Abstract

An emission inventory is an organized series of data about the amount of pollutants produced by natural sources and anthropic activities, with a special reference to a specific time frame and a specific territorial area. Within action A1 of the project PREPAIR, the available emission data for the Po basin and Slovenia have been collected and analyzed. The analyzed area has a surface of about 135,000 km2 and a population of about 28 million people.

The analysis of the emission data showed an alignment of the estimation methodologies with reference to the European guidelines for the preparation of emission inventories.

The emission dataset refers to 2013 and it was obtained from the union of local or national inventories (in the case of Slovenia) developed in the different territorial areas, maintaining the greatest possible detail on the classification of the types of emission sources and with reference to the territory of each municipality. In addition to the precise emission sources, properly characterized by a pair of coordinates, the analysis of the spatialization level of the sources allowed the identification of different categories of sources diffused according to the level of territorial coverage.

In this way, it is possible to identify extremely localized or peculiar sources of specific territorial areas or districts.

From a quantitative perspective, the emission data analysis of the Po basin regions confirms the relevance of the non-industrial combustion sector for the PM10 emissions, 56% of the total (59% for the whole domain), followed by road transport, 20% of the total emissions of PM10 (18% on the whole domain). Road transport represents also 50% of the total NOx emissions (51% on the PREPAIR domain), followed by industrial combustion (15% and 14% on the domain) and off-road vehicles (13% and 12% on the domain). The agriculture sector is confirmed as the main emission source of NH3 (97% of the total emissions).

Data confirm also that the Po basin represents a unique hot-spot in Europe. The Po valley is one of the most densely populated areas in Europe and yet the PM10 and NOx emissions per capita are lower than the average of EU28 countries (EEA, 2018). In fact, data demonstrate that PM10 emissions per capita in the Po basin are 3 Kg/person/year (3,4 kg/person/year for the PREPAIR domain) versus 4,3 kg/person/year of EU28 in 2013. Similarly, NOx emissions per capita are about 15 kg/person/year both for the Po basin and the PREPAIR domain versus 16,6 kg/person/year of EU28 in 2013.

The analysis of the emission data and of the emission estimation methodologies supported also the preliminary activities of the actions that will lead to the definition and collection of new data within the project, providing indications to the possible technical procedures to be implemented for the use of data coming from project's in-depth studies on the road traffic and the use of woody biomass in the residential sector.

Starting from the 2013 emission dataset, a similar emission dataset referred to 2025 was obtained before the reductions foreseen by the regional plans for the quality of air and by using data given by and methodologies agreed with the project partners.