PRESS RELEASE

Air quality, the study by CNR-IIA evaluating the future scenarios of electric mobility in the main Italian cities.

The CNR - Institute on Atmospheric Pollution in collaboration with MOTUS-E, the association for the development of electric mobility in Italy, has conducted a study for the evaluation of the dispersion into the atmosphere and the fallout on the ground of primary and secondary pollutants and the relative emission impact in the cities of Turin, Milan, Bologna, Rome and Palermo

The study examines and compares two prospective scenarios, respectively in 2025 and 2030, of the current fleet of vehicles relating variably to the private transport and logistics sectors of the five Italian cities.

The baseline scenario was calculated using the estimate of the pollution concentrations of PM10 and NO2 starting from the traffic flows to determine the emissions for each road of the city road network, providing an estimate of the contribution of traffic flow in the examined area (not all other sources of emissions have been considered).

The study has been developed using the ADMS (Advanced Dispersion Modeling System) - Roads5 software, based on specific weather data for each city examined, according to the traffic flows relating to each sector of urban mobility analyzed and provided by the administrations.

The traffic flows provided by the cities relate to 24 hours, and the meteorological data relate to a typical winter weekday (wind speed and direction, atmospheric stability, temperature, humidity, precipitation rate, cloudiness).

The scenarios provide for an increase in the percentage of technologies plug-in / electric hybrids in the vehicle fleet considering at the same time, the reduction of the percentages relating to internal combustion technologies such as petrol and diesel.

The emission factors of the Italian context relating to the fuel categories of petrol, diesel, LPG, natural gas and hybrid, used to calculate the emission rate (g / km / s) were obtained from the database of the Italian Institute for Environmental Protection and Research, (ISPRA) for the year 2017, which are calculated both with respect to the kilometers traveled and with respect to consumption, with reference to both the detail of the technologies and the aggregation by sector and fuel.

The reductions in the concentrations of PM10 and NO2 relating to the transport sector, reported in the two-time scenarios imagined, are attributable to the redistribution of technologies, the scrapping of the most polluting ones as well as the increase in penetration percentages relating to electricity and 'hybrid. The percentages of concentrations were calculated considering the ARPA monitoring stations as receptor points.

Francesco Petracchini, Director of the CNR-IIA, declares: "the study emphasizes the importance of scientific activity of the Institute in support of public administrations to provide elements necessary for understanding the environmental benefits associated with the use of clean technologies. Specifically, the CNR-IIA has assessed the improvements in air quality in urban areas by considering different scenarios in terms of penetration of electric mobility. "

c/o Area della Ricerca Roma 1
Strada Provinciale 35d, 9 – 00010, Montelibretti (RM), Italia
Phone: +39.06.90672815/454 - Pec: protocollo.iia@pec.cnr.it
Web: www.iia.cnr.it - E-mail: segreteria.direzione@iia.cnr.it

Dino Marcozzi, General Secretary of MOTUS-E says: “With this study, thanks to the collaboration with the CNR, we have a precise picture of the environmental benefits of electric mobility in Italian cities. Furthermore, our estimates of the penetration of electric vehicles up to 2030 see a trend of increasingly positive growth, reconfirming how zero-emission mobility is a concrete reality to reach for the health of the environment and of our country."

The datas were presented at KeyEnergy and will soon be published in a report.

The speech was included in a session of the digital edition of the fair dedicated to “Electric Renaissance: how zero-emission mobility can change the cities” in which Paola De Micheli (Minister of Infrastructure and Transport), Dino Marcozzi (MOTUS-E), Alessandra Astolfi (Ecomondo), Anna Donati (Kyoto Club), Francesco Petracchini (CNR-IIA Director), Valeria Rizza (CNR-IIA Researcher), Roberto Colicchio (Development Be Charge Head of Business), Andrea Poggio (Legambiente Head of mobility), Gianni Silvestrini (Kyoto Club Scientific Director) and Veronica Aneris (T&E Italy Director) took part.

The results of the simulation for the concentrations of PM10 and NO2 for each city analyzed

TURIN

NO2

In this case, the vehicle fleet consists of only the two sectors of private transport and logistics. Both Local Public Transport and all other types of vehicles (motorcycles, heavy vehicles, etc.) and other emission sources are excluded from the study.

The average hourly concentrations simulated reach a maximum of about 130 µg/m3 in the baseline scenario.

In future scenarios we observe a net reduction, going from a percentage of 61% by 2025 to a percentage of 93% by 2030.

PM10

In the basic scenario, the daily concentration values of PM10 reach a maximum of about 23 µg/m3. The areas most affected by the contribution of the private vehicle fleet are concentrated in the road--link with the greatest traffic flows.

In future scenarios we observe a net reduction, going from a percentage of 35% by 2025 to a not very significant reduction of 36% by 2030.

ROME

NO2

The vehicle fleet analyzed consists, in this case, of the private transport sector only. In future scenarios we obtained a net reduction in the average hourly concentrations of NO2 due to the private transport sector alone, which goes from a percentage of 53% by 2025 to a reduction of 89% by 2030.

PM10

In the base scenario, the daily PM10 concentration values due to private transport reach a maximum of about 22(Pg.86) µg/m3. The areas most affected by the contribution of the private vehicle fleet are concentrated in the arches with the greatest traffic flows, in this case coinciding with the GRA.

In future scenarios we are witnessing a net reduction, going from a percentage of 36% by 2025 to a not very significant reduction of 42% by 2030.

MILAN

NO2

The average hourly concentrations simulated on a winter weekday in January reach a maximum of about 140 µg/m3 in the base scenario. The vehicle fleet consists, in this case, of the private transport sector only.

In future scenarios we are witnessing a clear reduction in concentrations from a percentage of 62% by 2025 up to a reduction of 84% by 2030.

PM10

The average daily values of PM10 reach a maximum of about 21 µg/m3 for the basic scenario referring to a winter working day in January. The areas most affected by the contribution of the vehicle fleet are linked to the areas in which the arches with the greatest traffic flows fall.

There is a reduction in concentrations, passing from the 2025 scenario to the 2030 scenario, of 36% and 41% respectively

BOLOGNA

NO2

In this case, the vehicle fleet consists of only the two sectors of private transport and logistics. Both Local Public Transport and all other types of vehicles (motorcycles, heavy vehicles, etc.) and other emission sources not subject to study are excluded from the study.

The simulated hourly average concentrations reach a maximum of about 150 µg/m3 in the base scenario.

In future scenarios we are witnessing a net reduction, going from a percentage of 47% by 2025 to a reduction of 79% by 2030.

PM10

In the base scenario it is clear that the daily values of PM10 reach a maximum of about 15(PG.62) µg/m3. The areas most affected by the contribution of the vehicle fleet are those in which the arches with the greatest traffic flows fall.

There is a reduction in concentrations, passing from the 2025 scenario to the 2030 scenario, of 28% and 34% respectively.

PALERMO

NO2

In this case, the vehicle fleet consists solely of the private transport sector.

The simulated concentrations reach a maximum of about 90 µg/m3 in the base scenario.

In future scenarios we are witnessing a net reduction, going from a percentage of 52% by 2025 to a reduction of 74% by 2030.

PM10

From the base scenario it is clear that the PM10 values, expressed in µg/ m3, reach a maximum of about 15 µg/m3. The areas most affected by the contribution of the vehicle fleet are those areas where the arches with the greatest traffic flows fall.

There is a reduction in concentrations, passing from the 2025 scenario to the 2030 scenario, of 38% and 46% respectively.

e-mail: comunicazione@iia.cnr.it

website: http://www.iia.cnr.it/