

## **1.257 Comparison of urban air pollution monitoring networks using low-cost sensors in fixed, mobile, and paired modes: Lessons for developing economies.**

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Abstract:

In May 2018, the World Health Organization (WHO) announced that 90% of the global population are exposed levels of pollutions that are higher than deemed safe. Furthermore, 7 million people die each year due to exposure to fine particulate matter (PM) pollutants. In the last few years, low-cost sensors, which cost few hundred dollars or less, have been tested as complements to the existing official air pollution monitoring stations in North America, Europe, and Asia. While less reliable than government monitors, which can cost tens of thousands of dollars per pollutant, these devices open new potential in higher resolution monitoring, citizen engagement, and open data. They enable citizens to understand how pollution affects their health and what countermeasures they can take to protect themselves. Yet, the full costs of deploying and maintaining these low-cost sensors and analyzing their data have yet to be assessed. This paper aims to estimate and compare the advantages and costs of the three main modes of deploying urban air pollution networks using low-cost sensors: fixed, mobile, and paired phone systems using examples in the US and EU. We also discuss what these findings mean for cities in developing economies where staggering economic growth and energy consumption are accompanied by increased air pollution.