Evidence Based Policy Advocacy for Management of Air Pollution

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Background

Effective policy intervention for a pollution free megacity like Delhi needs to be based on comprehensive high frequency data and analysis. In particular, the pollution load is determined not merely by the number of vehicles but by 'on road' time of vehicles determined by many factors. The primary source of this pollution in a megacity like Delhi remains vehicular emission. It must be also emphasized that in addition to Respirable Suspended Particulate Matter (RSPM), other components of vehicular emission, like suspended particulate matter (SPM), NO_2 and sulphates, also contribute to poor air quality. CSIR-NISTADS proposed a Virtual Attendance in Work and School (VAWS) scheme for a non-disruptive, effective and sustainable solution for control of vehicular emission and hence for improvement of air quality. Under VAWS scheme, the working week is divided to a 2+1+2 working-day week, with one day as. Under VAWS, parents and the children will work at home on the specified day; the items of work/study will be prescribed in the previous day and the completion reports will be submitted on the day following VAWS' the scheme received wide and positive media coverage.

For a scientific and effective policy advocacy and policy intervention, however, a careful design, collection, compilation and synthesis of various related data is essential. For example, the amount of pollution in effect depends on the "running (emitting) time" of the vehicles, and not just on the number of vehicles; the emission itself depends on average traffic speed, idling time and several other factors (Goswami and Barua, 2008, 2012). The pollution concentrations also depend on the prevailing meteorological conditions (Goswami and Barua, 2013) and the socio-economic conditions (Goswami and Barua, 2014), and the pollutant species (Goswami and Barua, 2015). The concerned agencies responsible for pollution management have been collection data pertaining to particulate matters, however, comprehensive high frequency and precision data on various sources of pollution data is lacking such as there is virtually no data on related socio-economic aspects.

Objectives

The precise estimate of on-road duration of vehicular types, pollution concentrations and co-located meteorological variables will allow planning smart traffic for management of pollution. The high frequency socio-economic data will allow risk analysis and strengthen policy advocacy. Therefore, the project aims:

a. Comprehensive measurement of all the pollutants parameters like Particulate matter (PM10, PM 2.5 and PM 1) , SO_2, NO_2 etc. to create high-frequency and high-density pollutants inventory
b. Integrated System for a Pollution-based Real-Time Traffic Management or alert System
c. A GIS Integrated based solution for Traffic Management

d. Inhalation toxicology and expouse assessment studies
e. Identifying EPE for creating advisories in a location-specific manner.
f. Development of traffic alert

Brief of CSIR-NISTADS Initiatives

The CSIR NISTADS has undertaken a project entitled "Design of Policy Advocacy and Intervention for control of air pollution over Delhi through comprehensive quantitative analysis" aimed at creation of high-frequency pollutant inventory with collocated meteorological data at breathing level through mobile platform from 04 locations over Delhi namely; Pusa, Delhi university, Punjabi Bagh and Dhirpur. The objective of the study is provide an evidence based policy advocacy to manage the extreme pollution events (EPE) in Delhi.

Data-driven traffic management demands stringent conditions on the observation system design. The following are the highlights of the NISTADS observation platform.

High Sampling Frequency Air Pollution Data: Traffic decision support requires data at short intervals; the NISTADS observations were sampled at 15-minute intervals.

Multi-Site Sampling: An important requirement is to create concurrent distribution of pollutants to understand the locational dependencies. The NISTADS observations were designed to sample data over 12 locations.

Collocated Observations: In order to determine relative roles of various drivers and their inter-dependence, measurements were collocated for air quality, meteorological variables, vehicular data and socio-economic parameters (like exposure-hours).

Mobile Platform: The data was collected using a mobile platform with sensors mounted at breathing level (~ 2m). The use of the mobile platform ensured much wider spatial sampling than that through a point observation

Real-Time Pollution Alert: CSIR-NISTADS developed a Air-Quality linked Traffic Advisory System (AQTAS)

Expected Deliverables

- ✓ Feedback and emerging isses on air pollution
- ✓ Policy advisory document on air pollution
- ✓ Strategy for fututе to manage air pollution

For Further information
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