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Vehicular Emission Estimation of Islamabad by Using Copert-5 Model

Authors : Muhammad Jahanzaib, Muhammad Z. A. Khan, Junaid Khayyam

Abstract : Islamabad is the capital of Pakistan with the population of 1.365 million people and with a vehicular fleet size of 0.75 million. The vehicular fleet size is growing annually by the rate of 11%. Vehicular emissions are major source of Black carbon (BC). In developing countries like Pakistan, most of the vehicles consume conventional fuels like Petrol, Diesel, and CNG. These fuels are the major emitters of pollutants like CO, CO2, NOx, CH4, VOCs, and particulate matter (PM10). Carbon dioxide and methane are the leading contributor to the global warming with a global share of 9-26% and 4-9% respectively. NOx is the precursor of nitrates which ultimately form aerosols that are noxious to human health. In this study, COPERT (Computer program to Calculate Emissions from Road Transport) was used for vehicular emission estimation in Islamabad. COPERT is a windows based program which is developed for the calculation of emissions from the road transport sector. The emissions were calculated for the year of 2016 include pollutants like CO, NOx, VOC, and PM and energy consumption. The different variable was input to the model for emission estimation including meteorological parameters, average vehicular trip length and respective time duration, fleet configuration, activity data, degradation factor, and fuel effect. The estimated emissions for CO, CH4, CO2, NOx, and PM10 were found to be 9814.2, 44.9, 279196.7, 3744.2 and 304.5 tons respectively.

Keywords : COPERT Model, emission estimation, PM10, vehicular emission
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