

IV.8 Carbon monoxide

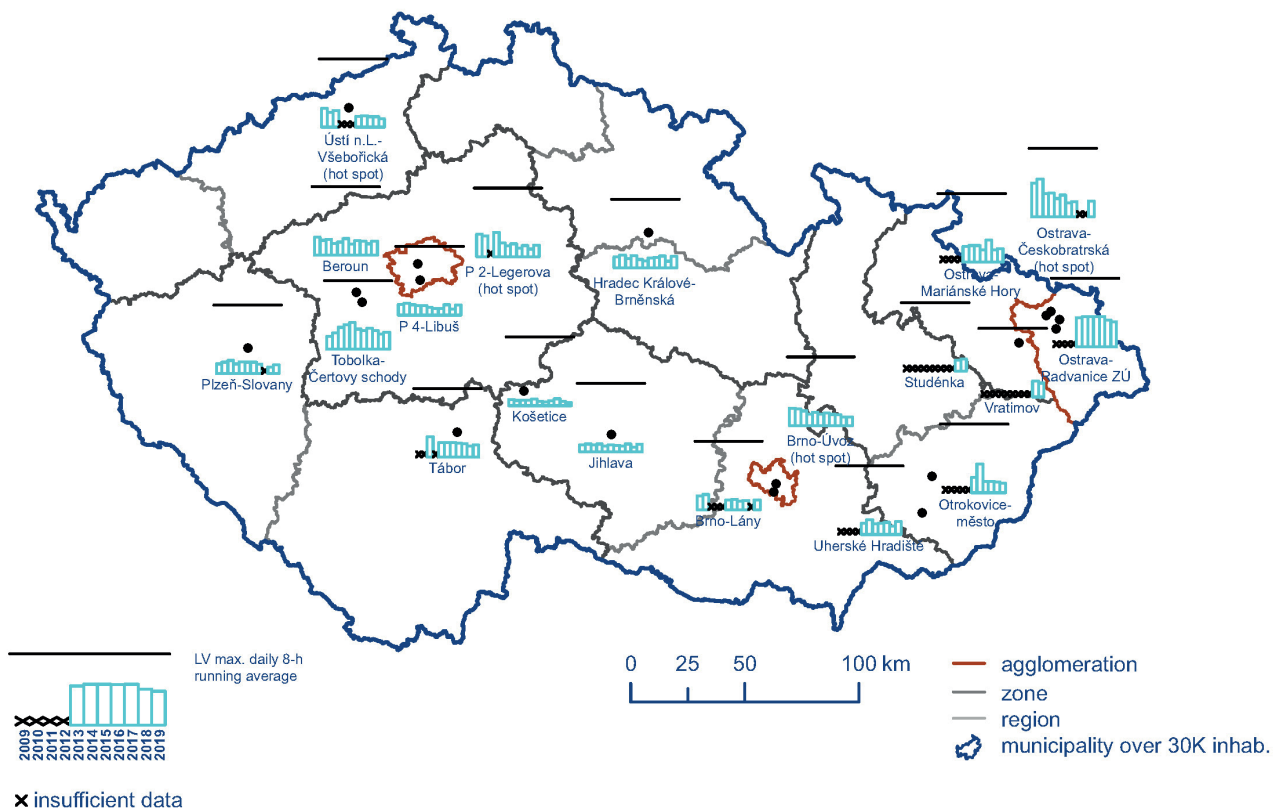
IV.8.1 Air pollution by carbon monoxide in 2019

Similar to previous years, the 8-hour pollution limit value for carbon monoxide (CO) was not exceeded in the Czech Republic in 2019 at any of 21 stations for which a sufficient amount of measured data was available for evaluating the air quality (Tab. XI.23). Overall, CO was measured at 24 stations. The highest daily 8-hour average CO concentration was measured at the Ostrava-Radvanice ZÚ station ($3,656 \mu\text{g}\cdot\text{m}^{-3}$) when the pollution limit value is $10,000 \mu\text{g}\cdot\text{m}^{-3}$. This is a very exposed part of the city affected by industry, traffic and local emission sources. If only one maximum is reported at one station, then the second highest 8-hour CO concentration was measured at the Tobolka-Čertovy schody rural station ($2,470 \mu\text{g}\cdot\text{m}^{-3}$) where the influence can be assumed from the nearby Čertovy schody lime manufacture. The third highest 8-hour concentration of this substance was measured at the Ostrava-Českobratrská station hot spot ($2,347 \mu\text{g}\cdot\text{m}^{-3}$) which is focused on monitoring air pollution from traffic.

Elevated CO concentrations occur primarily at urban locations affected by traffic and therefore measurement of this substance was retained at localities classified as traffic sites. At urban and rural background locations, the CO concentrations vary well below the pollution limit values except for the Tobolka-Čertovy schody location.

IV.8.2 Trends in carbon monoxide concentrations

A decreasing course in the maximum daily 8-hour CO concentrations can be seen at most stations in the Czech Republic, as shown in Fig. IV.8.1. CO concentrations were at about the same level in 2019 compared to the previous year. At some stations there was a slight decrease in CO concentrations (Ostrava-Radvanice ZÚ, Vratimov), at some there was a slight increase (Tobolka-Čertovy schody, Beroun).



Obr. IV.8.1 Maximum hourly 8-hour running average concentrations of CO at selected stations, 2009–2019

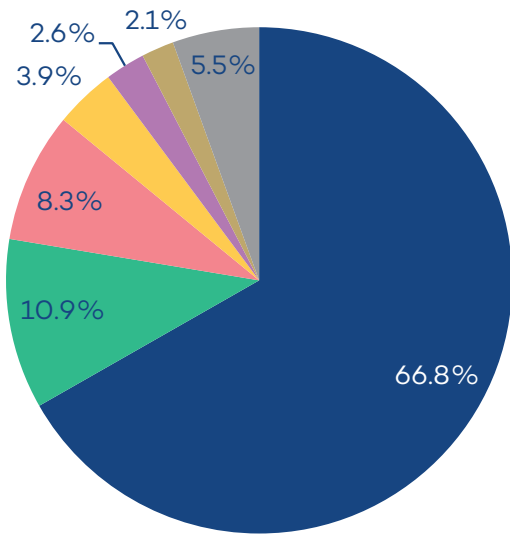


Fig. IV.8.2 Total emissions of CO sorted out by NFR sectors, 2018

IV.8.3 Carbon monoxide emissions

Carbon monoxide is a product of combustion of carbon-containing fuels at low temperatures and insufficient availability of air for combustion. The greatest amounts of CO are formed in sector 1A4bi – Residential: Stationary which produced 66.8% of national emissions in 2018. Other important sources included sectors 1A2a – Stationary combustion in manufacturing industries and construction: Iron and steel (10.9%) and 1A3bi – Road transport: Passenger cars (8.3%) (Fig. IV.8.2). The decrease in CO emissions in 2009–2018 (Fig. IV.8.3) was caused primarily by natural renewal of the vehicle fleet and a reduction in the production of iron and steel after 2007. In view of the predominant effect of sector 1A4bi this trend is substantially affected by evolution in consumption of solid fuels by households (Fig. II.7).

In the regions of the Czech Republic the contributions of the sectors differ in relation to the composition of sources in a given area. Due to predominant effect of the local heating, CO emissions in the Czech Republic are distributed over the entire residential built-up area. The impact of transportation dominates alongside motorways, roadways with high traffic levels and in larger urban units. The large amount of CO emissions in the O/K/F-M agglomeration originates from the production of iron and steel (Fig. IV.8.4).

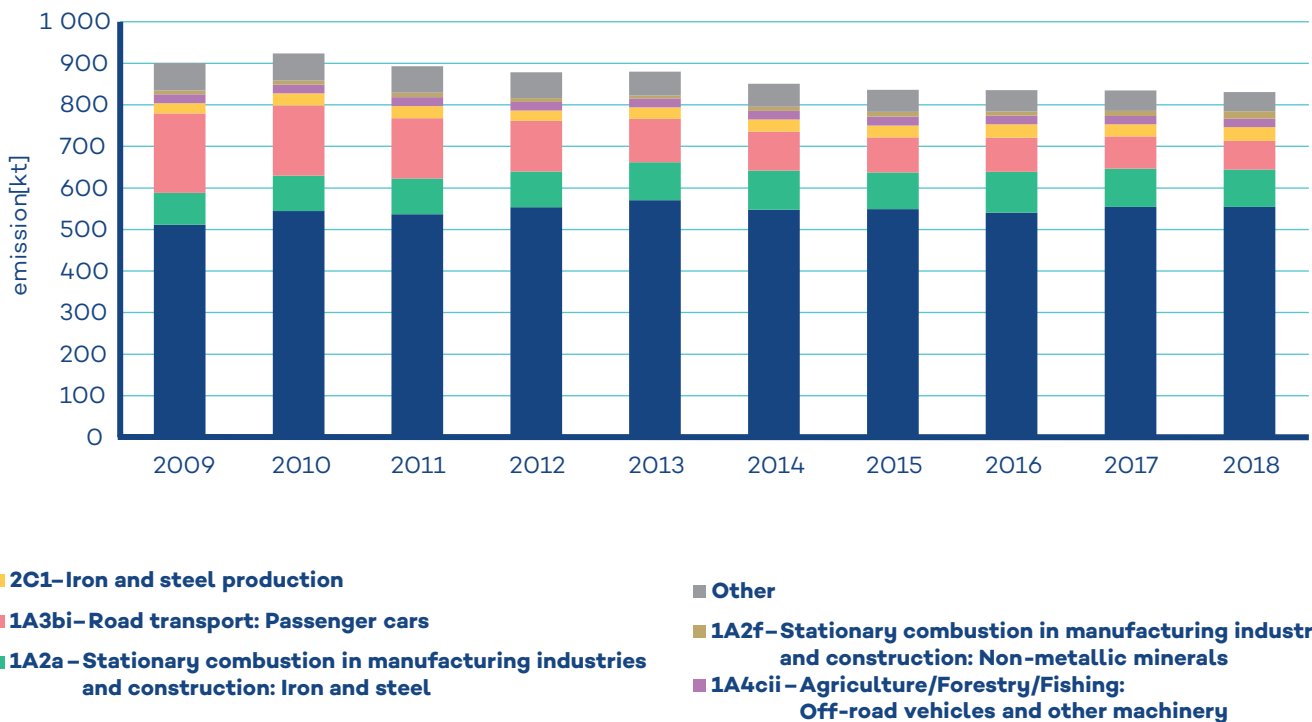
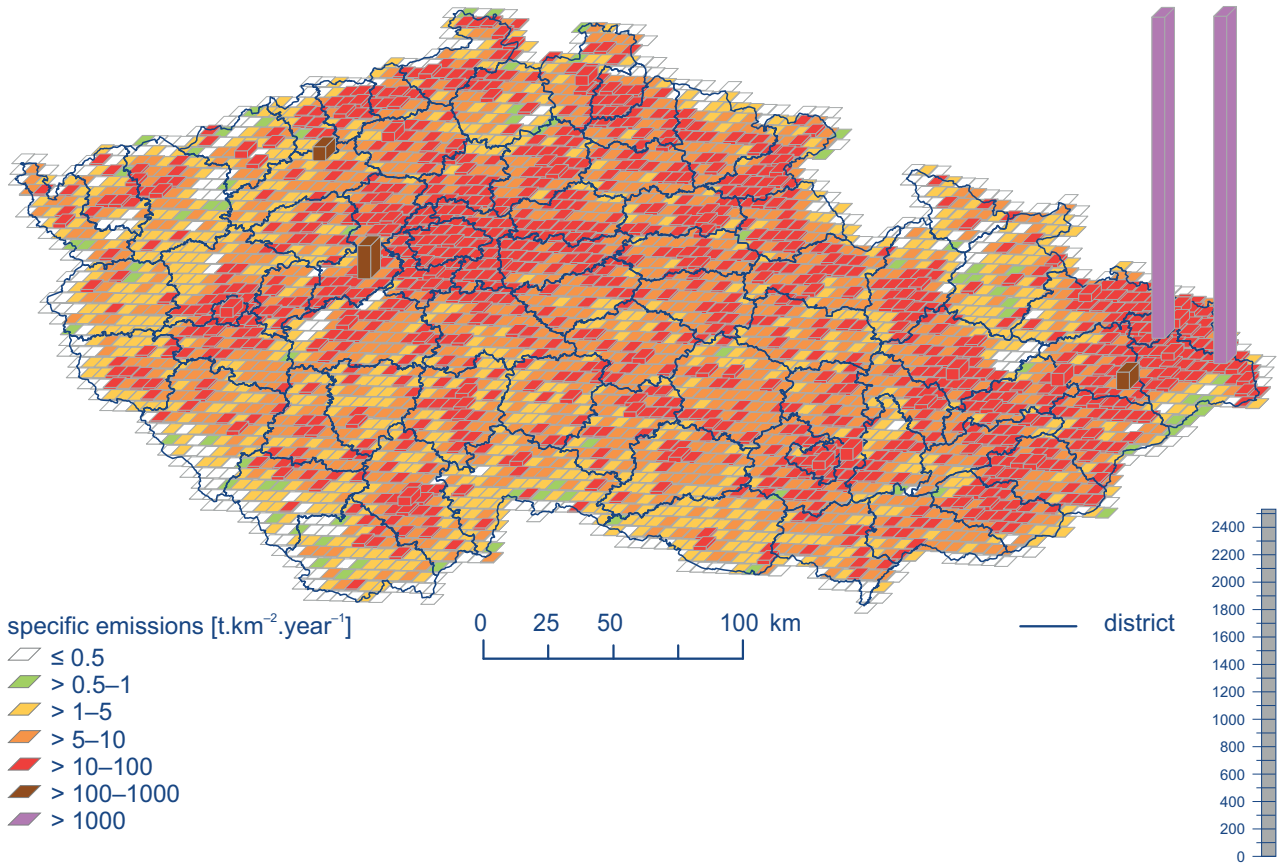


Fig. IV.8.3 The development of CO total emissions, 2009–2018



Obr. IV.8.4 Carbon monoxide emission density from 5 x 5 km squares, 2018