A Sustainable Path to Air Pollutants Detection

DEVELOPING A LOW-COST AIR QUALITY SENSOR

If you have any questions regarding the participation and submission, please feel free to contact the SQUARE Team Lead: obuks.ejohwomu@manchester.ac.uk
Subject: Developing a Low-Cost Air Quality Sensor.

A Sustainable Path to Air Pollutants Detection

DEVELOPING A LOW-COST AIR QUALITY SENSOR

Most urban dwellers have been exposed to unsafe air, leading to 4.2 million deaths yearly. It is pathetic to note that the quality of air in major cities across the world is plaguing human existence at an alarming rate. The United Nations Sustainable Development Goals [SDGs] Good Health & Well-being [SDG 3] and Sustainable Cities & Communities [SDG 11] aim to reduce the number of deaths from environmental pollution, including those from the impact of cities, by 2030. However, it is unlikely that developing countries would meet these targets unless concerted measures are applied.

The confirmation of the problems deterring the progress of the developing nations to meeting the SDGs has birthed this challenge organised by the SQUARE team. The challenge is the second stage of a series of events aimed at proffering solutions to air pollution. The challenge will bring together innovative and dedicated great minds within Africa to develop low-cost air quality monitors.

In the first edition of the competition, five air quality monitors were produced, and three (3) teams won the cash prizes allotted to the positions. Insights on the success of the event, last year, can be retrieved from the attached link. Moreover, some of the outputs of SQUARE with respect to seeking ways to curb the prevailing menace of air pollution can be found embedded in these links (output 1 and output 2). This year, we hope to advance the quest to further seek solutions that will be implemented within various sectors in Nigeria.

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The University of Manchester
ARCSSTE-E

NIGERIAN HEART FOUNDATION APPROVED

FEDERAL MINISTRY OF ENVIRONMENT
SQUARE

CHALLENGE

The variants of air pollutants (PM2.5, PM10, Ozone, carbon monoxide etc.) have been detected in specific areas of major cities worldwide. The price of the air quality monitors has been a significant hindrance to accomplishing the pillars of sustainability and widespread detection across cities and suburbs. As a result, all entries in this challenge should aim at developing low-cost air quality sensors. Participants will be required to provide an answer to this vital question:

How can available local materials, wastes, or low-cost materials be used to develop a sustainable air quality monitor?

TRACKS

▲ To fulfil the requirements of this challenge, participants must provide answers to the following questions. Kindly note that the questions below should only act as guidelines. The team may decide to reveal more innovative and interesting outlooks.

▲ How do you perceive the air pollution problems and lack of low-cost air quality sensors in your region?
The problems associated with air pollution should be briefly described with evidence, and the teams should emphasise the significance of low-cost air quality monitors.

▲ How can you solve the problem?
The team should develop an approach to address the problem. This section should include your work plan.

TRACKS: CONT.

▲ What are the different low-cost materials that can be combined to develop an air quality monitor capable of monitoring at least one pollutant?
The materials to be used must be affordable and meet sustainability requirements.

▲ Can the proffered solution fall within an affordable budget?
The team will be expected to develop a budget for the materials and sensors to be used for the air quality monitor.

▲ How will you develop your monitor?
A detailed methodology should outline how your team intends to develop the low-cost monitor. A video, chart or sketch can accompany your submission to help us better understand your solution.

▲ Will the air quality monitor serve the required purpose?
The sensor in your monitor should capture at least one pollutant. Your product should pass validation with an existing air quality monitor.

ELIGIBILITY

A team must comprise students in higher learning institutions and at least a Nigerian.

Members of a team may be researchers, innovators, start-ups or any individuals with the required skill desired in the team. An interdisciplinary team is strongly advised.

SUBMISSION

Submission of your entry will be via the attached link. Kindly provide all relevant information based on the template given in this link: https://forms.gle/hKxYc8M5oUP5A8k26. A provision in the preceding link exists for submitting necessary documents, videos, charts and every other information that will support your application.

PHASES OF THE COMPETITION

- ✓ Submission deadline and qualification phase: 21/06/2023 11:59 GMT+1
- ✓ Interview phase: 27/06/2023
- ✓ Calling the finalist: 30/06/2023
- ✓ Validation of monitors: 24/08/2023
- ✓ Announcement of the Winners: 25/08/2023

BENEFITS

A total of £500 to be won by five (5) teams in support of the project. A Maximum of £100 will be allotted to each of the five teams.

The winning team, first runner up and second runner up, will get a cash price of £250, £150 and £100, respectively. All the teams in the final round of the competition will be certified.

Internship with the Nigerian Institution of Environmental Engineers and collaboration opportunities with the University of Manchester.

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