# Opening Remarks and significance of the session


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# Challenges and needs on Air Quality Monitoring


*Link: Clean Air Asia (2020). Policy Brief: Monitoring Air Quality under the New Normal*

**Apart from increasing number of monitors, there should be investments on managing the data**

- Budget on DMS must be allocated at the onset
- Support of ICT departments/offices/ personnel is key

## The "New Normal"

- Increased usage of data in institutions in communicating to communities and the public
- Rapid progress in IoT, automation, and accessibility of datasets on the internet

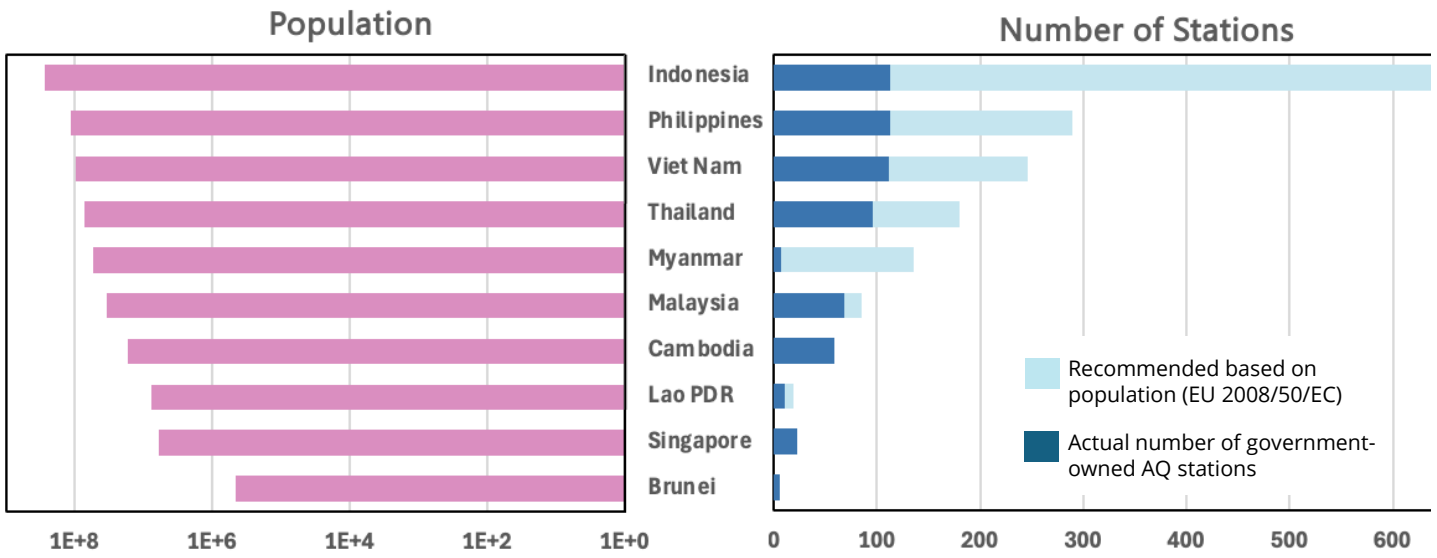
## We need detailed, real-time data

- The more details we know at the earliest time possible, the more we can understand the risks & immediate action needed
- Automation (without compromising accuracy) of data analysis

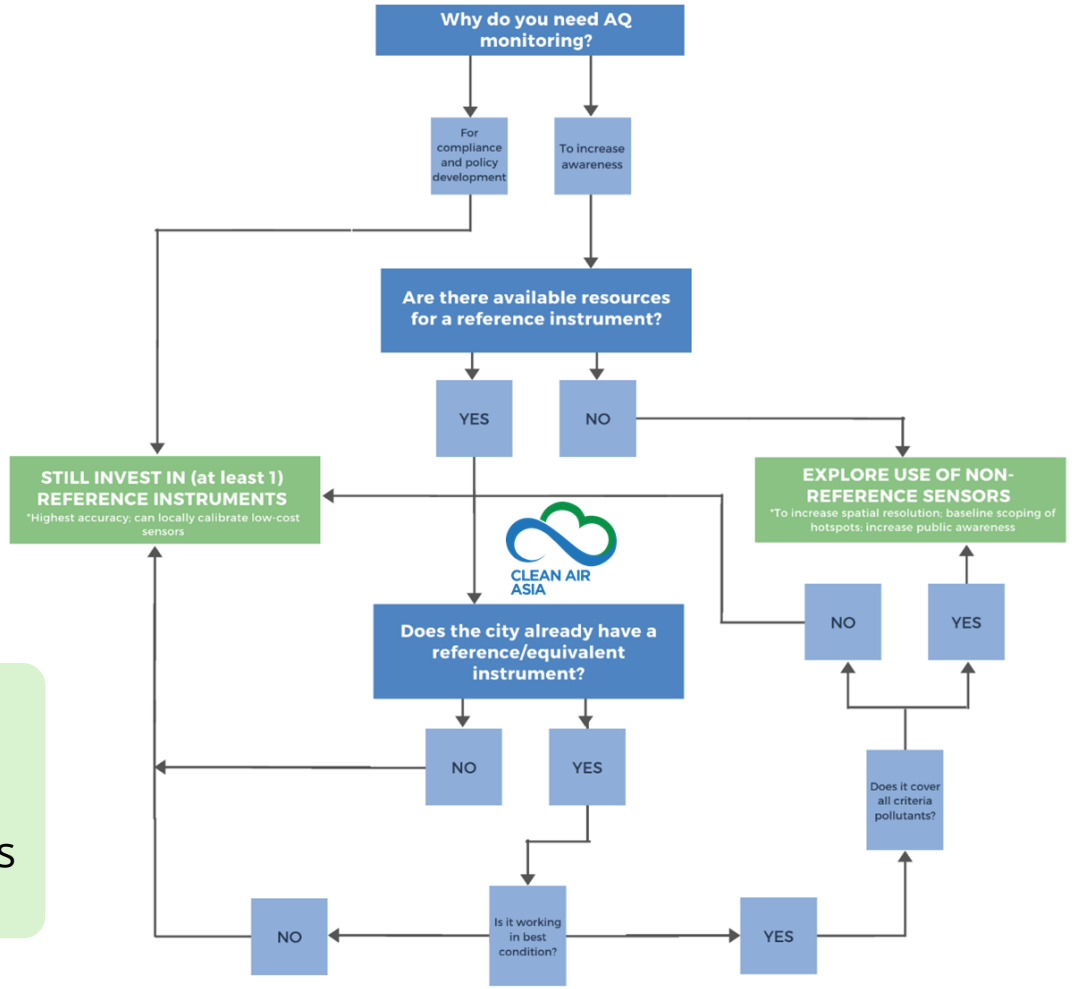
## Infrastructure-related challenges

- **Hardware:** Difficulty to purchase, maintain, operate updated (real-time) air quality stations, and required computational power
- **Software:** automation, ways to integrate different sources of data, data visualization
- **Human / process:** integration into workflows of institutions, operationalizing data usage, capacity development

# Efficient air pollution action must be driven by data – not just in terms of volume, but also of quality




*Clean Air Asia (2025). Air Quality in Southeast Asia Status and Trends 2025 Edition*




**SENSORS CAN FILL THE GAP – BUT WHAT ARE THE CHALLENGES?**

- Can cause *public confusion* if data reported is <u>not</u>
  - Accurate (requires performance evaluation)
  - Well-explained with context (limitations, considerations, factors and data that can influence air quality concentration)

*Clean Air Asia (2021). <u>City Solutions Toolkit: Technology Options for Air Quality Monitoring: Conventional vs. Next-generation</u>*

# Challenges and needs on Emissions Inventories, Source Apportionment, Impact Assessment

## More detailed and specific EIs

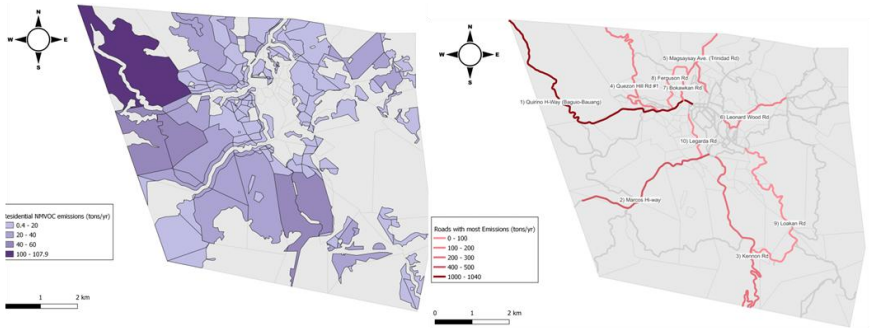
- Country- and regional level data that is not spatially mapped limits information that can be used for action

## Data availability and accessibility

- There is a need to have standard templates and processes on data collection, management, and sharing across offices

## Need for harmonized methods and integrative approaches

- Various efforts are being done but not integrated, even if using the same datasets



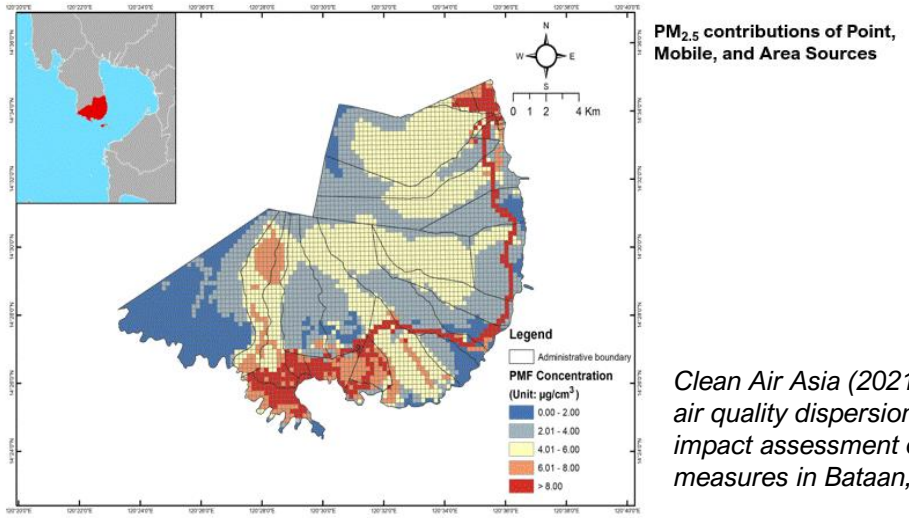
*Clean Air Asia (2023). Baguio City EI Maps for residential and mobile emissions*

## Limited resources and capacity for studies involving detailed (and timely) source apportionment, health impacts, and associated economic benefits

- Aside from challenges in data access, few institutions and government offices focusing in this topic

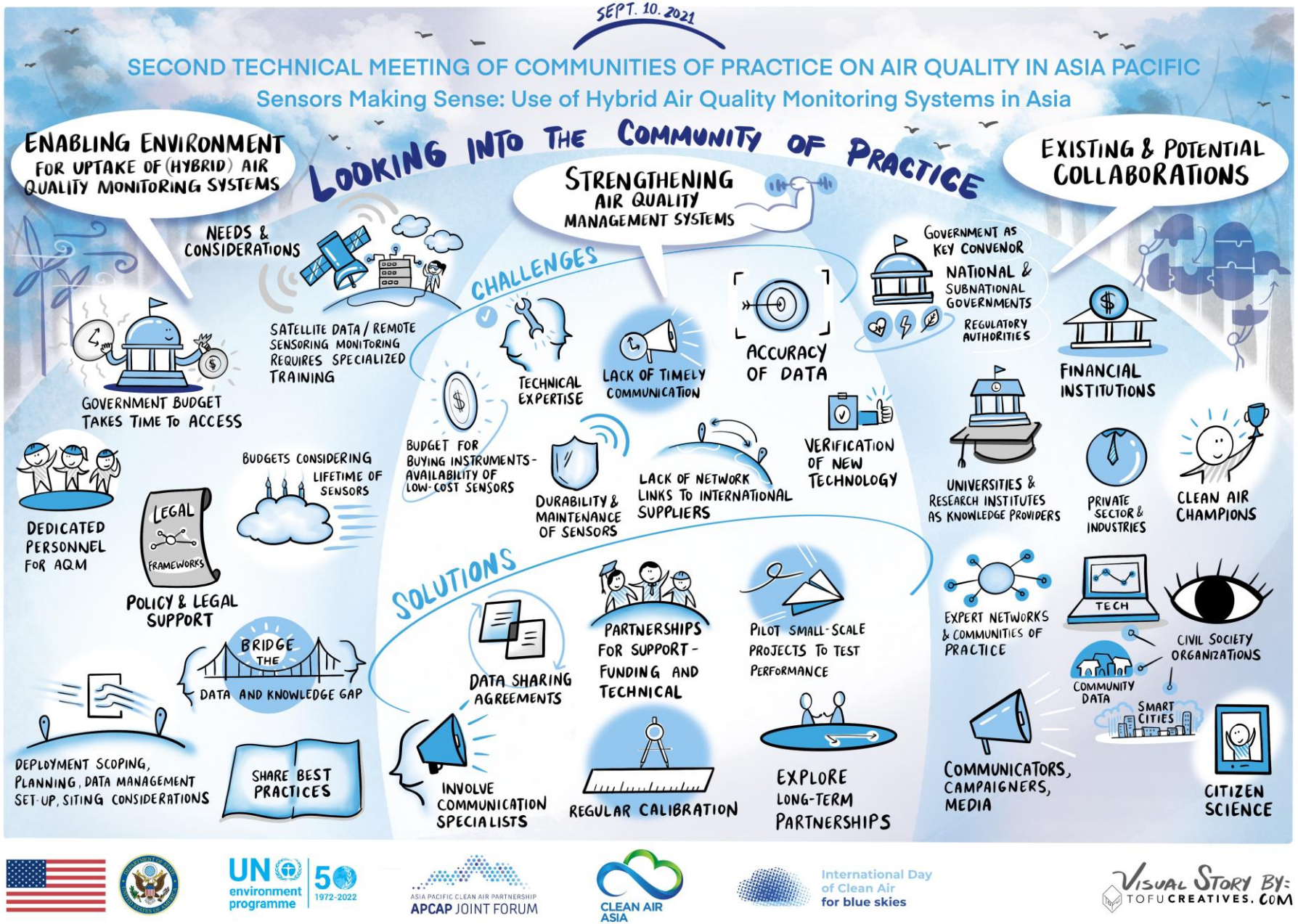
## Use of the outcomes to complement the overall communication of air quality

- This is the link that raises the highest interest among all stakeholders




*Clean Air Asia (2021). Emissions inventory, air quality dispersion modelling and health impact assessment of emission reduction measures in Bataan, Philippines*

# What progress have we had since five years ago?



# Clean Air Community of Practice (COMPASS)

Clean Air COMPASS

## THE ISSUE

Existing air quality data management options have limitations:

- **Proprietary systems are often expensive**
- Brands requires an **all-or-nothing ecosystem buy-in**, opaque, and overly controlling of the data
- **Custom-built DMS architectures are costly** and require significant technical expertise, and time

## EXPLORATION WITH STAKEHOLDERS

**Ingestion**
Types of devices and instruments, data access, formats and standards

**Storage**
How is data conventionally stored: on-premise vs cloud; file storage, APIs

**Sharing**
What do users do with data, what kinds of reporting, tools do they use with the data

## WHAT LIES AHEAD

- Conduct initial & ongoing stakeholder outreach
- Develop DMS prototype
- Pilot & iterate prototype
- Develop documentation & training materials
- Secure funding for long-term sustainability
- Fully launch open-source DMS

A collaborative, community-informed initiative to develop a customizable **open-source data management system (DMS)** for air quality measurement data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## WHAT IS A DMS?

- An air quality DMS is software that **collects, harmonizes, stores, validates, visualizes, and distributes data** from air quality monitoring networks and instruments.
- An open-source DMS is one whose source code (the code that runs the software program) is available to anyone who would like to view, copy, learn from, alter, or share it.

## THE APPROACH


## THE BENEFITS

- **Reduce duplication** of efforts, saving time and money
- Facilitate greater data **consistency** and **coordination** among data producers
- **Remove barriers** related to licensing fees, proprietary systems, and technical capabilities
- **Improve access** for resource-limited organizations and communities
- **Foster collaboration** by providing a shared, transparent foundation for diverse stakeholders to contribute
- **Empower organizations and communities** to effectively use air quality data
- Spur impactful actions to **clean the air**
- Provide a **foundation for accessible development and enhancement** of advanced data capabilities

## WHO IS BEHIND Clean Air COMPASS?

*Led by*

(2) NRDC (3) openaq (4) STI Sonoma Technology — A SPHERES ENVIRONMENTAL COMPANY

*Core Compass Members*

(1) Clean Air Asia (5) Allin Wayra (6) ECI Environmental Compliance Institute (7) SciCAN Science and Community Action Network (8) YGPE

*Seed funding provided by* Clean Air Fund

## LEARN MORE:

github.com/clean-air-compass

cleanaircompass.org

This poster

# Session Objectives

1. Present latest developments in the use of non-reference sensors and remote sensing technologies to complement reference air monitoring stations

2. Highlight success in the use of hybrid monitoring, source apportionment, and modelling in informing policy and prioritization of AQM actions

3. Discuss the way forward and recommendations for other cities or countries to adopt and scale-up presented case studies

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