

1.A.3.b vi-vii - Road Transport: Automobile Tyre and Brake Wear and Road Abrasion

This overview chapter provides information on emissions from automobile tyre and brake wear & road abrasion are reported reported in NFR sub-categories 1.A.3.b vi and 1.A.3.b vii. These sub-categories are important sources for a) particle emissions and b) emissions of heavy metals, POPs etc. included in these particles.

NFR-Code	Name of Category
1.A.3.b vi	Automobile Tyre and Brake Wear
1.A.3.b vii	Automobile Road Abrasion

Methodology

Activity data

Specific mileage data for all different types of road vehicles are generated within TREMOD (Knörr et al., 2021a)¹⁾. The following table provides an overview of annual mileages.

Table 1: Mileage data for road vehicles 1990-2020, in 10⁶ kilometers

	1990	1995	2000	2005	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Passenger Cars	588,898	487,373	464,231	514,293	568,833	582,833	588,342	597,222	611,403	621,230	630,488	637,690	639,989	649,851	564,736
Light Duty Vehicles	13,965	24,193	32,374	36,422	39,382	39,788	40,259	40,710	43,190	45,436	47,627	49,953	52,264	54,084	52,151
Heavy Duty Vehicles	40,827	54,279	62,659	60,974	62,979	64,519	63,810	64,318	64,822	65,823	66,697	67,346	68,059	68,968	66,635
<i>thereof: Lorries & Trucks</i>	36,657	50,362	58,621	56,877	58,799	60,324	59,572	60,064	60,553	61,408	62,138	62,833	63,539	64,396	63,045
<i>thereof: Buses</i>	4,170	3,916	4,038	4,098	4,180	4,195	4,238	4,254	4,269	4,415	4,560	4,512	4,520	4,572	3,590
Two-wheelers	51,554	132,273	141,013	88,061	46,636	41,741	36,830	32,719	29,615	27,589	25,507	23,954	22,888	22,186	21,101
<i>thereof: Mopeds</i>	5,917	3,830	5,042	6,298	6,333	6,120	5,919	5,856	5,713	5,821	5,718	5,578	5,621	5,643	5,602
<i>thereof: Motorcycles</i>	45,637	128,443	135,970	81,763	40,303	35,621	30,911	26,862	23,902	21,768	19,789	18,376	17,267	16,543	15,499
TOTAL MILEAGE	695,243	698,118	700,277	699,750	717,829	728,881	729,242	734,968	749,029	760,077	770,319	778,942	783,200	795,089	704,622

Discussion of emission trends

Please see sub-category chapters [1.A.3.b vi - Automobile Tyre and Brake Wear](#) and [1.A.3.b vii - Automobile Road Abrasion](#).

Recalculations

Planned improvements

Besides the **routine revision of the TREMOD model**, no specific improvements are planned.

²⁾ ³⁾

^{1), 2)} Knörr et al. (2021a): Knörr, W., Heidt, C., Gores, S., & Bergk, F.: ifeu Institute for Energy and Environmental Research (Institut für Energie- und Umweltforschung Heidelberg gGmbH, ifeu): Fortschreibung des Daten- und Rechenmodells: Energieverbrauch und Schadstoffemissionen des motorisierten Verkehrs in Deutschland 1960-2035, sowie TREMOD, im Auftrag des Umweltbundesamtes, Heidelberg & Berlin, 2021.

³⁾ EMEP/EEA, 2019: EMEP/EEA air pollutant emission inventory guidebook – 2019