

PRESS RELEASE

Monitoring Air Pollution through Low-Cost Sensors For Immediate Release

Bengaluru, 29 April 2022

Low-cost sensors (LCSs) that measure PM_{2.5} are becoming popular for monitoring air pollution because of their low cost and portability. South Asian countries could especially benefit from using LCSs as reference-grade monitors are expensive and not always affordable. LCSs could also aid in monitoring air pollution in areas/geographies where access to reference-grade monitors is limited. The low cost and portability of LCSs, however, come with some trade-offs on data quality, reliability, and shelf life.

The Center for Study of Science, Technology and Policy (CSTEP) and ILK Labs have brought out a technical note titled 'Performance Assessment of Low-Cost PM_{2.5} Sensors' to evaluate the performance of LCSs. The study was supported by Google. During the assessment, various LCSs measurements were compared with the measurements of a reference-grade instrument.

From the study, it is evident that PM_{2.5}, temperature, and relative humidity measurements of LCSs can capture trends. The uncorrected measurements can be used for qualitative information. For example, they can be used to identify specific days or locations that are more polluted than others. Given the affordability, portability, and ease of installation, LCSs can help give air quality information in areas with no monitoring. The high temporal resolution (compared to reference-grade instruments) is also useful in capturing short pollution events. However, for utility beyond qualitative characterisation, LCSs data need more processing.

Compared to the reference-grade instrument, the LCSs used in the study exhibited bias. Therefore, LCSs measurements need corrections. Calibration models developed using data from local field collocation experiments can be used for these corrections. Given the differences in measurements between different LCSs makes and models, the calibration models developed need to be make- or model-specific.

Dr Sreekanth Vakacherla, Project Lead, CSTEP, opined that 'Low-cost sensor technology for air pollution measurements and its calibration techniques are continuously evolving. More accurate measurements and longer shelf life could be expected from these sensors down the line'.

The full technical note is available [here](#).

For more details and interviews with researchers, please write to us at cpe@cstep.in

About CSTEP: Headquartered in Bengaluru, the Center for Study of Science, Technology and Policy (CSTEP) is one of India's leading think tanks with a mission to enrich policymaking with innovative approaches using science and technology for a



sustainable, secure, and inclusive society. CSTEP's areas of focus are Climate, Environment and Sustainability; Energy and Power; AI and Digital Platforms; and Strategic Studies.