**Concept Note**

Citizen Science and Community Engagement for Air Quality in Nairobi
SEI Africa – SEI York Collaboration
Internship Opportunity for KTH Master’s Students (September 2025 – February 2026**)**

**Partners:**

* Stockholm Environment Institute (SEI) Africa, York
* United Nations Environment Programme (UNEP)
* Athletics Kenya
* Haki Data Lab
* Data4Change
* Local communities, schools, cyclists, athletes, and CBOs around Dandora dumpsite and informal settlements

**Hosted Internship:** Master’s Students from KTH (Royal Institute of Technology, Sweden)

**1. Background and Rationale**

Air pollution remains one of the most pressing environmental and public health challenges in African cities, with Nairobi experiencing significant exposure risks for athletes, informal workers, and schoolchildren. Citizen science has emerged as a transformative approach to democratize air quality monitoring, bridge the science-policy gap, and empower communities with evidence to drive local interventions.

Building on **SEI York’s prior experience in mobile air quality sensing** and **SEI Africa’s ongoing partnerships with athletics federations, schools, and local governments**, this initiative aims to establish a **flagship citizen-led air quality monitoring program**. It will combine participatory training, mobile and low-cost sensors, and open data platforms to generate actionable insights for communities, policymakers, and sports/environmental stakeholders.

Emerging collaborations with **Haki Data Lab** and **Data4Change** provide a unique opportunity to embed citizen science, advocacy, and creative communication into this work. By combining SEI’s expertise in air quality science, exposure modelling, and policy engagement with local partners’ strong grassroots connections, the project can generate **policy-relevant, community-driven evidence** to shape urban climate resilience strategies in Nairobi and beyond.

Within this framework, SEI Africa seeks to host **two Master’s students from KTH** for a **6-month internship** to co-design and implement field-based citizen science activities in Nairobi.

**2. Objectives of the Internship**

The internship will provide the two Master’s students from KTH with hands-on experience at the intersection of **air quality science, citizen engagement, and urban climate resilience**. The students will be integrated into the CLEAR (Clean Air for Enhanced Urban Climate Resilience in Africa) project and support ongoing collaborations with community partners.

**Specific objectives are to:**

1. Support the design and implementation of **community-driven air quality monitoring pilots** in informal settlements.
2. Contribute to the **integration of sensor, satellite, and modelled data** into SEI’s data platforms for open, policy-relevant insights.
3. Assist in conducting **health and exposure risk analysis** to identify vulnerability hotspots.
4. Help develop **training modules and capacity-building workshops** targeting community-based organisations (CBOs), schools, and youth networks.
5. Document and evaluate lessons learned to feed into **policy dialogues and advocacy campaigns**.

**3. Scope of Work / Methodology**

The students will contribute to the following thematic areas:

**3.1 Citizen Science & Community Engagement**

* Support community mobilisation with Haki Data Lab and Social Justice Centers.
* Pilot mobile air quality sensing with school children, cyclists, informal workers, and athletes.
* Contribute to participatory workshops to co-design monitoring campaigns and communicate results.

**3.2 Data Integration & Visualisation**

* Work with SEI experts to integrate low-cost sensor data with **satellite and model outputs**.
* Explore approaches to harmonise datasets into **open-access platforms**.
* Collaborate with Data4Change on **data visualisation and storytelling** for advocacy.

**3.3 Exposure & Vulnerability Analysis**

* Support SEI’s work on **exposure modelling** and mapping of air pollution hotspots.
* Analyse links between exposure, socio-economic vulnerability, and climate resilience.
* Provide evidence to inform urban planning and protective measures for vulnerable groups.

**3.4 Capacity Development & Co-learning**

* Contribute to the development of **training materials** for CBOs, schools, and youth.
* Support **training of trainers (ToT)** with Haki Data Lab.
* Evaluate effectiveness of training approaches in terms of knowledge retention and community ownership.

**4. Roles and Responsibilities**

The **two KTH Master’s students** will work in collaboration, each bringing complementary expertise:

**Student A – *Community Engagement & Social Innovation***

* Lead participatory training workshops with youth, athletes, NGOs, and schools.
* Design citizen science protocols for community-friendly data collection.
* Document case studies and stories of impact for communication and policy briefs.
* Facilitate dialogue sessions with local authorities and employers to integrate citizen evidence into decision-making.

**Student B – *Technical & Data Analytics***

* Deploy and maintain mobile and low-cost air quality sensors in key sites (sports facilities, schools, markets).
* Process and analyse exposure data, linking to health, occupational risk, and spatial patterns.
* Support development of open-access dashboards and visualization tools.
* Collaborate on integrating remote sensing and machine learning for predictive air quality insights.

**5. Required Skills and Qualifications**

**For both students:**

* Enrolled in a master’s program at KTH in relevant fields (e.g., Environmental Engineering, Sustainable Development, Data Science, Urban Planning, or related).
* Demonstrated interest in air quality, citizen science, public health, or climate change.
* Strong communication and teamwork skills, with ability to engage across cultures.
* Proficiency in English (spoken and written).

**Specific skillsets:**

* **Student A**: Background in community engagement, participatory research, environmental education, or policy. Experience in qualitative research and facilitation is desirable.
* **Student B**: Strong quantitative skills in environmental data analysis, GIS, or remote sensing. Familiarity with sensor deployment, coding (Python/R), and data visualization is an asset.

**5. Internship Activity Plan (6 Months)**

| **Month** | **Key Activities** | **Lead Student(s)** |
| --- | --- | --- |
| **Month 1** | Orientation with SEI Africa & York teams; review of past work; mapping of stakeholders and sensor locations. | Both |
| **Month 2** | Community engagement workshops with schools, sports clubs, and NGOs. Sensor deployment in selected sites. | A (community), B (technical) |
| **Month 3** | Data collection begins, training sessions on interpreting results. Preliminary analysis of exposure patterns. | Both |
| **Month 4** | Development of open-data dashboards and visualization prototypes. Storytelling/documentation of early findings. | B (data), A (storytelling) |
| **Month 5** | Integration of evidence into local dialogues (policy roundtables, advocacy sessions with federations/employers). | Both |
| **Month 6** | Final synthesis of findings; production of technical report, community briefs, and academic paper draft. | Both |

**6. Expected Outcomes**

* A **scoping report** summarising opportunities and challenges of citizen science-based air quality monitoring in Nairobi.
* Training materials and protocols for youth groups, NGOs, and schools.
* Deployment, Operation of at least **10 low-cost/mobile sensors**, generating hyperlocal exposure datasets.
* **Maps and vulnerability profiles** highlighting exposure hotspots around informal settlements and Dandora dumpsite
* At least **two policy/advocacy briefs** linking citizen-generated evidence to actionable measures : A **short communication / blog post** documenting key lessons and policy implications.
* Contributions to an **academic paper** co-authored with SEI Africa and SEI York.
* Strengthened SEI’s visibility as a leader in **community-driven environmental monitoring** in Africa.

**7. Duration and Location**

* **Duration:** 6 months (September 2025 – February 2026).
* **Location:** Nairobi, hosted by **SEI Africa**, with technical backstopping from **SEI York**.
* **Fieldwork:** Nairobi and peri-urban sites (schools, sports facilities, markets).

**8. Reporting and Supervision**

* **Primary Supervisor (SEI Africa):** Research Fellow, Air Quality & Climate Program.
* **Co-Supervisor (SEI York):** Senior Scientist, Atmospheric Science & Citizen Science Portfolio.
* Monthly progress updates will be submitted jointly by the students.
* A **final internship report** will be presented to SEI Africa and SEI York for validation.