

Commentary

The need for open data on air quality monitoring in logistically difficult environments

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Background

Reports from the World Health Organization indicate that approximately seven million people died in 2012 due to the consequences of poor air quality (WHO, 2014). Air pollution is partly linked to lung and heart diseases, asthma and bronchitis. Efforts have been made in terms of policy and data availability in developed nations to help curb air inequality. Though this has not completely eradicated problems of air inequality, remarkable progress seemed to have been made to reduce air pollution in these countries. The same cannot be said for under-developed economies, especially countries in the Sub Saharan Africa, where Ghana belongs. The adverse effects of air pollution on health and general well-being in developing economies is alarming; sadly, availability of open data on air quality to enable scientists and individuals to take proactive measures to mitigate the effects of air pollution has become problematic.

The government of Ghana has enacted several policies to ensure the safety of the environment and to make quality health care a must have for every Ghanaian. Designated state institutions responsible for protecting the environment have been working to monitor air quality and to address environmental health problems, though they are under-resourced. These agencies, departments and institutions usually have a few number of air quality monitoring devices which are sparsely distributed in urban centers. A large part of the country is not monitored to assess the level of pollution in these areas. Scientists and researchers need air quality data, both historical and real time, to solve the challenges of poor air quality. Open data on air quality seem to be lacking, and access to reliable air quality data from state agencies by scientist and researchers is an arduous task as there are no clear guidelines to data access. This situation makes scientists and researchers handicapped in their quest to address the issue of poor air quality.

Air pollution and public awareness

More alarming is the fact that majority of the citizens are not aware of the dangerous effects of poor air quality, hence, they continue engaging in harmful practices like road-side cooking, burning of biomass in residential areas, use of fire wood and

charcoal for cooking, and use of kerosene lanterns, which exposes the majority of the population to diseases related to air pollution. The question that begs for an answer is, will citizens engage in these practices if they were aware of the dangers associated with them?

More sensitization is needed to make citizens aware of the harmful effects of air pollution and the measures they need to adopt to mitigate it. Furthermore, if awareness is created on the importance of air quality, and air quality data is made open and easily accessible to the citizenry, there will be a positive behavioral change and they will demand policy makers to address the challenges associated with poor air quality.

Practical steps and the way forward

Commendable steps have been taken by government and other agencies to ensure the nation gets clean ambient air. Notable among these measures are the Akoben Rating to serve as an incentive for adhering to air quality standards by industries (Michaud, 2013). That notwithstanding, more needs to be done in terms of making air quality data accessible to individuals and institutions, and increasing the number of monitors to cover all parts of the country; especially areas that are more prone to air pollution (mining communities, lumbering sites). There is also the need to create awareness and educate citizens on the damaging consequences of air pollution. Beyond the provision of access to air quality data, the available data should be presented to the citizenry in a form and language they can easily understand to make them take the necessary steps to curb air pollution.

The critical issue of open AQ data in the African context

Open data on air quality requires the development of some form of infrastructure. This includes, but is not limited to, reliable internet access, real time air quality monitors integrated with general packet radio services (GPRS) for data telemetry, file transfer protocol (FTP) server, reliable power source and skilled human capital. For example, the Ghana Environmental

Protection Agency (GhEPA) uses gravimetric method for collecting data on air quality species, namely PM_{2.5} and PM₁₀, which limits its ability to report the measurement data to cloud-based platforms, even though this is not impossible. The traditional air quality monitoring approaches, coupled with ad-hoc studies on air quality in Africa without uniform environmental sensing tools, are considerable obstacles in the fight against air inequality in Africa.

Relatively low-cost emerging cutting-edge high-resolution sensor networks are capable of collecting fast, reliable, real-time and in situ data on air quality (AQ) when properly operated (Brauer et al., 2012; Evans et al., 2012; Amann et al., 2013). These sensors are integrated with GPRS for data telemetry and a GPS for timestamp and location service. These low-cost sensors can bridge the gap in terms of routine air quality monitoring and facilitate the work of the responsible agencies to make air quality data readily available.

Awareness ignites actions

Air quality is treated as a very sensitive subject in Africa and most often a no-go area to talk about. Even staff from governmental agencies responsible for developing and enforcing air quality standards in many countries across Africa finds it difficult to talk about it. A personal communication with the staff of the GhEPA has shown that the misinterpretation of information from few experts in the governmental agencies by the public makes it difficult for disseminating information on air quality. An explicit example is when an officer during a presentation indicated that “most of the public vehicles on our roads pollute a lot and must be given a critical attention.” This information was read by the general public as banning all public vehicles from operating in Ghana.

It is therefore critical for governments in Africa to find a way to communicate air quality data to their citizens bearing in mind everyone has the right to breathe clean air and therefore need to know what they breathe. In Macedonia for example, open data was initially introduced in 2012 through the National Action Plan for Open Government Partnership. This action plan legally binds the government to open data in a machine-readable format. This commitment led to a follow-up study on mapping of citizen interest in the type of government collected data, of which air quality data was part (OGP Macedonia, 2018). As such, the Ministry of Environment and Physical Planning (MEPP) began a project to update a dedicated website with hourly information on air quality which is auto-generated by the State Automatic System for Ambient Air Quality (Irena Bojadzievska, personal communication). The case of Macedonia is a critical example to put pressure on governmental institutions to address air pollution. Open data is key to addressing many of the challenges in the context of Ghana and wider Africa of which air pollution is critical area.

Link to the community Statement

<https://medium.com/@openaq/community-statement-on-air-quality-in-ghana-time-to-take-action-21fb8fb2e769>

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