Tackling Air Pollution at the Source

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With 22 Indian cities in the top 30 most polluted cities in the world (IQAir, 2020), our new dependence on pollution management at receptors — such as smog towers, water sprinkling on roads, etc. — will fail miserably unless we prioritise source correction. We lack the capacity to remove all particulate or gaseous pollutants as no existing filtering technology can handle India's current emission rates. Moreover, these rather optimistic solutions might give some big emitters the green signal to emit more. Our collective efforts should go towards curbing the problem at its source, starting with emission inventory (EI) — which the Centre for Air Pollution Studies (CAPS) team at CSTEP has been working on for quite some time now.

What is emission inventory?

As per the US Environmental Protection Agency, an emission inventory is a database that lists, by source, the number of air pollutants discharged into the atmosphere during a year or other specific time period.
EI measurement is a product of the fuel consumed and the pre-defined emission factor for that fuel, with reductions as per the type of pollution control device used at the source.

Is it worth the effort?

The EI outputs are the inputs for: a) Dispersion modelling, and b) Clean air action plans.

EI helps us identify affected locations and draft a detailed clean air action plan for the study area (say, a city) under various scenarios to assist policymakers. Effective implementation of the action plan can bring about positive results.

From emission loads, the ambient air concentration can be estimated using dispersion models. Often, detailed EI studies are accompanied by on-ground monitoring. The results can be compared with reference-grade monitors installed by the Pollution Control Board.

Limitations of EIs till now

The study credibility is dependent mainly on two factors — the source (type of source, type and quantity of fuel, process design, control device, etc.) and the relevance of the chosen emission factor to the study area. The main hurdle faced by researchers is the lack of good quality updated data. Gaps exist in emission estimation sheets, which can only be gathered through offline data from government departments — involving communication, collaboration, and travel challenges.

Another challenge comes from researchers using varied methodologies, making comparisons difficult.

Towards higher accuracy and productivity

A national-level standard research methodology is vital, comprising country-specific emission factors, identical data sources, and similar modelling/analysis software. Moreover, up-to-date essential data should be more accessible, if not for the general public, then at least for research institutes.

These two changes would ensure faster and accurate studies, so that we can then Act — and not just Report.

On Aug 26–27, 2021, CSTEP is organising its flagship event on Air Pollution — the India Clean Air Summit 2021 (#ICAS2021). Join Us!

You may find details to the event here.