

## 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	<a href="#">Automobile Tyre and Brake Wear</a>
1.A.3.b vii	<a href="#">Automobile Road Abrasion</a>

### Methodology

#### Activity data

Specific mileage data for all different types of road vehicles are generated within TREMOD <sup>1)</sup>. The following table provides an overview of annual mileages.

Table 1: Mileage data for road vehicles 1990-2019, in 10<sup>6</sup> kilometers

	1990	1995	2000	2005	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
<b>MILEAGE: COMBUSTION ENGINES</b>														
<b>Passenger Cars</b>														
<b>Light Duty Vehicles</b>														
<b>Heavy Duty Vehicles</b>														
<i>thereof: Lorries &amp; Trucks</i>														
<i>thereof: Buses</i>														
<b>Two-wheelers</b>														
<b>Σ from fuel combustion</b>														
<b>MILEAGE: ELECTRIC ENGINES</b>														
<b>Passenger Cars</b>														
<b>Light Duty Vehicles</b>														
<b>Heavy Duty Vehicles</b>														
<i>thereof: Lorries &amp; Trucks</i>														
<i>thereof: Buses</i>														
<b>Two-wheelers</b>														
<b>Σ from electric energy</b>														
<b>TOTAL MILEAGE: COMBUSTION + ELECTRIC ENGINES</b>														
<b>Passenger Cars</b>														
<b>Light Duty Vehicles</b>														
<b>Heavy Duty Vehicles</b>														
<i>thereof: Lorries &amp; Trucks</i>														
<i>thereof: Buses</i>														
<b>Two-wheelers</b>														
<b>Σ over-all</b>														

source: TREMOD 6.02 <sup>2)</sup>

++ Images: Overview annual mileage for considered vehicle types [gallery size="medium"](#) : AD\_Mileage.png : AD\_Mileage\_el.png [gallery](#)

## 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

Recalculations were carried out due to a fundamental revision of the TREMOD software.

Table 2: Revised mileage data, in 10<sup>6</sup> kilometers

	1990	1995	2000	2005	2010	2011	2012	2013	2014	2015	2016	2017	2018
<b>Passenger Cars</b>													
Submission 2021													
Submission 2020													
absolute change													
relative change													
<b>Light Duty Vehicles</b>													
Submission 2021													
Submission 2020													
absolute change													
relative change													
<b>HDVs: Trucks</b>													
Submission 2021													
Submission 2020													
absolute change													
relative change													
<b>HDVs: Buses</b>													
Submission 2021													
Submission 2020													
absolute change													
relative change													
<b>Motorcycles &amp; Mopeds</b>													
Submission 2021													
Submission 2020													
absolute change													
relative change													
<b>REVISED TOTAL MILEAGE</b>													
Submission 2021													
Submission 2020													
absolute change													
relative change													

For changes in the **emission factors** applied, please refer to the sub-ordinate chapters on **tyre and brake wear** and **road abrasion**.

### Emission estimates



For more information on recalculated emission estimates for Base Year and 2018, please see the pollutant specific recalculation tables following chapter [8.1 - Recalculations](#).

## Planned improvements

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

## FAQs

---

[bibliography](#) : 1 : Knörr et al. (2019a): 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 1960-2030, sowie TREMOD, im Auftrag des Umweltbundesamtes, Heidelberg & Berlin, 2019. : 2 : EMEP/EEA, 2019: EMEP/EEA air pollutant emission inventory guidebook – 2019 [bibliography](#)

---

<sup>1)</sup> (bibcite 1)

<sup>2)</sup> (bibcite 1)