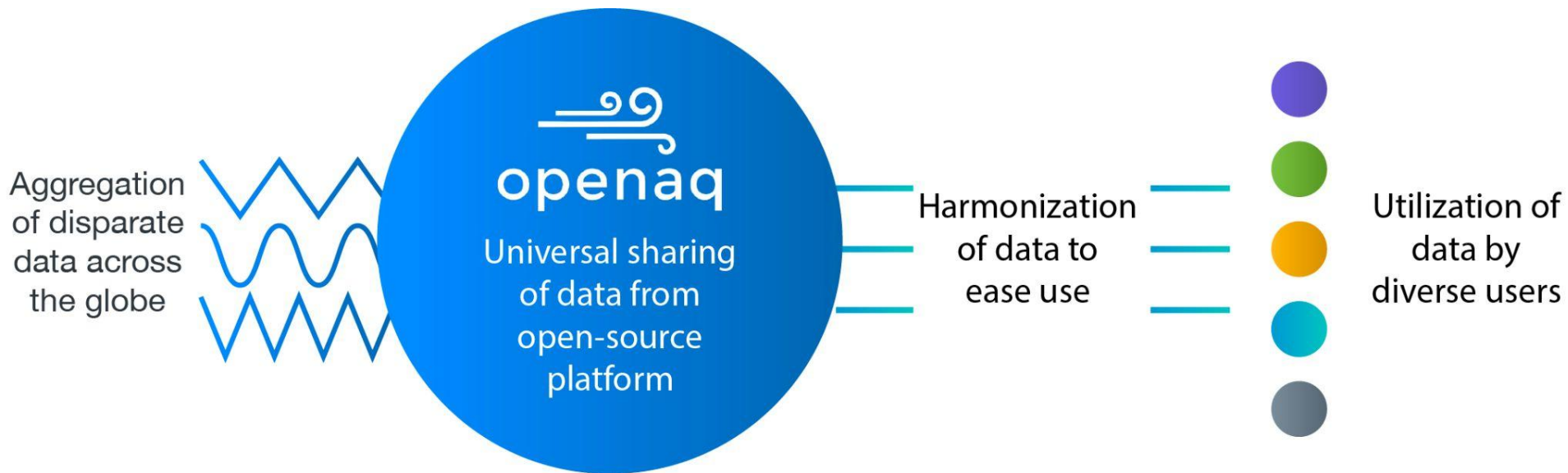# Providing Open Access to Global Air Quality Data to Support Vulnerable Communities

Colleen Marciel F. Rosales, Ph.D.,
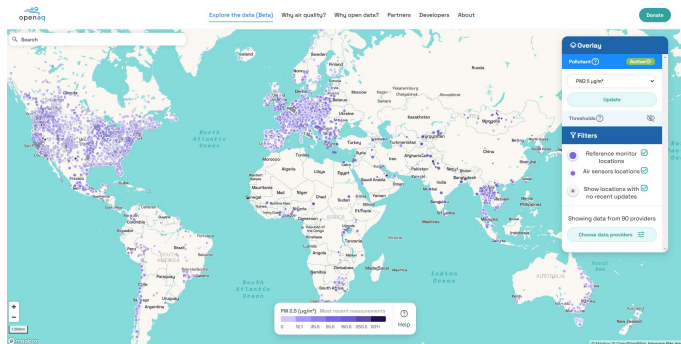Chris Hagerbaumer, Russ Biggs, Gabriel Fosse

openaq.org • explore.openaq.org

OpenAQ harmonizes air quality data from disparate sources into one single format so that the public can more fully maximize the uses—and ultimate impact—of the data

Aggregation of disparate data across the globe

openaq
Universal sharing of data from open-source platform

Harmonization of data to ease use

Utilization of data by diverse users

The OpenAQ Platform

The world's largest *open-source* real-time air quality data platform
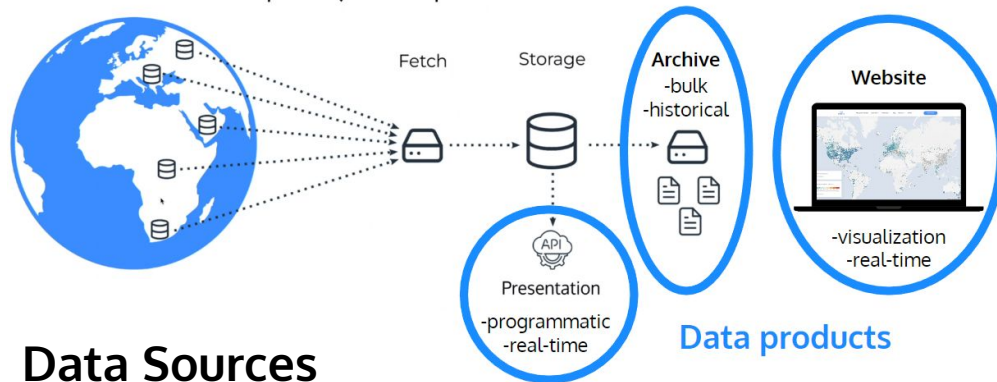**openaq.org • explore.openaq.org**

explore.openaq.org

25+ billion data points
48,000 locations
150 countries

- $PM_{2.5}$
- PM_{10}
- Sulfur Dioxide (SO_2)
- Nitrogen Dioxide (NO_2)
- Carbon Monoxide (CO)
- Black Carbon (BC)
- Ozone (O_3)

How the OpenAQ Data Pipeline Works

Data products

Data Sources (instruments)

1. Reference monitors
2. Air sensors ("low-cost" sensors)

Open Air Quality Data: The Global Landscape
December 2022

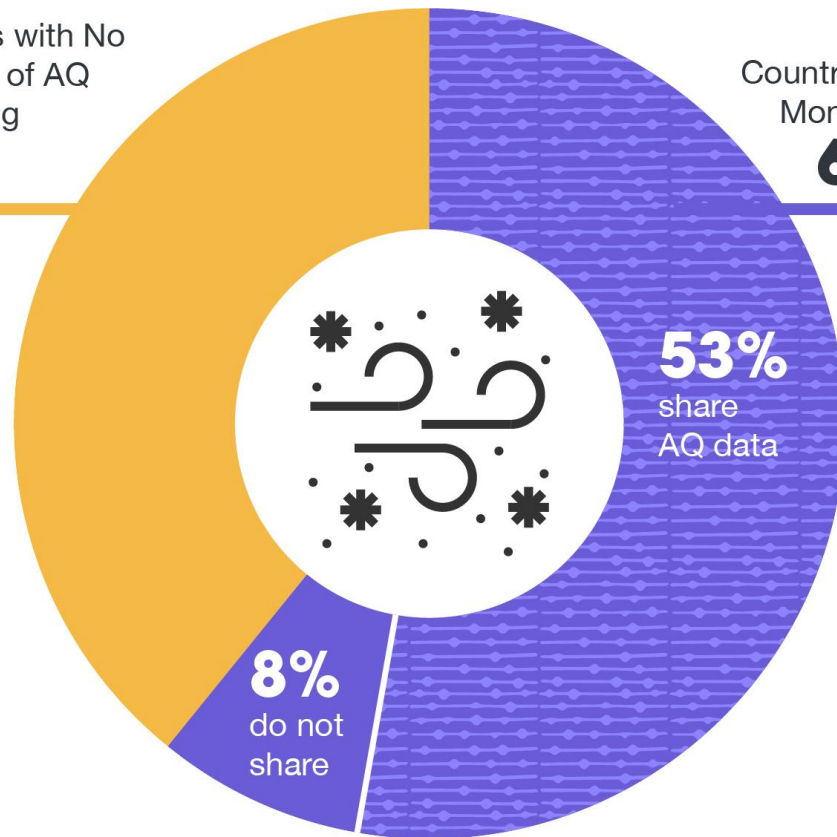Less than ¼ of countries meet the four key criteria for open data

- Physical units
- Station-specific coordinates
- Timely fine-scale temporal information (near real-time)
- Programmatic access

bit.ly/OpenAQ2022Report

Countries with No Evidence of AQ Monitoring
39%

Countries that Monitor AQ
61%

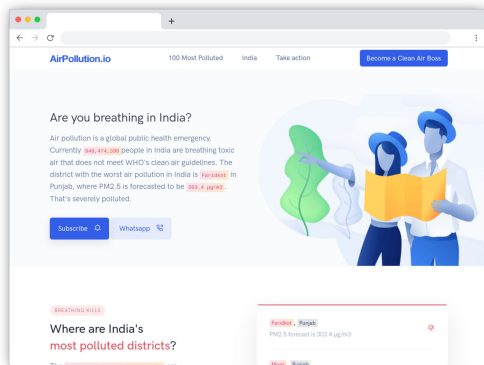**53%** share AQ data

8% do not share

N=197

Who makes use of the data in OpenAQ?

- Air quality and climate change researchers/analysts at universities, think tanks, governments (national & subnational) + international governmental entities
- Governments producing & sharing AQ data
- Public health entities
- Non-governmental organizations (NGOs) & community-based organizations (CBOs)
- Journalists and storytellers
- App developers and tech companies
- Data enthusiasts that need a big dataset for data science studies
- Anyone who cares about air quality!
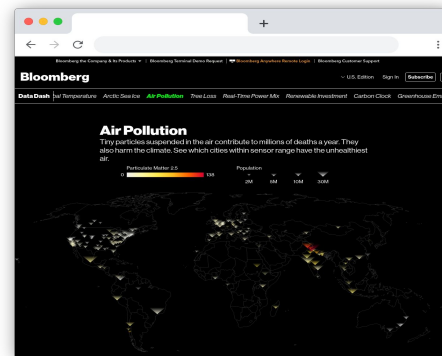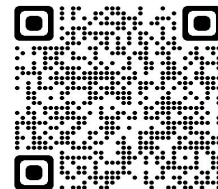
Smokey Air Pollution Bot

airpollution.io

- Chatbot
- Real-time air quality data
- Communicates hazard levels and methods to safeguard personal health
- Software development contributors

Bloomberg Green PM$_{2.5}$ Tracker

bloomberg.com/graphics/climate-change-data-green/air-quality.html

- Interactive platform
- PM$_{2.5}$ levels based on population density in cities across the globe
- Evidence-based journalism

Clean Air One Atmosphere

Ghana, The Gambia

medium.com/@cleanaironea

AQAI

Machine learning-powered predictive model for monitoring air quality
(Belize, Latin America)

UNICEF Venture-fund backed

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📜 openaq.medium.com

ESIP Meeting January 2023
Opening Doors to Open Science

- 1/24 Open Science and Information Quality across ESIP
- 1/25 Harnessing Air Quality Data to Protect Health and Save Lives
- 1/25 ESIP Research Showcase
- 1/26 Using Open Data to Fight Air Inequality: Introduction to the OpenAQ Platform and Use Cases

Funders supporting our vision of a world where everyone breathes healthy air, enabled by universal access to data: