,749	0%	294.36	271.67	-7%	1,082,288	910,182	-172,106
		Car 2	13,788	13,788	0%	407.17	222.43	-45%	5,914,130	3,066,393	-2,847,737
		Car 3	52,128	52,128	0%	808.95	179.65	-78%	31,696,478	9,364,788	-22,331,690
		Car 4	187,947	187,947	0%	418.16	158.34	-61%	64,733,485	24,983,323	-39,750,162
		Car 5	283,480	283,480	0%	423.99	158.34	-63%	120,187,695	44,873,190	-75,314,505
		Car 6	184,768	184,768	0%	262.61	158.34	-40%	48,521,163	29,255,985	-19,265,178
		Diesel oil total	686,582	686,582	0%	394.65	161.95	-59%	272,126,081	112,890,717	-159,235,364
		Pkx Total	1,421,152	1,421,152	0%	225.98	155.61	-31%	521,732,955	163,425,451	-358,307,504
	Gasoline	pre-Cars	940	940	0%	611.41	645.95	-7%	612,247	596,878	-15,369
		Car 1	124	124	0%	908.23	312.78	-66%	112,083	39,682	-72,401
		Car 2	485	485	0%	302.12	221.62	-27%	140,344	102,950	-37,394
		Car 3	596	596	0%	118.57	115.36	-3%	65,955	68,812	2,857
		Car 4	1,476	1,476	0%	58.72	53.38	-9%	74,877	78,816	3,939
		Car 5	1,680	1,680	0%	21.73	53.38	146%	35,240	89,034	53,794
		Car 6	910	910	0%	19.18	53.38	187%	17,052	49,080	32,028
		Gasoline total	6,186	6,186	0%	171.55	167.18	-2%	1,058,799	1,034,211	-24,588
	Diesel Oil	pre-Cars	2,087	2,087	0%	413.41	386.79	-7%	860,499	811,163	-49,336
		Car 1	1,538	1,538	0%	398.47	276.25	-30%	680,795	511,158	-169,637
		Car 2	3,580	3,580	0%	321.26	153.04	-53%	1,143,793	687,293	-456,500
		Car 3	11,684	11,684	0%	595.30	150.79	-75%	6,940,879	1,758,747	-5,182,132
		Car 4	39,050	39,050	0%	506.70	33.69	-93%	19,789,647	3,635,035	-16,154,612
		Car 5	75,789	75,789	0%	432.66	33.69	-92%	32,790,965	7,054,945	-25,736,020
		Car 6	19,625	19,625	0%	101.71	33.69	-67%	2,977,439	1,026,876	-1,950,563
		Diesel oil total	153,284	153,284	0%	404.66	183.89	-55%	65,083,900	15,925,216	-49,158,684
		100% Total	159,470								

Adjustment details for 2018

ACTIVITY DATA 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.b.i. Passenger Cars	Gasoline	pre-Cars	12,219	12,219	0%	637.58	644.11	-65%	7,780,965	6,648,721	-1,132,234	-55%
		Car 1	14,362	14,362	0%	374.34	341.68	-36%	5,371,161	3,448,643	-1,922,518	-36%
		Car 2	34,285	34,285	0%	221.97	111.68	-60%	5,360,977	2,688,163	-2,672,814	-50%
		Car 3	43,642	43,642	0%	88.16	76.96	-4%	3,487,781	3,358,617	-139,164	-4%
		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	8,725,668	5,497,386	170%
	Car 6	193,041	193,041	0%	6.00	52.30	0%	4,190,422	8,718,250	4,527,828	89%	
	Gasoline total	689,027	689,027	0%	64.42	68.36	6%	45,032,966	47,186,817	2,153,851	5%	
	Diesel Oil	pre-Cars	1,363	1,363	0%	303.16	264.96	-16%	171,851	345,173	173,322	101%
		Car 1	2,849	2,849	0%	298.17	272.65	-9%	862,432	775,165	-87,267	-9%
		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	-71%	24,932,029	7,333,241	-17,598,788	-71%
		Car 4	130,534	130,534	0%	414.71	180.40	-51%	54,133,837	20,937,329	-33,196,508	-51%
		Car 5	251,212	251,212	0%	416.25	180.40	-51%	104,585,786	40,253,731	-64,332,055	-51%
Car 6	228,685	228,685	0%	254.87	180.40	-31%	58,284,140	35,680,446	-22,603,694	-31%		
Diesel oil total	666,074	666,074	0%	375.66	163.38	-56%	247,556,063	188,748,684	-158,847,459	-56%		
FCs Total	1,365,101	1,365,101	0%	214.34	154.68	-28%	262,589,060	156,555,421	-106,033,639	-40%		
Gasoline	pre-Cars	911	911	0%	664.51	645.95	-3%	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	4%	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	4%	
	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%	989,199	1,011,138	21,939	2%		
Diesel Oil	pre-Cars	1,872	1,872	0%	411.51	386.79	-6%	771,337	574,742	-196,595	-26%	
	Car 1	1,285	1,285	0%	389.94	276.25	-29%	483,129	272,286	-210,843	-44%	
	Car 2	2,942	2,942	0%	318.56	193.88	-39%	965,389	550,789	-414,600	-43%	
	Car 3	9,383	9,383	0%	558.10	150.74	-73%	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%	28,684,880	6,217,860	-22,467,020	-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%	98,344,525	55,880,318	-42,464,207	-53%		
LDNs Total	180,574	180,574	0%	375.80	184.94	-52%	69,343,125	96,851,449	27,508,324	40%		
1.A.3.b.ii - Heavy Duty Vehicles - Buses	Diesel Oil	pre-Cars	547	547	0%	1078.15	1919.23	-43%	589,267	557,147	-32,120	-5%
		Car 1	237	237	0%	732.78	732.57	0%	173,678	178,368	4,690	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	-21%	4,262,734	3,183,482	-1,079,252	-21%
		Car 4	3,043	3,043	0%	473.16	382.73	-19%	1,439,790	1,073,333	-366,457	-26%
		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	289%		
Buses Total	51,634	51,634	0%	309.75	283.53	-9%	15,993,546	13,687,186	-2,306,360	-15%		
1.A.3.b.iii - Heavy Duty Vehicles - Trucks & Lorries	Diesel Oil	pre-Cars	3,262	3,262	0%	1034.82	737.35	-29%	3,375,359	2,485,071	-890,288	-29%
		Car 1	1,094	1,094	0%	747.82	488.39	-31%	818,052	512,378	-305,674	-31%
		Car 2	5,544	5,544	0%	817.44	581.68	-29%	4,532,180	2,781,516	-1,750,664	-39%
		Car 3	20,583	20,583	0%	629.54	563.68	-10%	12,367,751	7,277,279	-5,090,472	-44%
		Car 4	15,912	15,912	0%	358.89	276.23	-21%	6,334,421	4,386,424	-1,947,997	-31%
		Car 5	154,983	154,983	0%	250.40	154.68	-38%	45,964,153	24,283,389	-21,680,764	-47%
Car 6	381,799	381,799	0%	68.78	154.68	125%	28,251,482	69,665,886	41,414,404	146%		
Trucks Total	585,186	585,186	0%	515.18	172.19	-66%	188,173,537	180,760,889	-7,412,648	-4%		
1.A.3.b.iv - Motorized Two-Wheelers (MOWs)	Gasoline	pre-Cars	4,940	4,940	0%	128.95	188.61	46%	622,656	783,451	160,795	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%	25,126	1,239,686	988,562	384%
		Car 4	1,130	1,130	0%	58.41	188.64	673%	23,066	224,582	201,516	673%
		Car 5	0	0	0%	0.00	188.61	0%	0	0	0	0%
MOWs Total	18,487	18,487	0%	85.66	188.61	108%	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	291,129,612	-187,628,674	-38%	

Adjustment details for 2019

Detailed Data for 2022													
NFR Code	Fuel	Activity Data			Implied Emission Factor			NO _x Emissions					
		current	adjusted	difference	current	adjusted	difference	current	adjusted	difference			
		in [t]	in [t]	in [%]	in [g/t]	in [g/t]	in [%]	in [kg]	in [kg]	in [%]			
1.A.3.b.i - Passenger Cars	Gasoline	pre-Cars	13,648	13,648	0%	638.58	644.11	-55%	8,664,621	7,382,686	-1,281,935	-55%	
		Car 1	12,427	12,427	0%	378.32	341.68	-36%	4,781,480	3,083,383	-1,698,096	-36%	
		Car 2	20,086	20,086	0%	225.58	92.59	-59%	4,531,070	1,858,018	-2,672,852	-59%	
		Car 3	38,216	38,216	0%	82.22	76.12	-5%	2,977,840	2,829,186	-148,654	-5%	
		Car 4	295,220	295,220	0%	57.04	53.29	-7%	14,588,285	13,889,621	-698,664	-7%	
		Car 5	180,537	180,537	0%	19.77	53.29	170%	3,173,728	8,584,356	5,410,628	170%	
		Car 6	285,636	285,636	0%	25.63	53.29	180%	5,285,099	11,010,782	5,725,683	180%	
	Gasoline total	784,031	784,031	0%	62.36	68.45	10%	43,961,941	48,238,025	4,276,084	10%		
	Diesel Oil	pre-Cars	2,736	2,736	0%	313.70	264.96	-16%	913,180	724,921	-188,259	-21%	
		Car 1	2,845	2,845	0%	298.16	272.65	-9%	786,913	687,786	-99,127	-13%	
		Car 2	8,891	8,891	0%	407.19	222.16	-44%	3,620,286	2,037,480	-1,582,806	-44%	
		Car 3	33,079	33,079	0%	815.11	180.42	-71%	20,310,125	5,967,483	-14,342,642	-71%	
		Car 4	111,335	111,335	0%	419.17	182.44	-51%	48,688,685	18,085,228	-30,603,457	-51%	
		Car 5	231,784	231,784	0%	419.37	182.44	-50%	95,117,643	37,650,997	-57,466,646	-41%	
		Car 6	273,511	273,511	0%	227.36	182.44	-20%	62,183,230	44,429,184	-17,754,046	-29%	
	Diesel oil total	663,841	663,841	0%	345.81	165.67	-52%	229,566,088	189,582,982	-139,983,106	-52%		
	FCs Total	1,368,532	1,368,532	0%	699.83	155.32	-78%	273,668,029	157,821,007	-115,847,022	-42%		
	1.A.3.b.ii - Light Duty Vehicles (LDV)	Gasoline	pre-Cars	909	909	0%	644.89	645.95	1%	681,459	581,962	-99,497	-15%
			Car 1	87	87	0%	915.28	312.78	-66%	88,953	30,396	-58,557	-66%
Car 2			316	316	0%	304.63	224.45	-26%	95,158	70,848	-24,310	-26%	
Car 3			447	447	0%	112.68	121.47	8%	59,355	54,283	-5,072	-8%	
Car 4			1,126	1,126	0%	53.08	54.36	4%	59,652	62,199	2,547	4%	
Car 5			1,361	1,361	0%	25.34	54.36	110%	34,240	74,680	40,440	110%	
Car 6			2,420	2,420	0%	18.75	54.36	180%	45,383	133,753	88,370	180%	
Gasoline total		6,483	6,483	0%	144.88	153.25	5%	974,299	1,044,150	69,851	5%		
Diesel Oil		pre-Cars	1,744	1,744	0%	418.96	386.79	-7%	725,111	541,376	-183,735	-26%	
		Car 1	1,079	1,079	0%	389.52	276.25	-29%	420,285	232,256	-188,029	-45%	
		Car 2	2,334	2,334	0%	315.90	194.79	-39%	737,682	454,630	-283,052	-39%	
		Car 3	7,649	7,649	0%	601.11	150.79	-75%	4,587,943	1,446,232	-3,141,711	-75%	
		Car 4	20,711	20,711	0%	512.28	94.57	-82%	14,788,380	2,716,154	-12,072,226	-82%	
		Car 5	68,794	68,794	0%	436.30	84.57	-79%	25,499,080	5,552,420	-19,946,660	-79%	
		Car 6	59,031	59,031	0%	146.18	81.57	-35%	8,616,586	5,722,892	-2,893,694	-33%	
Diesel oil total		159,183	159,183	0%	347.42	191.98	-41%	55,383,325	36,221,485	-19,161,840	-37%		
LDVs Total		165,866	165,866	0%	339.31	183.97	-46%	56,279,594	37,243,596	-19,035,998	-46%		
1.A.3.b.iii - Heavy Duty Vehicles (HDV)		Diesel Oil	pre-Cars	489	489	0%	1086.23	1191.23	-6%	588,087	478,258	-109,829	-19%
			Car 1	147	147	0%	738.37	752.57	2%	188,212	110,953	-77,259	-41%
	Car 2		1,611	1,611	0%	723.67	645.57	-10%	1,271,445	1,041,621	-229,824	-18%	
	Car 3		5,709	5,709	0%	639.49	466.75	-27%	3,885,281	2,623,779	-1,261,502	-33%	
	Car 4		2,747	2,747	0%	473.92	342.84	-28%	1,382,041	969,434	-412,607	-30%	
	Car 5		17,190	17,190	0%	362.91	186.64	-49%	6,219,175	3,180,791	-3,038,384	-49%	
	Car 6		25,335	25,335	0%	69.43	186.64	269%	5,918,901	4,686,133	-1,232,768	-21%	
	Diesel total	52,939	52,939	0%	274.81	247.83	-9%	14,547,072	11,538,878	-3,008,194	-21%		
	Gasoline	pre-Cars	3,140	3,140	0%	924.98	737.35	-20%	3,250,020	2,370,443	-879,577	-27%	
		Car 1	989	989	0%	747.90	584.04	-21%	724,240	453,754	-270,486	-37%	
		Car 2	4,560	4,560	0%	817.42	581.04	-29%	3,734,343	2,288,967	-1,445,376	-39%	
		Car 3	16,377	16,377	0%	628.94	371.48	-41%	13,900,323	6,758,540	-7,141,783	-41%	
		Car 4	15,127	15,127	0%	396.86	269.43	-31%	12,235,679	5,689,320	-6,546,359	-46%	
		Car 5	185,233	185,233	0%	965.15	282.84	-71%	36,960,499	8,918,499	-28,041,999	-76%	
		Car 6	432,496	432,496	0%	72.98	184.92	151%	11,175,486	67,683,853	56,508,367	151%	
	Gasoline total	595,913	595,913	0%	73.15	169.17	-56%	95,380,700	180,893,736	85,513,036	89%		
	1.A.3.b.iv - Motorized Two-Wheelers (MWV)	Gasoline	pre-Cars	4,913	4,913	0%	125.89	164.79	31%	664,997	792,791	127,794	19%
			Car 1	2,835	2,835	0%	129.39	177.29	31%	355,496	582,589	227,093	41%
			Car 2	3,084	3,084	0%	119.23	180.86	67%	389,224	615,317	226,093	58%
Car 3			6,082	6,082	0%	43.03	180.86	381%	284,284	1,193,617	909,333	381%	
Car 4			2,085	2,085	0%	21.68	180.86	817%	43,489	386,647	343,158	817%	
Car 5			0	0	0%	0.00	180.86	0%	0	0	0	0%	
MWVs Total			18,190	18,190	0%	86.95	186.83	107%	1,615,490	5,562,941	3,947,451	171%	
1.A.3.b. Road Transport Total		2,262,080	2,262,080	0%	99.58	132.83	-23%	67,268,146	292,497,437	164,771,248	245%		

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