Relative impact of on-road vehicle emissions on public health and climate change mitigation in a medium-sized Colombian Andean region

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Abstract

Air pollution, public health and climate change mitigation have been directly related to transport. Globally, integrated emission control policies and measures have been established under the EURO VI regulation and promotion of sustainable transport. Nevertheless, in developing countries such as Colombia, limitations have been detected due to the characteristics of the vehicle fleet, fuel quality, transport infrastructure, lack of integrated public policies and air quality standards that exceed the recommendations by the World Health Organization (WHO), which generating a risk factor in the development of respiratory diseases. Chronic obstructive pulmonary disease COPD has been declared a public health problem because is the third leading cause of death in Colombia, 9 out of 100 people older than 40 who have been exposed to risk factors suffer from this chronic disease. In the Colombian Andean region, higher risk factors have been detected due to growth of the vehicle fleet, and therefore increase disease load. In the department of Caldas, located in the Colombian Andean region, 3.440 deaths from COPD have been recorded between 2010 and 2016. For this period, the premature death rate from COPD has been estimated at 4.265 years per 100.000 population; while the number of disability-adjusted lost years (DALYs) has been calculated at 5.223 years per 100.000 population. Correlations between the disease load, the vehicle fleet and the criteria air pollutants are analyzed in the case study. Mitigation actions are priority due to increases in CO2 emissions (75%), CH4 (107%) and NOX (89%) estimated for the 2010-2019 period. Mitigation actions would have co-benefits in the reduction of criteria air pollutants as particulate matter that shows average annual concentrations up to 21.7 µg / m3 in PM2.5 and 45.6 µg / m3 for PM10 in this period. The impact of transport in intermediate cities in developing countries is therefore evident.

Keywords—*Climate Change, Public Health, Air Pollution, Urban Transport*

Professional Biography

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