

Impact of electromobility development on air quality in Poland

Joanna Struzewska (1,3), Jacek W. Kaminski (2,3), Grzegorz Jeleniewicz (3), and Paweł Durka (3)

(1) Warsaw University of Technology, Faculty of Building Services, Hydro and Environmental Engineering, Department of Environmental Protection and Management, Warsaw, Poland (struzw@is.pw.edu.pl), (2) Institute of Geophysics, Polish Academy of Sciences, Warsaw, Poland, (3) Institute of Environmental Protection - National Research Institute, Warsaw, Poland

Electromobility is one of several strategic directions for Poland's economic development in the next decade. The project "Energy Efficiency by development of electromobility in Poland" was undertaken to assess the overall impact of modified emission fluxes from two major activity sources - energy production and road transport - on air pollution on the country and agglomeration scales in Poland, based on air quality model simulations.

Possible electromobility development scenarios in Poland from year 2015 to three time horizons 2020, 2025 and 2030 were developed. For each of the years different scenarios were considered i.e. high, low and medium expansion.

Adequate changes in road transport and energy sector emission levels and trends for each of time horizons were applied. Emission data for 2020, 2025, 2030 for other sectors than energy production and road transport model scenarios were the same as for base case scenario to address the impact of electromobility.

The GEM-AQ model (Kaminski et al., 2008) was used to carry out air quality simulations for the defined scenarios for the 1-year period. Model simulations used base meteorology for 2015 in order to reflect changes that can be attributed to emissions scenarios only. The base simulation was done for 2015. Scenario runs were accomplished for 2020, 2025, 2030.

We will present the scenarios assumptions and the relative change of pollutants concentrations between electromobility development scenarios and the base scenario. Trends in pollutant's concentrations for different scenarios analyzed for the entire country and cities with over 100K inhabitants will be also presented.