

Emission factor in 2019																					
Vehicle type	Technology /Engine standard	Annual average VKT (km)	Fuel type	EF start-up (g/start)	EF running (g/km)	EF start-up (g/start)	EF running (g/km)	EF start-up (g/start)	EF running (g/km)	EF start-up (g/start)	EF running (g/km)	EF start-up (g/start)	EF running (g/km)	EF start-up (g/start)	EF running (g/km)	EF start-up (g/start)	EF running (g/km)	EF start-up (g/start)	EF running (g/km)	EF start-up (g/start)	EF running (g/km)
Passenger car	Euro 1	>161,000	Gasoline	2.44	9.56	0.33	0.09	0.07	0.01	0.06	0.05	0.00	0.00	0.00	0.00	0.79	6.26	0.00	0.00	0.07	0.02
	Euro 2	>161,000		3.30	12.91	0.56	0.15	0.28	0.04	0.13	0.11	0.00	0.00	0.01	0.00	2.97	23.62	0.00	0.00	0.11	0.03
	Euro 3	>161,000		5.25	14.95	0.25	0.06	0.55	0.07	0.16	0.11	0.00	0.00	0.00	0.00	6.88	54.74	0.01	0.00	0.05	0.01
	Euro 4	<79,000		0.56	0.22	0.04	0.00	0.01	0.00	0.02	0.01	0.00	0.00	0.00	0.00	2.94	23.40	0.00	0.00	0.01	0.00
	Euro 4	<79,000		0.99	0.14	0.07	0.00	0.02	0.01	0.05	0.01	0.00	0.00	0.00	0.00	5.14	103.00	0.00	0.00	0.01	0.00
	Euro 4	80,000-161,000		2.26	2.96	0.18	0.02	0.08	0.03	0.13	0.09	0.00	0.00	0.00	0.00	9.68	77.03	0.01	0.00	0.04	0.01
	Hybrid	<79,000		0.02	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.06	0.49	0.00	0.00	0.00	0.00
	Hybrid	<79,000		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Hybrid	80,000-161,000		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Hybrid	>161,000		0.18	0.48	0.01	0.00	0.02	0.00	0.01	0.01	0.00	0.00	0.00	0.00	0.23	1.85	0.00	0.00	0.00	0.00
	Carburetor/mix	<79,000	NGV modified	0.12	0.18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.11	0.74	0.00	0.00	0.02	0.01
	Carburetor/mix	<79,000		0.21	0.84	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.00	0.00	0.00	0.16	1.15	0.00	0.00	0.04	0.03
	Carburetor/mix	80,000-161,000		0.49	1.93	0.00	0.00	0.00	0.00	0.01	0.02	0.00	0.00	0.00	0.00	0.32	2.22	0.00	0.00	0.09	0.10
	Carburetor/mix	>161,000		0.64	0.00	0.00	0.00	0.03	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.37	9.88	0.00	0.00	0.13	0.18
	Carburetor/mix	<79,000	LPG	0.95	1.43	0.02	0.01	0.00	0.00	0.02	0.03	0.00	0.00	0.00	0.00	0.48	3.34	0.00	0.00	0.01	0.00
	Carburetor/mix	<79,000		1.68	6.59	0.03	0.03	0.00	0.00	0.06	0.09	0.00	0.00	0.00	0.00	0.74	5.16	0.00	0.00	0.01	0.01
	Carburetor/mix	80,000-161,000		3.79	15.04	0.07	0.09	0.01	0.00	0.13	0.18	0.00	0.00	0.00	0.00	1.41	9.86	0.00	0.00	0.02	0.03
	Carburetor/mix	>161,000		5.03	23.04	0.11	0.16	0.11	0.01	0.18	0.21	0.00	0.00	0.00	0.00	1.64	11.53	0.00	0.00	0.04	0.05
	Euro 1	>161,000	Diesel	0.07	0.01	0.01	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.01	0.00	0.96	3.36	0.00	0.00	0.00	0.00
	Euro 2	>161,000		0.23	0.03	0.01	0.00	0.00	0.00	0.01	0.05	0.00	0.00	0.03	0.01	3.60	12.66	0.00	0.00	0.00	0.00
	Euro 3	>161,000		0.15	0.02	0.02	0.00	0.00	0.00	0.02	0.12	0.00	0.00	0.05	0.01	8.14	28.60	0.00	0.00	0.00	0.00
	Euro 4	<79,000		0.04	0.01	0.00	0.00	0.00	0.00	0.01	0.03	0.00	0.00	0.01	0.00	3.24	11.39	0.00	0.00	0.00	0.00
	Euro 4	<79,000		0.06	0.01	0.00	0.00	0.00	0.00	0.01	0.05	0.00	0.00	0.02	0.00	5.50	19.30	0.00	0.00	0.00	0.00
	Euro 4	80,000-161,000		0.14	0.02	0.01	0.00	0.00	0.00	0.02	0.10	0.00	0.00	0.04	0.00	10.61	37.27	0.01	0.00	0.00	0.00

Emission factor in 2019																					
Vehicle type	Technology /Engine standard	Annual average VKT (km)	Fuel type	EF start-up (g/start)	EF running (g/km)	EF start-up (g/start)	EF running (g/km)	EF start-up (g/start)	EF running (g/km)	EF start-up (g/start)	EF running (g/km)	EF start-up (g/start)	EF running (g/km)	EF start-up (g/start)	EF running (g/km)	EF start-up (g/start)	EF running (g/km)	EF start-up (g/start)	EF running (g/km)	EF start-up (g/start)	EF running (g/km)
	Electric	Any	Electric	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				28.64	90.37	1.75	0.63	1.19	0.18	1.05	1.30	0.00	0.00	0.18	0.04	65.95	446.86	0.04	0.01	0.66	0.50
Motorcycle	4 cycle / Carburetor	>50,000	Gasoline	2.95	2.72	0.62	0.42	0.14	0.06	0.13	0.05	0.00	0.00	0.04	0.02	2.95	14.51	0.00	0.00	0.15	0.15
	4 cycle /FI	<25,000		7.27	17.56	1.77	0.66	0.19	0.02	0.33	0.14	0.00	0.00	0.05	0.04	10.00	55.12	0.00	0.00	0.36	0.20
	4 cycle /FI	26,000-50,000		5.01	11.28	1.24	0.43	0.15	0.05	0.26	0.11	0.00	0.00	0.04	0.03	6.48	35.94	0.00	0.00	0.26	0.14
	4 cycle /FI	>50,000		1.50	3.22	0.39	0.13	0.05	0.04	0.09	0.04	0.00	0.00	0.01	0.01	1.82	10.20	0.00	0.00	0.09	0.04
				16.72	34.78	4.02	1.64	0.52	0.17	0.80	0.33	0.00	0.00	0.14	0.10	21.26	115.78	0.00	0.00	0.85	0.54
Van	Euro 1	>161,000	Gasoline	0.30	0.92	0.04	0.01	0.01	0.00	0.01	0.01	0.00	0.00	0.00	0.00	0.10	0.72	0.00	0.00	0.01	0.00
	Euro 2	>161,000		0.38	1.17	0.06	0.02	0.03	0.00	0.02	0.01	0.00	0.00	0.00	0.00	0.34	2.57	0.00	0.00	0.01	0.00
	Euro 3	>161,000		0.86	1.93	0.04	0.01	0.09	0.01	0.03	0.02	0.00	0.00	0.00	0.00	1.12	8.44	0.00	0.00	0.01	0.00
	Euro 4	<79,000		0.14	0.03	0.01	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.72	5.45	0.00	0.00	0.00	0.00
	Euro 4	80,000-161,000		0.14	0.15	0.01	0.00	0.01	0.00	0.01	0.01	0.00	0.00	0.00	0.00	0.60	4.53	0.00	0.00	0.00	0.00
	Euro 4	>161,000		0.13	0.28	0.01	0.00	0.04	0.00	0.01	0.01	0.00	0.00	0.00	0.00	0.48	3.59	0.00	0.00	0.00	0.00
	Carburetor/mix	<79,000	NGV modified	0.46	1.56	0.00	0.00	0.00	0.00	0.01	0.02	0.00	0.00	0.00	0.00	0.35	2.37	0.00	0.00	0.08	0.06
	Carburetor/mix	80,000-161,000		0.45	1.57	0.00	0.00	0.00	0.00	0.01	0.02	0.00	0.00	0.00	0.00	0.29	1.99	0.00	0.00	0.08	0.08
	Carburator/mix	>161,000		1.84	7.35	0.01	0.01	0.08	0.01	0.05	0.06	0.00	0.00	0.00	0.00	1.06	7.12	0.00	0.00	0.39	0.46
	Carburator/mix	<79,000	LPG	0.99	3.38	0.02	0.01	0.00	0.00	0.03	0.05	0.00	0.00	0.00	0.00	0.43	2.92	0.00	0.00	0.01	0.00
	Carburator/mix	80,000-161,000		0.97	3.37	0.02	0.02	0.00	0.00	0.03	0.05	0.00	0.00	0.00	0.00	0.36	2.43	0.00	0.00	0.01	0.01
	Carburator/mix	>161,000		3.94	15.75	0.09	0.11	0.09	0.01	0.14	0.17	0.00	0.00	0.00	0.00	1.29	8.68	0.00	0.00	0.03	0.04
	Euro 1	>161,000	Diesel	0.23	0.03	0.02	0.00	0.00	0.00	0.01	0.04	0.00	0.00	0.03	0.01	3.02	10.27	0.00	0.00	0.00	0.00
	Euro 2	>161,000		0.69	0.08	0.04	0.01	0.00	0.00	0.03	0.14	0.00	0.00	0.09	0.02	10.55	35.85	0.00	0.00	0.00	0.00
	Euro 3	>161,000		0.62	0.06	0.06	0.01	0.00	0.00	0.09	1.66	0.00	0.00	0.20	0.03	33.85	369.21	0.00	0.00	0.00	0.00
	Euro 4	<79,000		0.22	0.03	0.01	0.00	0.00	0.00	0.03	0.16	0.00	0.00	0.06	0.01	19.75	67.10	0.01	0.00	0.00	0.00
	Euro 4	80,000-161,000		0.23	0.03	0.02	0.00	0.00	0.00	0.03	3.02	0.00	0.00	0.07	0.01	16.86	1010.07	0.01	0.00	0.00	0.00
	Euro 4	>161,000		0.24	0.03	0.02	0.00	0.00	0.00	0.03	0.15	0.00	0.00	0.14	0.01	13.86	47.09	0.01	0.00	0.00	0.00

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Vehicle type	Technology /Engine standard	Annual average VKT (km)	Fuel type	EF start-up (g/start)	EF running (g/km)	EF start-up (g/start)	EF running (g/km)	EF start-up (g/start)	EF running (g/km)	EF start-up (g/start)	EF running (g/km)	EF start-up (g/start)	EF running (g/km)	EF start-up (g/start)	EF running (g/km)	EF start-up (g/start)	EF running (g/km)	EF start-up (g/start)	EF running (g/km)	EF start-up (g/start)	EF running (g/km)
				12.81	37.69	0.48	0.22	0.35	0.04	0.57	5.59	0.00	0.00	0.59	0.09	105.05	1590.40	0.03	0.01	0.63	0.67
Pickup	Euro 1	>161,000	Gasoline	0.10	0.29	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.23	0.00	0.00	0.00	0.00
	Euro 2	>161,000		0.16	0.48	0.03	0.01	0.01	0.00	0.01	0.01	0.00	0.00	0.00	0.00	0.14	1.05	0.00	0.00	0.01	0.00
	Euro 3	>161,000		0.37	0.81	0.02	0.00	0.04	0.00	0.01	0.01	0.00	0.00	0.00	0.00	0.48	3.58	0.00	0.00	0.00	0.00
	Euro 4	<79,000		0.05	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.28	2.12	0.00	0.00	0.00	0.00
	Euro 4	80,000-161,000		0.05	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.23	1.73	0.00	0.00	0.00	0.00
	Euro 4	>161,000		0.04	0.09	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.16	1.20	0.00	0.00	0.00	0.00
	Carburator/mix	<79,000	NGV modified	0.10	0.34	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.08	0.54	0.00	0.00	0.02	0.01
	Carburator/mix	80,000-161,000		0.10	0.32	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.07	0.45	0.00	0.00	0.02	0.02
	Carburator/mix	>161,000		0.41	1.50	0.00	0.00	0.02	0.00	0.01	0.01	0.00	0.00	0.00	0.00	0.25	1.71	0.00	0.00	0.09	0.10
	Carburator/mix	<79,000	LPG	0.46	1.55	0.01	0.01	0.00	0.00	0.02	0.03	0.00	0.00	0.00	0.00	0.21	1.39	0.00	0.00	0.00	0.00
	Carburator/mix	80,000-161,000		0.44	1.43	0.01	0.01	0.00	0.00	0.02	0.02	0.00	0.00	0.00	0.00	0.17	1.15	0.00	0.00	0.00	0.00
	Carburator/mix	>161,000		1.81	6.57	0.04	0.04	0.04	0.01	0.07	0.08	0.00	0.00	0.00	0.00	0.63	4.26	0.00	0.00	0.01	0.01
	Euro 1	>161,000	Diesel	0.22	0.03	0.02	0.00	0.00	0.00	0.01	0.03	0.00	0.00	0.03	0.01	2.86	9.73	0.00	0.00	0.00	0.00
	Euro 2	>161,000		0.81	0.10	0.04	0.01	0.00	0.00	0.03	0.16	0.00	0.00	0.10	0.02	12.39	42.09	0.00	0.00	0.00	0.00
	Euro 3	>161,000		0.74	0.07	0.08	0.01	0.00	0.00	0.10	1.99	0.00	0.00	0.24	0.04	40.41	440.74	0.00	0.00	0.00	0.00
	Euro 4	<79,000		0.24	0.03	0.02	0.00	0.00	0.00	0.03	0.18	0.00	0.00	0.07	0.01	21.61	73.43	0.01	0.00	0.00	0.00
	Euro 4	80,000-161,000		0.24	0.03	0.02	0.00	0.00	0.00	0.03	3.25	0.00	0.00	0.07	0.01	18.12	1085.22	0.01	0.00	0.00	0.00
	Euro 4	>161,000		0.22	0.03	0.02	0.00	0.00	0.00	0.03	0.15	0.00	0.00	0.12	0.01	13.01	44.22	0.01	0.00	0.00	0.00
				6.57	13.70	0.32	0.10	0.13	0.02	0.38	5.93	0.00	0.00	0.63	0.09	111.13	1714.83	0.03	0.01	0.16	0.15
Truck	3 ways/EGR	<79,000	NGV	0.01	0.18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.35	3.64	0.00	0.00	0.00	0.01
	3 ways/EGR	80,000-161,000		0.00	0.06	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.12	1.18	0.00	0.00	0.00	0.00
	3 ways/EGR	>161,000		0.05	1.07	0.00	0.00	0.07	0.02	0.00	0.02	0.00	0.00	0.00	0.00	1.77	18.13	0.00	0.00	0.00	0.06
	3 ways/EGR	<79,000	LPG	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.09	0.00	0.00	0.00	0.00

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	3 ways/EGR	80,000-161,000		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	3 ways/EGR	>161,000		0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.27	0.00	0.00	0.00
	Euro 2	>161,000	Diesel	0.10	0.37	0.01	0.10	0.00	0.00	0.24	2.11	0.00	0.00	0.19	0.15	19.36	175.34	0.00	0.00	0.00	0.00
	Euro 3	<79,000		0.06	0.22	0.01	0.04	0.00	0.00	0.10	0.86	0.00	0.00	0.03	0.02	11.15	100.95	0.01	0.01	0.00	0.00
	Euro 3	80,000-161,000		0.02	0.08	0.00	0.01	0.00	0.00	0.03	0.29	0.00	0.00	0.02	0.01	3.67	33.23	0.00	0.00	0.00	0.00
	Euro 3	>161,000		0.21	0.78	0.02	0.15	0.00	0.00	0.32	2.84	0.00	0.00	0.35	0.26	35.16	318.43	0.03	0.04	0.00	0.00
				0.45	2.78	0.04	0.30	0.07	0.02	0.70	6.12	0.00	0.00	0.59	0.44	71.61	651.27	0.05	0.06	0.01	0.08
Bus	Euro 2	>161,000	Gasoline	0.45	10.27	0.01	0.16	0.04	0.01	0.01	0.21	0.00	0.00	0.00	0.00	1.03	10.59	0.00	0.00	0.00	0.04
	Euro 3	<79,000		0.05	1.23	0.00	0.02	0.00	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.24	2.47	0.00	0.00	0.00	0.00
	Euro 4	80,000-161,000		0.03	0.63	0.00	0.01	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.10	1.02	0.00	0.00	0.00	0.00
	Euro 4	>161,000		0.37	8.97	0.01	0.13	0.04	0.01	0.01	0.15	0.00	0.00	0.00	0.00	1.05	10.76	0.00	0.00	0.00	0.03
	3 ways/EGR	<79,000	NGV	0.02	0.58	0.00	0.00	0.00	0.01	0.00	0.01	0.00	0.00	0.00	0.00	1.15	11.79	0.00	0.00	0.00	0.03
	3 ways/EGR	80,000-161,000		0.01	0.29	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.53	5.49	0.00	0.00	0.00	0.02
	3 ways/EGR	>161,000		0.33	7.16	0.00	0.01	0.47	0.15	0.01	0.11	0.00	0.00	0.00	0.00	11.84	121.63	0.01	0.02	0.03	0.42
	3 ways/EGR	<79,000	LPG	0.00	0.08	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.18	1.82	0.00	0.00	0.00	0.00
	3 ways/EGR	80,000-161,000		0.00	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.08	0.82	0.00	0.00	0.00	0.00
	3 ways/EGR	>161,000		0.05	1.03	0.00	0.01	0.07	0.02	0.00	0.02	0.00	0.00	0.00	0.00	1.83	18.80	0.00	0.00	0.00	0.00
	Euro 2	>161,000	Diesel	0.15	0.56	0.02	0.14	0.00	0.00	0.36	3.18	0.00	0.00	0.28	0.22	29.07	263.67	0.00	0.00	0.00	0.00
	Euro 3	<79,000		0.03	0.12	0.00	0.02	0.00	0.00	0.05	0.47	0.00	0.00	0.02	0.01	6.06	54.94	0.00	0.01	0.00	0.00
	Euro 3	80,000-161,000		0.02	0.06	0.00	0.01	0.00	0.00	0.03	0.22	0.00	0.00	0.01	0.01	2.80	25.41	0.00	0.00	0.00	0.00
	Euro 3	>161,000		0.19	0.70	0.02	0.13	0.00	0.00	0.29	2.55	0.00	0.00	0.32	0.23	31.54	286.01	0.03	0.03	0.00	0.00
				1.70	31.71	0.06	0.64	0.63	0.20	0.76	6.96	0.00	0.00	0.64	0.48	87.50	815.22	0.06	0.07	0.04	0.54