IV.8 Carbon monoxide

IV.8.1 Air pollution by carbon monoxide in 2020

Similar to previous years, the 8-hour pollution limit value for carbon monoxide (CO) was not exceeded in the CR in 2020 at any of the total 23 stations. The highest daily 8-hour average CO concentration occurred at the Ostrava-Radvanice ZÚ station (4 191 µg.m^{-3}) while the pollution limit value is 10 000 µg.m^{-3}. This station is in a very exposed part of the city affected by industry, traffic and local emission sources. Taking into consideration just one maximum reported at one station, then the second highest 8-hour CO concentration was measured at the Tobolka-Čertovy schody rural station (2 986 µg.m^{-3}), where the influence can be assumed from the nearby Čertovy schody lime manufacturing facility. The third and fourth highest 8-hour CO concentrations were measured at the Beroun (2 551 µg.m^{-3}) and Tábor (1 952 µg.m^{-3}) traffic stations, where an impact from traffic has a role due to the location of the stations near busy roads.

Elevated CO concentrations occur primarily at urban locations affected by traffic, so measurements of this substance were continued at localities classified as traffic sites. At urban and rural background locations, CO concentrations fall well below the pollution limit values. An exception is the Tobolka-Čertovy schody station, where 8-hour CO concentrations reached almost 30% of the air pollution limit in several cases.

IV.8.2 Trends in carbon monoxide concentrations

A decreasing trend in the maximum daily 8-hour CO concentrations can be seen at most stations in the CR, as shown in Fig. IV.8.1. In 2020, the decrease in CO concentrations at most stations continued (Ostrava-Českobratrská, hot spot, Ostrava-Mariánské Hory, Uherské Hradiště, Hradec Králové-Brněnská, and Prague 2-Legerova, hot spot). On the contrary, there was a slight increase at some stations (Ostrava-Radvanice ZÚ, Tobolka-Čertovy schody, and Beroun).

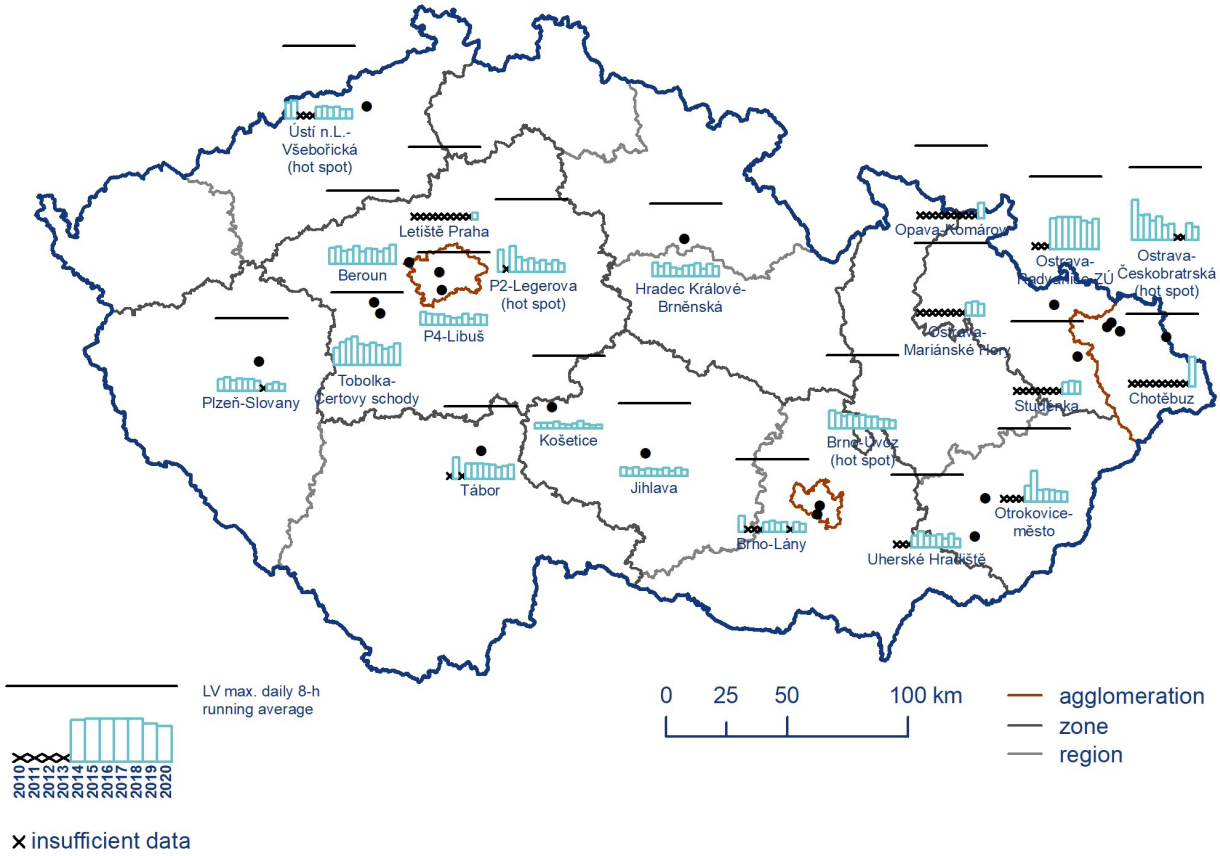

Fig. IV.8.1 Maximum hourly 8-hour running average concentrations of CO at selected stations, 2010–2020

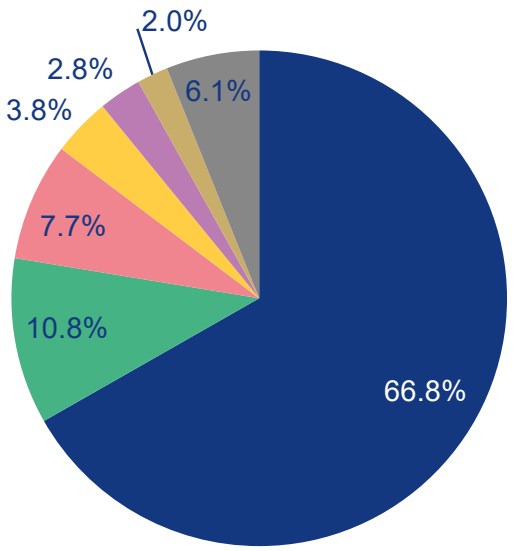

Fig. IV.8.2 Total emissions of CO sorted out by NFR sectors, 2019

IV.8.3 Carbon monoxide emissions

Carbon monoxide is a product of the 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: Heating, water heating, cooking, which produced 66.8% of national emissions in 2019. Other important sources included sectors 1A2a – Stationary combustion in manufacturing industries and construction: Iron and steel (10.8%) and 1A3bi – Road transport: Passenger cars (7.7%; Fig. IV.8.2). The decreasing trend in CO emissions in 2010–2019 (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 2011. In view of the predominant effect of sector 1A4bi, this trend is substantially affected by developments in the consumption of solid fuels by households (Fig. II.7).

For individual regions of the CR, contributions from sectors differ in relation to the composition of sources in a given area. Due to the predominant effect of local heating, CO emissions in the CR 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.

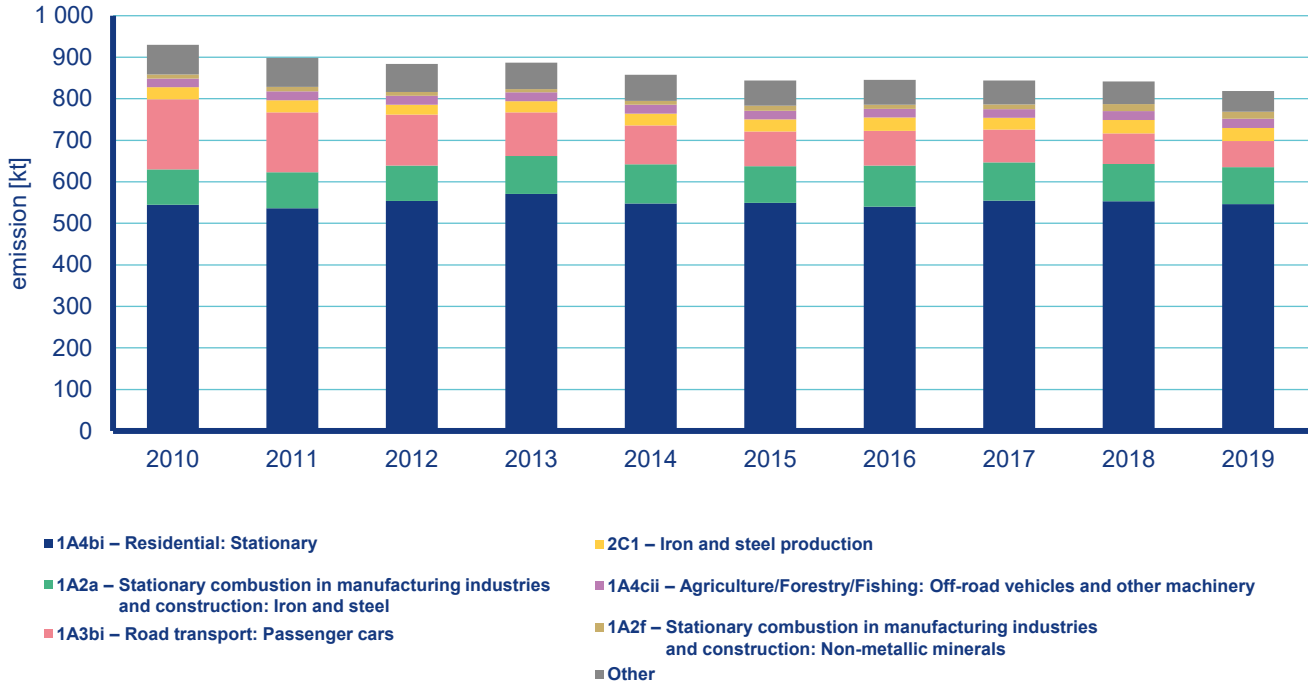

Fig. IV.8.3 CO total emissions, 2010–2019