Environmental Engineering and Management Journal *April 2018, Vol.17, No. 4, 865-875*
http://www.eemj.icpm.tuiasi.ro/; http://www.eemj.eu

"Gheorghe Asachi" Technical University of Iasi, Romania

PASSENGER CAR DEPENDENCY AND CONSEQUENT AIR POLLUTANTS EMISSIONS IN IASI METROPOLITAN AREA (ROMANIA)

Lucian Roșu[1], Marinela Istrate[1,2], Alexandru Bănică[1,2*]

[1]*"Faculty of Geography and Geology, "Alexandru Ioan Cuza" University of Iasi, 11 Carol I Bvd., 700505 Iasi, Romania*
[2]*"Alexandru Ioan Cuza" University of Iasi, CERNESIM, 11 Carol I Bvd., 700506 Iasi, Romania*

Abstract

Urban expansion, often seen as an indicator of economic growth and a possible response to housing crisis in big cities, is the main driver for carbon emissions in the metropolitan area due to higher values of household income, vehicle ownership and home size. The transport related pollution includes over 200 different compounds: besides CO_2 emissions, CO, NOx, BTX and dust resulting from exhausting processes, from abrasive wear of brakes, tires and road surfaces. The expansion of the urban areas in Romania has faced similar patterns in all major cities in Eastern Europe. Traffic congestion and increasing pollution became common aspects of urban life, as most big cities were not prepared for this fast change in urban land use. The present paper proposes to highlight which communes from the Iasi metropolitan area contribute the most to air pollution due to car commuting. The results highlight the negative effects of urban sprawl upon air pollution and the challenges raised by residential mobility. The above-mentioned aspects were analyzed using surveys, statistical data, pollutants inventory and GIS related simulations for commuting in order to highlight patterns of peri-urban air pollution due to car commuting. The results suggest that the Iasi metropolitan area is confronted with an important sprawl which results in high values of different air pollutant emissions originating from extensive passenger car use in the peri-urban area.

Key words: commuting, Iasi pollutants emissions inventory, urban sprawl

Received: May, 2017; Revised final: February, 2018; Accepted: March, 2018; Published in final edited form: April 2018

[*] Author to whom all correspondence should be addressed: e-mail: alexandrubanica@yahoo.com; Phone: +40 232 201 479