

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%	77.644.842	67.690.906	9.953.935	-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	88.138.959	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	331.625.655	300.740.081	-48%
1.A.3.b.i	gasoline		750.957	750.957	0%	85.73	78.00	-9%	64.379.994	58.677.229	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	41.365.008	-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	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	300.429.094	-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%	49.026.074	50.634.714	-1.607.640	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%	45.032.996	47.786.817	-2.753.820	6%
1.A.3.b.i	diesel oil		666.074	666.074	0%	371.66	163.30	-56%	247.556.063	108.768.604	138.787.459	-56%
1.A.3.b.ii	gasoline		6.315	6.315	0%	158.22	160.11	1%	999.199	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	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%	91.380.700	106.809.376	-15.428.676	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		2.202.899	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	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	19,189,262	-7,716,663	-30%
	Car 2	96,425	96,425	0%	172.95	135.63	-22%	16,580,020	13,020,026	-3,559,995	-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	444,991	444,991	0%	42.27	42.19	0%	18,911,389	18,773,529	-137,859	0%
	Car 5	31,234	31,234	0%	18.41	42.19	127%	581,142	1,317,737	736,595	127%
Car 6	0	0	0%	25.08	42.19	62%	2	2	0	0%	
Gasoline total	795,957	795,957	0%	92.55	84.39	-9%	77,646,642	67,656,586	-9,990,056	-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	-30%	29,372,795	10,974,210	-18,398,584	-63%
	Car 3	134,025	134,025	0%	542.54	176.54	-67%	72,645,173	23,929,276	-48,715,897	-67%
	Car 4	279,154	279,154	0%	304.37	140.58	-53%	167,299,180	39,243,811	-128,055,369	-77%
	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	46,553	-38,491	-45%	
Diesel oil total	529,380	529,380	0%	429.45	160.55	-63%	227,347,096	84,970,461	-142,376,635	-63%	
Pkx Total	1,325,337	1,325,337	0%	238.12	155.14	-36%	364,985,938	152,627,047	-212,358,891	-58%	
Gasoline	pre-Cars	1,249	1,249	0%	627.99	640.95	1%	783,320	906,871	123,551	16%
	Car 1	367	367	0%	961.95	297.39	-69%	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	90.83	10%	70,631	77,625	6,994	10%
	Car 4	2,420	2,420	0%	36.32	44.90	24%	87,987	188,679	100,692	115%
	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%	1,419,832	1,358,126	-61,706	-4%	
1.A.3.b.i. Light Duty Vehicles (LDVs)	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%
	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	-79%	696,296	144,434	-551,862	-79%
Car 6	0	0	0%	15.73	80.69	42%	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%	
LDVs Total	119,775	119,775	0%	464.70	139.18	-70%	55,658,966	16,685,913	-38,973,053	-70%	
1.A.3.b.ii. Heavy Duty Vehicles (HDVs)	pre-Cars	3,382	3,382	0%	1096.25	1028.78	-6%	3,674,087	3,432,644	-241,443	-7%
	Car 1	2,826	2,826	0%	749.41	732.14	-2%	2,117,871	2,125,595	7,723	0%
	Car 2	10,152	10,152	0%	801.96	643.47	-20%	8,140,119	6,532,213	-1,607,906	-20%
	Car 3	15,090	15,090	0%	633.22	437.25	-30%	10,865,776	7,289,299	-3,576,477	-33%
	Car 4	5,461	5,461	0%	448.63	351.65	-22%	2,650,016	1,921,527	-728,489	-28%
	Car 5	10,326	10,326	0%	337.28	182.33	-46%	3,882,417	1,882,644	-1,999,773	-51%
Car 6	0	0	0%	0%	0%	0%	0	0	0	0%	
Buses Total	48,044	48,044	0%	623.80	482.55	-23%	29,931,266	23,185,732	-6,745,534	-23%	
1.A.3.b.iii. Heavy Duty Vehicles (Trucks & Lorries)	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	38,558	38,558	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%
	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%
Car 6	0	0	0%	0%	0%	0%	0	0	0	0%	
Trucks Total	566,741	566,741	0%	446.67	271.83	-39%	293,148,243	154,696,160	-138,452,083	-47%	
1.A.3.b.iv. Motorized Two-Wheelers (MOWs)	pre-Cars	7,973	7,973	0%	122.80	149.18	22%	972,721	1,189,353	216,632	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	194.21	38%	585,362	696,661	111,299	19%
	Car 3	2,950	2,950	0%	38.11	184.21	381%	116,189	657,032	540,843	381%
	Car 4	0	0	0%	0%	0%	0%	0	0	0	0%
	Car 5	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%	
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 [kg]		
1.A.3.a.i. Passenger Cars	Gasoline	pre-Cars	13,063	13,063	0%	592.96	534.68	-9%	7,720,235	6,979,435	-740,801	-10%	
		Car 1	61,979	61,979	0%	347.96	340.16	-2%	21,540,430	18,884,961	-2,655,469	-12%	
		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	-11%	73,165,851	64,851,551	-8,314,300	-11%		
	Diesel Oil	pre-Cars	1,711	1,711	0%	318.13	264.95	-16%	583,760	453,197	-130,563	-22%	
		Car 1	8,426	8,426	0%	297.32	245.96	-17%	2,585,115	2,239,987	-345,128	-13%	
		Car 2	42,514	42,514	0%	407.93	279.27	-30%	17,384,549	9,321,916	-8,062,633	-46%	
Car 3		121,429	121,429	0%	555.36	176.55	-68%	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	695	695	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%	249,313,791	80,138,959	-169,174,832	-63%	
		Pkx Total	1,348,252	1,348,252	0%	232.52	133.47	-43%	713,499,642	152,990,510	-560,509,132	-78%	
		Gasoline	pre-Cars	1,084	1,084	0%	629.25	640.95	1%	482,074	560,371	78,297	16%
	Car 1		283	283	0%	818.74	284.47	-65%	243,289	86,158	-157,131	-65%	
	Car 2		1,184	1,184	0%	268.66	191.66	-29%	310,529	223,189	-87,340	-28%	
	Car 3		783	783	0%	85.97	95.39	11%	67,320	74,782	7,462	11%	
	1.A.3.b.ii. Light Duty Vehicles (LDVs)	Gasoline	Car 4	2,562	2,562	0%	37.38	46.51	24%	95,786	119,162	23,376	24%
Car 5			241	241	0%	16.13	46.51	189%	3,882	11,190	7,308	189%	
Car 6			0	0	0%	15.33	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%	
Diesel Oil			pre-Cars	3,995	3,995	0%	425.99	386.79	-9%	1,989,280	1,225,652	-763,628	-38%
			Car 1	4,787	4,787	0%	398.18	276.24	-30%	1,984,260	1,030,426	-953,834	-48%
		Car 2	10,816	10,816	0%	336.76	153.18	-54%	3,644,582	2,091,063	-1,553,519	-43%	
		Car 3	28,876	28,876	0%	541.53	150.54	-72%	15,037,249	4,345,870	-10,691,379	-72%	
1.A.3.b.iii. Heavy Duty Vehicles (HDVs)		Diesel Oil	Car 4	60,032	60,032	0%	493.82	80.26	-84%	30,039,914	5,429,011	-24,610,904	-81%
			Car 5	6,029	6,029	0%	448.95	80.26	-80%	2,930,198	584,364	-2,336,834	-80%
	Car 6		0	0	0%	154.21	80.26	-47%	1	8	7	-47%	
	Diesel oil total		115,967	115,967	0%	485.15	126.92	-74%	58,448,558	16,781,142	-41,667,416	-74%	
	LDVs total		122,085	122,085	0%	448.92	130.61	-71%	17,247,389	19,532,958	2,285,569	13%	
	pre-Cars		2,620	2,620	0%	1062.63	1115.76	5%	2,836,189	2,671,331	-164,858	-6%	
	Diesel Oil	Car 1	2,250	2,250	0%	752.91	574.01	-24%	1,699,787	1,096,297	-603,490	-35%	
		Car 2	9,074	9,074	0%	804.17	547.36	-30%	7,287,125	4,537,498	-2,749,627	-38%	
		Car 3	14,087	14,087	0%	523.35	457.38	-13%	9,425,890	6,089,064	-3,336,826	-35%	
		Car 4	5,131	5,131	0%	444.80	361.61	-19%	2,763,338	1,885,274	-878,064	-32%	
1.A.3.b.iv. Heavy Duty Vehicles (HDVs)	Diesel Oil	Car 5	13,366	13,366	0%	336.60	182.62	-45%	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%	592.85	448.99	-24%	28,071,221	21,256,323	-6,814,898	-24%	
		pre-Cars	8,044	8,044	0%	109.67	183.88	68%	8,395,423	6,144,933	-2,250,490	-27%	
		Car 1	4,384	4,384	0%	758.16	524.04	-30%	3,288,422	2,595,377	-693,045	-21%	
		Car 2	29,277	29,277	0%	817.87	570.01	-30%	23,947,723	16,233,223	-7,714,500	-32%	
	Diesel Oil	Car 3	61,581	61,581	0%	630.56	399.43	-37%	77,271,520	45,342,437	-31,929,083	-41%	
		Car 4	68,430	68,430	0%	392.26	299.43	-24%	22,977,784	16,969,685	-6,008,099	-26%	
		Car 5	342,175	342,175	0%	378.30	152.63	-60%	95,549,475	52,619,687	-42,929,788	-45%	
		Car 6	0	0	0%	0	0	0%	0	0	0	0%	
1.A.3.b.v. Motorized Two-Wheelers (MOWs)	Trucks Total	SA.3.091	563,091	563,091	0%	414.38	244.29	-40%	231,493,271	138,136,342	-93,356,929	-40%	
		pre-Cars	7,389	7,389	0%	102.36	150.24	22%	965,588	1,110,176	144,588	15%	
		Car 1	4,085	4,085	0%	124.72	180.26	32%	599,229	688,547	89,318	15%	
		Car 2	3,544	3,544	0%	137.85	194.58	41%	488,552	680,633	192,081	41%	
		Car 3	3,560	3,560	0%	39.58	194.58	382%	140,563	630,634	490,071	382%	
		Car 4	0	0	0%	0	0	0%	0	0	0	0%	
	MOWs total	SA.3.091	79,809	79,809	0%	118.79	171.64	54%	2,137,082	3,299,152	1,162,070	54%	
		1.A.3.b. Road Transport	Total	2,180,883	2,180,883	0%	305.80	157.85	-48%	552,365,736	331,625,655	-220,740,081	-40%

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	11,581	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	-29%	
		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%	297.79	264.44	-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%	
1.A.3.b.i. Light Duty Vehicles (LDVs)	Gasoline	Car 6	1,557	1,557	0%	219.84	158.66	-44%	484,664	220,086	-264,578	-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	1,306,262	1,306,262	0%	234.61	152.29	-54%	386,442,896	146,673,597	-239,769,299	-54%	
		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	-28%	268,134	133,538	-134,596	-28%	
		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%	
	Diesel Oil	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	-13%	1,238,546	1,092,662	-145,884	-13%	
		pre-Cars	3,281	3,281	0%	424.46	386.79	-9%	1,368,754	1,022,093	-346,661	-9%	
		Car 1	3,666	3,666	0%	398.34	276.24	-30%	1,445,960	1,017,634	-428,326	-30%	
		Car 2	8,479	8,479	0%	336.40	133.28	-49%	2,852,325	1,639,772	-1,212,553	-49%	
Diesel Oil	Car 3	23,785	23,785	0%	558.53	150.44	-73%	13,050,281	3,565,082	-9,485,199	-73%		
	Car 4	59,485	59,485	0%	494.22	89.85	-82%	29,369,870	5,337,395	-24,032,475	-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	-74%	55,186,382	13,741,354	-41,445,028	-74%		
	100% Total	126,088	126,088	0%	489.51	123.61	-74%	56,344,963	14,834,656	-41,510,307	-74%		
	1.A.3.b.ii. Heavy Duty Vehicles Buses	Gasoline	pre-Cars	1,326	1,326	0%	1091.46	1118.45	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	457.61	-27%	9,073,197	6,689,744	-2,383,453	-27%	
Car 4			5,331	5,331	0%	468.10	361.85	-22%	2,642,179	1,677,777	-964,402	-22%	
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	19,965,298	-7,176,615	-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	14,680,877	-5,281,723	-27%	
		Car 5	485,981	485,981	0%	261.24	152.32	-42%	116,149,955	61,626,577	-54,523,378	-42%	
1.A.3.b.iii. Heavy Duty Vehicles Trucks & Lorries	Gasoline	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%	
		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	171.38	38%	536,615	738,050	201,435	38%	
		Car 2	3,287	3,287	0%	136.22	184.55	43%	445,087	636,853	191,766	43%	
		Car 3	3,984	3,984	0%	38.66	184.55	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%	
	MOWs Total	16,268	16,268	0%	107.43	173.28	61%	1,982,546	3,163,439	1,180,893	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	6,967,452	-44,189	-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	675,303	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	748,116	748,116	0%	88.35	74.85	-16%	68,190,887	56,671,737	-11,519,150	-17%	
	Diesel Oil	pre-Cars	1,389	1,389	0%	312.32	284.56	-9%	433,081	368,136	-64,945	-9%
		Car 1	5,425	5,425	0%	298.42	286.79	-4%	1,678,472	1,640,688	-37,784	-4%
		Car 2	28,437	28,437	0%	406.84	279.91	-40%	11,563,522	6,253,531	-5,309,991	-46%
		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%	317,723,135	146,576,886	-171,146,249	-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	186.27	-65%	187,281	59,528	-127,753	-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	181.79	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	47,288	31,101	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%	1,137,299	1,096,727	-40,572	-3%		
1.A.3.b.i. Light Duty Vehicles (LDVs)	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%	1,166,762	834,566	-332,196	-30%
		Car 2	6,982	6,982	0%	336.92	133.28	-49%	2,340,147	1,260,674	-1,079,473	-46%
		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	90.45	-82%	27,776,440	5,048,416	-22,728,024	-82%
		Car 5	29,024	29,024	0%	14,971	90.45	-80%	13,911,325	2,687,964	-10,483,361	-80%
	Car 6	41	41	0%	51.26	90.45	-40%	6,160	2,688	-2,472	-40%	
	Diesel oil total	118,777	118,777	0%	488.66	154.93	-76%	47,083,533	13,656,488	-33,423,845	-76%	
	LDVs total	124,354	124,354	0%	484.14	148.03	-76%	18,214,142	5,077,276	-13,136,866	-76%	
	Diesel Oil	pre-Cars	1,172	1,172	0%	1096.89	1191.23	-4%	1,249,028	1,194,143	-54,885	-4%
Car 1		1,004	1,004	0%	727.95	170.88	-76%	766,620	791,181	24,561	76%	
Car 2		6,084	6,084	0%	764.37	643.48	-14%	5,324,968	4,576,271	-748,697	-14%	
Car 3		13,167	13,167	0%	628.43	457.65	-27%	8,262,880	5,988,202	-2,284,678	-27%	
Car 4		4,945	4,945	0%	485.55	351.71	-27%	2,270,611	1,739,796	-530,815	-27%	
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	319%		
Diesel total	51,776	51,776	0%	509.54	380.06	-26%	28,760,969	18,620,483	-7,738,126	-26%		
LDVs total	9,983	9,983	0%	1036.72	717.35	-29%	6,072,150	4,322,888	-1,748,262	-29%		
1.A.3.b.ii. Heavy Duty Vehicle Reses	Diesel Oil	Car 1	2,985	2,985	0%	743.27	585.27	-21%	1,150,848	1,065,909	-84,939	-21%
		Car 2	16,444	16,444	0%	918.17	610.47	-34%	15,089,881	9,440,953	-5,648,928	-34%
		Car 3	78,750	78,750	0%	823.53	587.33	-29%	47,837,440	27,587,440	-20,250,000	-29%
		Car 4	42,781	42,781	0%	356.90	287.27	-27%	16,936,987	12,989,770	-3,947,217	-27%
		Car 5	436,960	436,960	0%	261.70	152.65	-40%	193,161,304	86,796,496	-106,364,807	-40%
		Car 6	18,020	18,020	0%	58.67	152.65	261%	913,082	2,750,630	1,837,548	261%
Trucks Total	1,887,739	1,887,739	0%	353.86	287.20	-21%	211,087,531	124,188,949	-86,898,582	-41%		
1.A.3.b.iii. Heavy Duty Vehicle Trucks & Lorries	Diesel Oil	pre-Cars	6,362	6,362	0%	123.07	119.79	-2%	181,736	164,179	-17,557	-2%
		Car 1	4,013	4,013	0%	101.03	173.15	70%	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	716,565	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%
MWVs total	18,029	18,029	0%	104.34	175.38	68%	5,962,088	5,187,618	-1,294,951	-68%		
1.A.3.b. Road Transport		2,132,683	2,132,683	0%	288.88	145.76	-50%	616,079,063	390,854,371	-395,224,692	-63%	

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	844.11	-11%	7 132 688	6 327 484	-795 844	-11%	
		Car 1	30 667	30 667	0%	368.77	343.93	-32%	11 062 246	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	-494 218	-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	157%	3 183 252	0 187 581	5 004 293	157%	
	Car 6	10 315	10 315	0%	25.97	47.80	84%	267 855	433 096	-225 246	84%		
	Gasoline total	752 526	752 526	0%	76.03	73.89	4%	57 215 533	54 998 951	2 216 612	-4%		
	Diesel Oil	pre-Cars	1 341	1 341	0%	311.73	284.66	-55%	417 967	362 246	-55 722	-55%	
		Car 1	4 992	4 992	0%	298.92	267.29	-11%	1 482 264	1 387 643	-155 951	-11%	
Car 2		23 934	23 934	0%	406.71	320.45	-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. - Heavy Duty Vehicles (Buses)	Gasoline	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	43 370 380	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%	
		Flx Total	1 338 571	1 338 571	0%	294.44	152.15	-53%	538 951 584	154 612 853	384 338 731	-53%	
		Diesel Oil	pre-Cars	986	986	0%	632.14	645.95	-2%	160 583	176 124	-15 841	-2%
	Car 1		173	173	0%	968.27	989.96	-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	193%	23 517	68 918	-45 401	193%		
1.A.3.b.iii. - Heavy Duty Vehicles (Trucks & Lorries)	Gasoline	Gasoline total	5 845	5 845	0%	596.34	176.49	-7%	1 112 584	1 631 847	-588 912	-7%	
		pre-Cars	2 537	2 537	0%	428.16	386.79	-21%	1 985 919	776 259	1 209 659	-21%	
		Car 1	2 589	2 589	0%	393.82	276.25	-49%	987 136	539 898	447 328	-49%	
		Car 2	6 087	6 087	0%	338.91	133.25	-42%	1 385 995	1 180 889	-205 126	-42%	
		Car 3	19 220	19 220	0%	571.75	150.58	-74%	10 417 076	2 742 056	7 675 020	-74%	
		Car 4	52 361	52 361	0%	498.70	91.69	-82%	26 164 486	4 703 746	21 460 740	-82%	
	Diesel Oil	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	-60%	29 829	17 974	11 855	-60%	
		Diesel oil total	128 578	128 578	0%	415.56	170.96	-77%	61 146 575	14 267 237	46 879 338	-77%	
		Flx Total	134 423	134 423	0%	463.16	153.81	-75%	62 259 160	15 298 869	46 968 311	-75%	
1.A.3.b.iv. - Heavy Duty Vehicles (Motorised Two-Wheelers (MOW))	Diesel Oil	pre-Cars	984	984	0%	1099.48	1919.23	-5%	1 062 384	1 062 921	-48 437	-5%	
		Car 1	837	837	0%	728.12	170.99	3%	599 232	626 359	-18 127	3%	
		Car 2	5 596	5 596	0%	704.30	643.67	-59%	4 284 320	3 683 441	-598 879	-59%	
		Car 3	11 221	11 221	0%	621.20	458.38	-21%	7 082 740	5 143 520	-1 939 220	-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%	
	Trucks Total	Car 6	4 182	4 182	0%	42.78	183.99	330%	178 913	789 476	-610 563	330%	
		Buses Total	49 143	49 143	0%	468.37	339.99	-27%	23 017 115	16 788 234	6 228 881	-27%	
		Trucks Total	pre-Cars	4 182	4 182	0%	1034.34	737.35	-29%	4 945 942	3 525 898	1 420 134	-29%
			Car 1	2 285	2 285	0%	748.66	561.41	-25%	1 600 685	1 237 759	-362 926	-25%
Car 2	13 623		13 623	0%	817.30	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	19 937 825	16 651 841	-42%		
1.A.3.b.v. - Road Transport	Gasoline	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	11 368 582	-7 431 413	189%	
		Trucks Total	572 154	572 154	0%	314.89	196.65	-38%	179 874 133	112 285 582	67 588 551	-38%	
		Diesel Oil	pre-Cars	6 185	6 185	0%	122.85	158.64	29%	795 185	974 388	-218 152	29%
			Car 1	3 037	3 037	0%	134.71	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	1 611 189	-1 311 467	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%	
MOWs Total	18 673	18 673	0%	108.59	179.24	78%	1 878 294	3 346 794	-1 468 499	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 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%	823.37	844.11	-14%	7,266,112	6,191,942	-1,074,169	-14%	
		Car 1	34,112	34,112	0%	371.34	345.71	-34%	8,963,681	5,924,574	-3,039,228	-34%	
		Car 2	42,925	42,925	0%	297.78	142.69	-32%	8,918,785	6,099,659	-2,819,646	-32%	
		Car 3	72,871	72,871	0%	73.86	74.74	1%	5,381,361	5,446,237	64,877	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	151%	3,454,481	0,881,456	5,406,375	151%	
	Gasoline total	715,156	715,156	0%	76.38	71.73	4%	53,196,187	51,380,983	1,815,204	4%		
	Diesel Oil	pre-Cars	1,382	1,382	0%	319.33	284.66	-55%	367,917	339,733	-28,184	-55%	
		Car 1	4,219	4,219	0%	298.14	267.84	-59%	1,261,930	1,129,989	-131,941	-59%	
		Car 2	19,689	19,689	0%	407.80	320.36	-49%	8,913,587	4,339,719	4,574,868	-49%	
Car 3		71,044	71,044	0%	595.91	179.64	-70%	42,271,648	12,719,962	29,551,686	-70%		
1.A.3.b.i. - Heavy Duty Vehicles (HDVs)	Gasoline	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	86,400,009	-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	163,163,591	111,974,732	-63%	
		Flx Total	1,360,721	1,360,721	0%	245.48	153.52	-53%	547,334,420	154,544,484	392,789,936	-53%	
		Gasoline	pre-Cars	979	979	0%	664.37	645.95	-1%	1,375,361	1,611,977	-236,616	-1%
	Car 1		150	150	0%	895.63	911.93	-61%	134,523	46,851	87,672	-61%	
	Car 2		629	629	0%	298.27	312.94	-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%	
	1.A.3.b.ii. - Heavy Duty Vehicles (HDVs)	Gasoline	Car 4	1,720	1,720	0%	47.06	51.30	9%	80,950	80,240	710	9%
Car 5			1,620	1,620	0%	18.41	51.30	179%	29,912	83,086	-53,174	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%	187.52	172.88	8%	1,683,507	1,680,999	2,508	8%	
Diesel Oil			pre-Cars	2,323	2,323	0%	418.91	386.79	-26%	968,185	712,531	255,654	-26%
			Car 1	2,186	2,186	0%	391.47	276.25	-49%	924,270	453,227	471,043	-49%
		Car 2	5,025	5,025	0%	324.91	133.25	-49%	1,632,296	971,296	661,020	-49%	
		Car 3	15,781	15,781	0%	588.35	150.67	-74%	9,112,414	2,385,713	6,746,701	-74%	
1.A.3.b.iii. - Heavy Duty Vehicles (HDVs)		Diesel Oil	Car 4	47,480	47,480	0%	501.73	91.74	-82%	23,732,396	4,340,290	19,392,106	-82%
			Car 5	62,116	62,116	0%	436.13	91.74	-79%	27,090,214	5,680,295	21,392,809	-79%
	Car 6		635	635	0%	154.91	91.74	-40%	87,758	68,230	19,528	-40%	
	Diesel oil total		115,366	115,366	0%	488.35	187.66	-77%	63,565,843	16,461,490	46,999,953	-77%	
	LDVs Total		141,098	141,098	0%	476.78	130.62	-76%	64,589,330	15,688,490	48,900,861	-76%	
	pre-Cars		979	979	0%	707.34	1819.23	-26%	1,048,312	986,256	62,056	-26%	
	Diesel Oil	Car 1	747	747	0%	707.34	751.91	-9%	545,471	581,636	-36,165	-9%	
		Car 2	5,211	5,211	0%	707.43	644.46	-49%	6,837,087	3,359,634	3,477,453	-49%	
		Car 3	11,282	11,282	0%	633.90	458.67	-29%	14,711,732	5,174,589	9,537,143	-29%	
		Car 4	6,586	6,586	0%	489.70	351.99	-35%	2,154,066	1,614,177	539,889	-35%	
1.A.3.b.iv. - Heavy Duty Vehicles (HDVs)	Diesel Oil	Car 5	26,267	26,267	0%	368.77	184.58	-49%	8,727,068	4,477,641	4,249,427	-49%	
		Car 6	5,224	5,224	0%	63.13	184.58	241%	277,542	964,226	-686,684	241%	
		Diesel total	52,497	52,497	0%	486.96	327.99	-29%	23,997,871	11,149,448	12,848,423	-29%	
		pre-Cars	4,319	4,319	0%	1034.89	312.75	-29%	4,488,571	3,184,428	1,304,143	-29%	
		Car 1	1,083	1,083	0%	748.71	553.48	-26%	1,387,291	1,025,551	361,740	-26%	
		Car 2	11,902	11,902	0%	817.38	587.58	-30%	3,072,240	5,633,480	-2,439,381	-30%	
	Diesel Oil	Car 3	47,480	47,480	0%	501.73	91.74	-82%	27,460,779	9,722,811	17,737,968	-82%	
		Car 4	29,223	29,223	0%	356.88	263.72	-26%	11,572,868	8,294,190	3,278,678	-26%	
		Car 5	309,726	309,726	0%	264.17	153.49	-46%	93,413,973	50,456,496	42,957,477	-46%	
		Car 6	193,787	193,787	0%	67.48	183.49	161%	8,913,354	26,262,637	-17,350,684	161%	
1.A.3.b.v. - Motorized Two-Wheelers (MOWs)	Diesel Oil	Trucks Total	589,451	589,451	0%	264.68	157.49	-39%	197,189,625	190,292,733	-6,888,957	-39%	
		pre-Cars	5,744	5,744	0%	125.41	157.28	25%	720,441	983,470	-263,028	25%	
		Car 1	3,517	3,517	0%	127.40	170.22	33%	444,086	619,819	-175,733	33%	
		Car 2	3,382	3,382	0%	127.35	186.53	45%	430,600	665,965	-236,365	45%	
		Car 3	5,011	5,011	0%	49.29	196.53	389%	234,136	1,144,416	-910,280	389%	
		Car 4	6	6	0%	19.96	196.53	180%	69	884	-736	180%	
	MOWs Total	18,459	18,459	0%	99.32	180.65	82%	1,833,382	5,334,472	1,501,896	82%		
		1.A.3.b. - Road Transport	Total	2,161,950	2,161,950	0%	264.39	139.26	-48%	575,931,265	381,697,596	194,853,678	-48%

Adjustment details for 2026

NFR Code	Fuel	Activity Data			Implied Emission Factor			NO _x Emissions				
		current	adjusted	difference in [%]	current	adjusted	difference in [%]	current	adjusted	difference in [%]		
1.A.3.a.i - Passenger Cars	Gasoline	pre-Cars	11,782	11,782	0%	636.75	644.11	-14%	7,470,914	6,410,967	-11,667,867	-14%
		Car 1	20,270	20,270	0%	372.25	341.68	-35%	7,545,483	4,986,888	-2,648,596	-35%
		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%	17,969,964	16,777,445	-1,192,489	-7%
		Car 5	183,374	183,374	0%	19.09	50.17	163%	3,580,746	9,189,834	5,609,088	163%
		Car 6	66,332	66,332	0%	26.67	50.17	88%	1,768,917	3,327,850	1,558,933	88%
		Gasoline total	715,272	715,272	0%	78.93	70.65	-10%	58,736,967	50,535,049	-8,201,918	-14%
	Diesel Oil	pre-Cars	1,380	1,380	0%	368.76	254.66	-31%	386,262	339,173	-46,089	-12%
		Car 1	3,749	3,749	0%	298.36	269.64	-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%	36,991,999	11,085,409	-25,906,590	-70%
		Car 4	175,940	175,940	0%	405.76	156.24	-61%	71,362,220	27,474,086	-43,878,214	-61%
		Car 5	299,654	299,654	0%	433.34	156.24	-64%	130,032,044	46,019,229	-83,912,815	-64%
Diesel oil total	625,119	625,119	0%	418.36	160.76	-61%	277,947,660	188,535,230	-89,408,430	-61%		
Pkx Total	1,380,391	1,380,391	0%	235.75	154.41	-35%	327,736,627	199,070,280	-128,666,347	-39%		
Gasoline	pre-Cars	910	910	0%	602.79	645.95	-1%	593,186	547,543	-45,643	-8%	
	Car 1	136	136	0%	908.31	312.78	-66%	122,126	42,425	-79,700	-66%	
	Car 2	540	540	0%	308.39	217.84	-29%	162,311	117,797	-44,514	-29%	
	Car 3	650	650	0%	108.43	111.57	3%	70,432	72,731	2,299	3%	
	Car 4	1,684	1,684	0%	49.06	52.36	7%	78,714	84,003	5,289	7%	
	Car 5	1,724	1,724	0%	19.82	52.36	164%	34,157	80,258	46,100	164%	
	Car 6	363	363	0%	19.85	52.36	181%	6,764	19,992	13,228	181%	
	Gasoline total	5,506	5,506	0%	588.27	171.66	-7%	1,068,292	1,013,478	-54,814	-5%	
1.A.3.b.i - Light Duty Vehicles (LDVs)	Diesel Oil	pre-Cars	2,189	2,189	0%	414.81	386.79	-7%	899,849	885,433	-14,416	-2%
		Car 1	1,780	1,780	0%	391.89	276.25	-30%	780,189	385,371	-394,798	-50%
		Car 2	4,223	4,223	0%	323.43	153.31	-53%	1,365,994	676,452	-689,542	-50%
		Car 3	13,582	13,582	0%	588.91	150.77	-74%	8,064,323	2,940,233	-5,124,090	-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	-93%	32,223,283	6,668,780	-25,554,503	-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	-77%	65,712,732	15,256,007	-50,456,726	-77%	
	LDVs total	149,994	149,994	0%	445.21	188.29	-76%	66,781,025	16,229,684	-50,551,340	-76%	
	1.A.3.b.ii - Heavy Duty Vehicles - Buses	Diesel Oil	pre-Cars	891	891	0%	1076.81	1919.23	-43%	964,197	988,234	24,037
Car 1			583	583	0%	731.36	1332.67	-45%	633,675	646,236	12,560	2%
Car 2			4,375	4,375	0%	708.25	645.03	-9%	3,440,614	2,822,621	-617,993	-18%
Car 3			10,333	10,333	0%	632.87	458.91	-28%	6,539,364	4,741,827	-1,797,536	-27%
Car 4			4,449	4,449	0%	475.90	382.29	-20%	2,117,219	1,666,881	-450,338	-21%
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%
Buses Total			54,157	54,157	0%	404.73	388.24	-2%	23,082,189	16,885,117	-6,197,072	-27%
Gasoline		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	-21%	1,163,482	789,813	-373,669	-33%
	Car 2	8,876	8,876	0%	817.75	585.42	-28%	7,258,047	4,486,626	-2,771,421	-38%	
	Car 3	34,167	34,167	0%	638.91	568.06	-11%	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	-2,754,763	-29%	
	Car 5	269,736	269,736	0%	267.22	153.60	-42%	74,680,233	39,976,610	-34,623,623	-47%	
Car 6	261,480	261,480	0%	61.77	153.60	149%	16,149,280	40,244,036	24,094,756	149%		
Trucks Total	594,013	594,013	0%	226.31	180.97	-20%	134,431,899	101,486,262	-32,945,637	-24%		
1.A.3.b.iii - Motorized Two-Wheelers (M2Ws)	Gasoline	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	158,683	39%
		Car 2	3,375	3,375	0%	125.94	187.68	50%	421,961	687,078	265,117	63%
		Car 3	6,443	6,443	0%	48.36	187.68	381%	209,627	1,273,671	1,064,044	508%
		Car 4	66	66	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%
		M2Ws Total	16,185	16,185	0%	96.14	181.68	89%	1,885,897	3,452,476	1,566,579	83%
1.A.3.b - Road Transport	Total	2,267,339	2,267,339	0%	258.89	137.22	-46%	553,799,598	362,981,620	-190,817,978	-46%	

Adjustment details for 2027

NFR Code	Fuel	Activity Data				Implied Emission Factor				NO _x Emissions			
		current	adjusted	difference	in [%]	current	adjusted	difference	in [%]	current	adjusted	difference	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	-18%	
		Car 1	17,449	17,449	0%	372.96	341.68	-35%	6,588,211	4,217,644	-2,391,267	-36%	
		Car 2	30,435	30,435	0%	217.43	141.75	-35%	6,617,570	4,314,140	-2,303,430	-35%	
		Car 3	54,271	54,271	0%	78.48	76.27	-3%	4,254,938	4,139,376	-115,562	-3%	
		Car 4	315,086	315,086	0%	54.96	51.26	-7%	17,316,320	16,511,881	-804,439	-5%	
		Car 5	180,240	180,240	0%	19.17	51.26	167%	3,485,382	9,239,815	5,754,433	167%	
	Car 6	114,791	114,791	0%	26.66	51.26	92%	3,060,235	5,884,372	2,824,136	92%		
	Gasoline total	724,571	724,571	0%	67.66	60.88	-10%	49,046,874	40,534,734	-8,512,140	-17%		
	Diesel Oil	pre-Cars	1,780	1,780	0%	368.76	254.66	-31%	486,963	347,626	-139,337	-29%	
		Car 1	3,749	3,749	0%	298.36	269.64	-9%	1,082,268	910,182	-172,086	-16%	
		Car 2	13,788	13,788	0%	407.17	222.43	-45%	5,914,130	3,066,393	-2,847,736	-48%	
		Car 3	52,128	52,128	0%	808.95	179.65	-78%	31,696,478	9,364,788	-22,331,690	-71%	
		Car 4	187,947	187,947	0%	418.16	156.24	-61%	64,733,485	24,983,323	-39,750,162	-61%	
		Car 5	283,480	283,480	0%	423.39	156.24	-63%	120,187,656	44,073,190	-76,114,466	-63%	
	Car 6	184,768	184,768	0%	262.61	156.24	-41%	48,521,163	29,255,985	-19,265,178	-40%		
Diesel oil total	696,562	696,562	0%	398.65	161.95	-59%	272,126,081	112,890,721	-159,235,359	-58%			
Pkx Total	1,421,142	1,421,142	0%	245.98	155.61	-36%	321,152,955	163,425,453	-157,727,502	-49%			
Gasoline	pre-Cars	940	940	0%	611.41	645.95	-1%	612,247	596,878	-15,369	-2%		
	Car 1	124	124	0%	908.23	312.78	-66%	112,083	39,682	-72,401	-64%		
	Car 2	485	485	0%	302.12	221.62	-27%	140,344	102,950	-37,394	-27%		
	Car 3	596	596	0%	118.57	115.36	4%	65,955	68,812	2,857	4%		
	Car 4	1,476	1,476	0%	50.72	53.38	5%	74,877	78,816	3,938	5%		
	Car 5	1,680	1,680	0%	21.73	53.38	146%	36,240	89,034	52,794	146%		
Car 6	910	910	0%	19.18	53.38	180%	17,052	49,080	31,928	180%			
Gasoline total	6,186	6,186	0%	171.55	167.18	-2%	1,058,799	1,034,211	-24,588	-2%			
1.A.3.a.ii. Heavy Duty Vehicles (LDVs)	Diesel Oil	pre-Cars	2,067	2,067	0%	413.41	386.79	-7%	860,499	831,163	-29,336	-3%	
		Car 1	1,538	1,538	0%	398.47	276.25	-30%	680,795	331,158	-349,636	-50%	
		Car 2	3,580	3,580	0%	321.26	153.04	-52%	1,143,793	687,293	-456,500	-40%	
		Car 3	11,684	11,684	0%	556.30	150.79	-73%	6,940,879	1,758,747	-5,182,132	-75%	
		Car 4	39,050	39,050	0%	1,076.70	339.89	-68%	23,749,471	6,235,025	-17,514,446	-72%	
		Car 5	75,629	75,629	0%	436.66	83.69	-79%	32,790,966	7,654,945	-25,136,021	-79%	
	Car 6	19,735	19,735	0%	151.71	83.69	-39%	2,977,439	1,826,675	-1,150,764	-39%		
	Diesel oil total	153,284	153,284	0%	424.66	183.89	-74%	65,083,930	15,925,276	-49,158,654	-74%		
	LDVs total	199,670	199,670	0%	414.83	186.35	-74%	66,752,729	16,969,627	-49,783,102	-74%		
	Diesel Oil	pre-Cars	736	736	0%	1073.33	1191.23	-5%	790,259	750,425	-39,834	-5%	
		Car 1	411	411	0%	731.37	752.57	-3%	380,684	389,062	8,408	3%	
		Car 2	3,325	3,325	0%	767.91	645.49	-16%	2,920,280	2,147,440	-772,840	-26%	
		Car 3	8,670	8,670	0%	826.12	543.40	-34%	5,433,440	3,988,065	-1,445,375	-27%	
		Car 4	3,823	3,823	0%	474.87	562.49	-16%	1,812,061	1,947,607	135,546	8%	
		Car 5	21,913	21,913	0%	363.82	185.64	-49%	7,937,567	4,663,698	-3,284,291	-41%	
Car 6	14,586	14,586	0%	68.52	185.64	270%	86,215	272,630	186,415	216%			
Diesel total	53,382	53,382	0%	378.80	286.71	-23%	19,793,981	15,384,828	-4,409,873	-23%			
pre-Cars	3,680	3,680	0%	120.43	171.35	-29%	3,730,272	2,659,676	-1,070,596	-29%			
Car 1	1,311	1,311	0%	748.03	408.38	-47%	980,842	614,151	-366,690	-37%			
Car 2	7,087	7,087	0%	817.66	583.45	-29%	5,794,870	3,580,026	-2,214,844	-38%			
Car 3	26,886	26,886	0%	638.17	365.72	-42%	19,642,611	9,583,881	-10,058,729	-51%			
Car 4	29,082	29,082	0%	397.77	279.34	-30%	7,968,416	6,187,646	-1,780,769	-22%			
Car 5	204,365	204,365	0%	244.36	168.79	-31%	59,989,789	45,365,362	-14,624,427	-24%			
Car 6	335,065	335,065	0%	65.62	114.35	75%	21,985,366	11,798,641	-10,186,725	-46%			
Trucks total	988,263	988,263	0%	599.82	375.92	-36%	116,631,141	105,268,508	-11,362,633	-10%			
pre-Cars	5,336	5,336	0%	125.51	157.19	-25%	6,711,085	830,789	-5,880,295	-88%			
Car 1	3,257	3,257	0%	126.39	177.68	-41%	4,111,617	579,244	-3,532,373	-86%			
Car 2	3,396	3,396	0%	122.56	180.33	-32%	4,452,280	673,540	-3,778,740	-85%			
Car 3	6,741	6,741	0%	49.22	180.33	363%	2,711,187	1,336,566	-1,374,621	-50%			
Car 4	430	430	0%	19.28	180.33	983%	7,862	85,270	77,408	983%			
Car 5	0	0	0%	0.00	180.33	0%	0	0	0	0%			
MDVs total	19,740	19,740	0%	92.83	183.39	98%	1,786,674	5,933,787	1,758,114	98%			
1.A.3.b. Road Transport Total		2,291,407	2,291,407	0%	233.43	135.23	-42%	525,545,974	384,880,596	-140,665,378	-28%		

Adjustment details for 2018

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	12,219	12,219	0%	637.58	644.11	-65%	7,780,965	6,648,721	-1,132,234	-15%
		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	186,030	186,030	0%	19.35	52.30	170%	3,228,282	8,725,668	5,497,386	170%
	Diesel Oil	pre-Cars	159,041	159,041	0%	6.00	52.30	0%	4,190,432	8,718,250	4,527,818	89%
		Car 1	3,949	3,949	0%	363.16	254.96	-30%	386,446	365,173	-21,273	-5%
		Car 2	2,949	2,949	0%	268.57	279.65	4%	862,432	875,167	12,735	1%
		Car 3	10,784	10,784	0%	409.20	222.67	-45%	4,391,793	2,483,596	-1,908,198	-45%
		Car 4	40,786	40,786	0%	612.49	180.15	-71%	24,932,029	7,333,241	-17,598,788	-71%
		Car 5	130,534	130,534	0%	414.71	180.40	-61%	54,133,837	20,937,329	-33,196,508	-61%
	Trucks & Lorries	pre-Cars	251,212	251,212	0%	416.25	180.40	-61%	104,585,786	40,293,731	-64,292,055	-61%
		Car 1	228,685	228,685	0%	254.87	180.40	-31%	58,284,140	35,680,446	-22,603,694	-39%
		Diesel oil total	666,074	666,074	0%	375.66	163.38	-56%	247,596,063	188,748,684	-158,847,459	-56%
FltC Total		1,365,181	1,365,181	0%	214.34	114.68	-46%	262,589,060	156,555,421	-106,033,639	-46%	
1.A.3.b.i - Light Duty Vehicles (LDVs)	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	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	4%
		Car 5	1,483	1,483	0%	23.70	54.36	129%	35,160	80,626	45,466	129%
	Diesel Oil	pre-Cars	1,643	1,643	0%	19.18	54.36	182%	39,550	89,326	49,776	182%
		Car 1	6,315	6,315	0%	154.22	160.11	4%	999,199	1,011,136	11,937	1%
		Car 2	1,872	1,872	0%	411.51	386.79	-6%	771,337	574,742	-196,595	-26%
		Car 3	1,285	1,285	0%	389.94	276.25	-29%	483,129	272,296	-210,833	-44%
		Car 4	2,942	2,942	0%	318.56	153.88	-51%	965,389	550,789	-414,600	-43%
		Car 5	9,383	9,383	0%	558.10	150.74	-73%	5,689,152	1,411,299	-4,277,853	-75%
	Trucks & Lorries	pre-Cars	33,232	33,232	0%	508.42	93.81	-82%	15,929,185	3,117,457	-12,811,728	-80%
		Car 1	66,283	66,283	0%	432.92	93.81	-78%	28,684,080	6,217,860	-22,466,220	-78%
		Car 5	39,482	39,482	0%	158.79	93.81	-41%	5,941,615	3,686,228	-2,255,387	-38%
LDVs total		154,259	154,259	0%	384.71	182.69	-53%	59,344,525	35,880,316	-23,464,209	-41%	
LDVs total		180,574	180,574	0%	375.86	184.94	-52%	69,343,125	36,851,449	-32,491,676	-52%	
1.A.3.b.ii - Heavy Duty Vehicles (HDVs)	Gasoline	pre-Cars	547	547	0%	1078.16	1919.23	-43%	589,267	557,147	-32,120	-5%
		Car 1	237	237	0%	732.78	752.57	3%	173,678	176,368	2,690	2%
		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%
	Diesel Oil	pre-Cars	20,670	20,670	0%	64.89	186.37	288%	1,176,026	3,682,314	2,506,288	214%
		Car 1	91,634	91,634	0%	309.75	283.53	-9%	15,993,546	13,687,186	-2,306,360	-15%
		Car 2	3,262	3,262	0%	1034.82	737.35	-29%	3,375,359	2,485,071	-890,288	-26%
		Car 3	1,094	1,094	0%	747.82	488.39	-35%	918,052	512,378	-405,674	-44%
		Car 4	5,544	5,544	0%	817.44	581.68	-29%	4,532,180	2,781,516	-1,750,664	-39%
		Car 5	20,583	20,583	0%	629.54	563.68	-10%	12,367,751	7,277,279	-5,090,472	-41%
	Trucks & Lorries	pre-Cars	15,912	15,912	0%	358.89	276.23	-23%	6,334,421	4,386,424	-1,947,997	-31%
		Car 1	154,983	154,983	0%	250.40	154.68	-38%	45,964,153	24,283,389	-21,680,764	-47%
		Car 5	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	-67%	188,173,537	180,760,889	-7,412,648	-4%	
1.A.3.b.iii - Motorised Two-Wheelers (MTWs)	Gasoline	pre-Cars	4,940	4,940	0%	128.95	158.61	26%	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%	129.33	186.64	45%	387,596	639,833	252,237	65%
		Car 3	6,241	6,241	0%	48.24	186.64	384%	25,126	1,239,686	1,214,560	384%
		Car 4	1,130	1,130	0%	58.41	186.64	673%	23,066	224,682	201,616	673%
		Car 5	0	0	0%	0.00	186.64	0%	0	0	0	0%
	MTWs Total		18,487	18,487	0%	85.66	186.64	118%	1,658,558	3,434,767	1,776,209	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	-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 [t]	in [t]	in [%]		
1.A.3.a.i - Passenger Cars	Gasoline	pre-Cars	13,648	13,648	0%	638.58	644.11	-65%	8,664,621	7,382,686	-1,281,935	-15%
		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	111.68	-50%	4,531,070	1,858,018	-2,672,852	-59%
		Car 3	38,216	38,216	0%	82.22	76.12	-7%	2,977,840	2,829,186	-148,654	-5%
		Car 4	295,220	295,220	0%	57.04	53.29	-7%	14,588,285	13,589,621	-998,664	-7%
		Car 5	180,537	180,537	0%	19.77	53.29	170%	3,173,728	8,584,356	5,410,628	170%
	Diesel Oil	pre-Cars	285,636	285,636	0%	25.63	53.29	180%	5,295,099	11,010,782	5,715,683	180%
		Car 1	154,031	154,031	0%	62.36	68.45	10%	43,961,941	48,238,025	4,276,084	10%
		Car 2	3,745	3,745	0%	313.70	254.96	-19%	911,180	734,621	-176,559	-19%
		Car 3	2,545	2,545	0%	298.86	272.65	-9%	764,913	687,786	-77,127	-9%
		Car 4	8,891	8,891	0%	407.19	229.16	-44%	3,420,286	2,037,480	-1,382,806	-44%
		Car 5	33,079	33,079	0%	615.11	180.42	-71%	20,310,125	5,967,483	-14,342,642	-71%
	Trucks & Lorries	pre-Cars	111,335	111,335	0%	419.17	182.44	-61%	48,688,685	18,085,228	-30,603,457	-61%
		Car 1	231,784	231,784	0%	419.37	182.44	-60%	95,117,643	37,650,997	-57,466,646	-60%
		Car 5	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%
	P/Cs total		1,368,532	1,368,532	0%	599.83	155.32	-74%	273,668,099	157,821,687	-115,846,412	-42%
1.A.3.b.i - Heavy Duty Vehicles (HDVs)	Gasoline	pre-Cars	909	909	0%	644.89	645.95	-1%	687,449	581,962	-105,487	-15%
		Car 1	87	87	0%	915.28	312.78	-66%	89,953	30,396	-59,557	-66%
		Car 2	316	316	0%	304.63	224.45	-26%	96,158	70,848	-25,310	-26%
		Car 3	447	447	0%	112.68	121.47	8%	59,355	64,283	4,928	8%
		Car 4	1,126	1,126	0%	53.08	55.26	4%	59,692	62,199	2,507	4%
		Car 5	1,361	1,361	0%	25.34	55.26	110%	34,240	74,680	40,440	110%
	Diesel Oil	pre-Cars	2,420	2,420	0%	18.76	55.26	180%	45,389	133,733	88,343	180%
		LDVs total	6,683	6,683	0%	54.86	155.35	5%	94,299	1,094,156	1,003,957	5%
		Car 1	1,164	1,164	0%	418.96	389.79	-25%	725,111	541,376	-183,735	-25%
		Car 2	1,079	1,079	0%	389.52	275.25	-40%	420,285	232,255	-188,030	-40%
		Car 3	2,234	2,234	0%	315.99	154.79	-30%	737,682	454,490	-283,192	-30%
		Car 4	7,640	7,640	0%	601.11	330.13	-45%	4,587,943	2,744,422	-1,843,521	-45%
	Trucks & Lorries	pre-Cars	20,711	20,711	0%	512.28	94.57	-82%	14,788,380	2,716,154	-12,072,226	-82%
		Car 1	58,794	58,794	0%	434.30	94.57	-79%	25,499,080	5,552,420	-19,946,660	-79%
		Car 5	69,031	69,031	0%	146.18	81.57	-30%	8,616,586	5,722,892	-2,893,694	-30%
	Diesel oil total		159,183	159,183	0%	347.42	191.90	-71%	55,383,325	36,221,485	-19,161,840	-71%
	LDVs total		165,866	165,866	0%	339.31	183.97	-46%	56,229,594	37,248,956	-18,980,638	-46%
1.A.3.b.ii - Heavy Duty Vehicles (HDVs)	Diesel Oil	pre-Cars	489	489	0%	1086.23	1193.23	-6%	588,087	478,258	-109,829	-6%
		Car 1	147	147	0%	738.37	752.57	2%	188,212	110,933	-77,280	-2%
		Car 2	1,611	1,611	0%	629.67	645.57	-10%	1,271,445	1,041,621	-229,824	-10%
		Car 3	5,709	5,709	0%	733.49	466.75	-37%	3,985,261	2,623,779	-1,361,482	-37%
		Car 4	2,147	2,147	0%	473.92	342.84	-28%	1,382,041	969,434	-412,607	-28%
		Car 5	17,190	17,190	0%	362.91	186.64	-69%	6,219,175	3,180,791	-3,038,384	-69%
	Trucks & Lorries	pre-Cars	25,935	25,935	0%	69.43	186.64	269%	5,918,961	4,686,133	-1,232,828	-20%
		Diesel total	52,939	52,939	0%	274.81	247.83	-10%	14,547,072	13,158,878	-1,388,194	-10%
		Car 1	3,140	3,140	0%	1034.98	737.35	-29%	3,250,020	2,370,443	-879,577	-29%
	Trucks & Lorries	pre-Cars	969	969	0%	747.90	581.04	-30%	724,240	453,754	-270,486	-30%
		Car 1	5,880	5,880	0%	817.42	581.04	-30%	3,734,343	2,288,967	-1,445,376	-30%
		Car 2	16,377	16,377	0%	628.94	371.48	-41%	10,390,323	5,756,540	-4,633,783	-41%
	Trucks & Lorries	pre-Cars	19,137	19,137	0%	396.86	269.43	-33%	1,226,679	3,689,320	2,462,641	33%
		Car 1	185,203	185,203	0%	965.15	542.80	-43%	36,969,499	19,418,290	-17,551,189	-43%
		Car 2	432,692	432,692	0%	72.98	154.92	110%	11,175,486	67,683,853	56,508,367	110%
	Trucks total		595,913	595,913	0%	73.15	169.17	18%	95,380,700	180,899,376	85,518,676	18%
	1.A.3.b.iii - Motorized Two-Wheelers (M2Ws)	Gasoline	pre-Cars	4,913	4,913	0%	125.89	164.79	31%	664,997	792,791	127,794
Car 1			2,835	2,835	0%	129.39	177.29	37%	355,496	582,589	227,093	37%
Car 2			3,084	3,084	0%	119.33	180.66	67%	389,224	615,317	226,093	67%
Car 3			6,082	6,082	0%	43.03	180.66	381%	284,284	1,193,617	909,333	381%
Car 4			2,085	2,085	0%	21.69	180.66	817%	43,489	386,647	343,158	817%
Car 5			0	0	0%	0.00	180.66	0%	0	0	0	0%
M2Ws total		18,150	18,150	0%	86.95	180.63	107%	5,615,490	5,562,941	-52,549	-1%	
1.A.3.b. Road Transport Total		2,262,080	2,262,080	0%	99.58	132.83	-23%	637,268,146	292,497,437	-344,770,709	-46%	

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