



Resilience
Academy

RESILIENCE ACADEMY

YOUNG PEOPLE WITH TOOLS, KNOWLEDGE AND SKILLS TO SECURE
RESILIENT URBAN DEVELOPMENT



KADI

Knowledge
and climate services
from an African observation
and Data research Infrastructure

Funded by the
European Union



OCTOBER 17th 2024

Niina Käyhkö | niina.kayhko@utu.fi
University of Turku, Finland



UNIVERSITY
OF TURKU



GFDRR
Global Facility for Disaster Reduction and Recovery



Administered by
THE WORLD BANK
IBRD • IDA | WORLD BANK GROUP



African cities are increasingly vulnerable to climate change

58%

2050

53%

2040

48%

2030

- Half of African population is expected to be urban by 2035
- Rapid, uncontrolled urbanization
- Weak urban planning and poor infrastructures
- Scarcity of up-to-date climate risk data and information
- Young, vibrant and increasingly educated youths
- New job opportunities enabled by emerging

TRADITIONAL APPROACH TO DATA COLLECTION: HARD TO SUSTAIN, HARD TO SCALE



EXPERT
CENTRIC



COSTLY



COMPLEX



TOP DOWN



NOT DESIGNED TO
SCALE





THE MISSION

“Future climate services and data production models need to be more locally driven, low complexity, fit the purpose and context and engage local talent so that decisions are reliable, owned locally and made actionable over time”



Resilience
Academy

Resilience Academy is a partnership and service delivery program of the universities aiming to improve digital skills, competences and employment of the African youth for more effective climate risk management and resilience in cities



Disruption space between digital data, technologies and community engagement

- Mobile tools and digital platforms
- Earth observation and global data
- Internet of Things, automation and GeoAI
- Citizen engagement
- Local knowledge – localized data
- Digital public goods
- Open Science
- Informed decision-making and resilience



THE STRATEGY

Digital data commons –
accessible climate risk
data

**Open-source digital
technologies** - inclusive,
affordable tools

Community engagement
– local knowledge and
context integrated

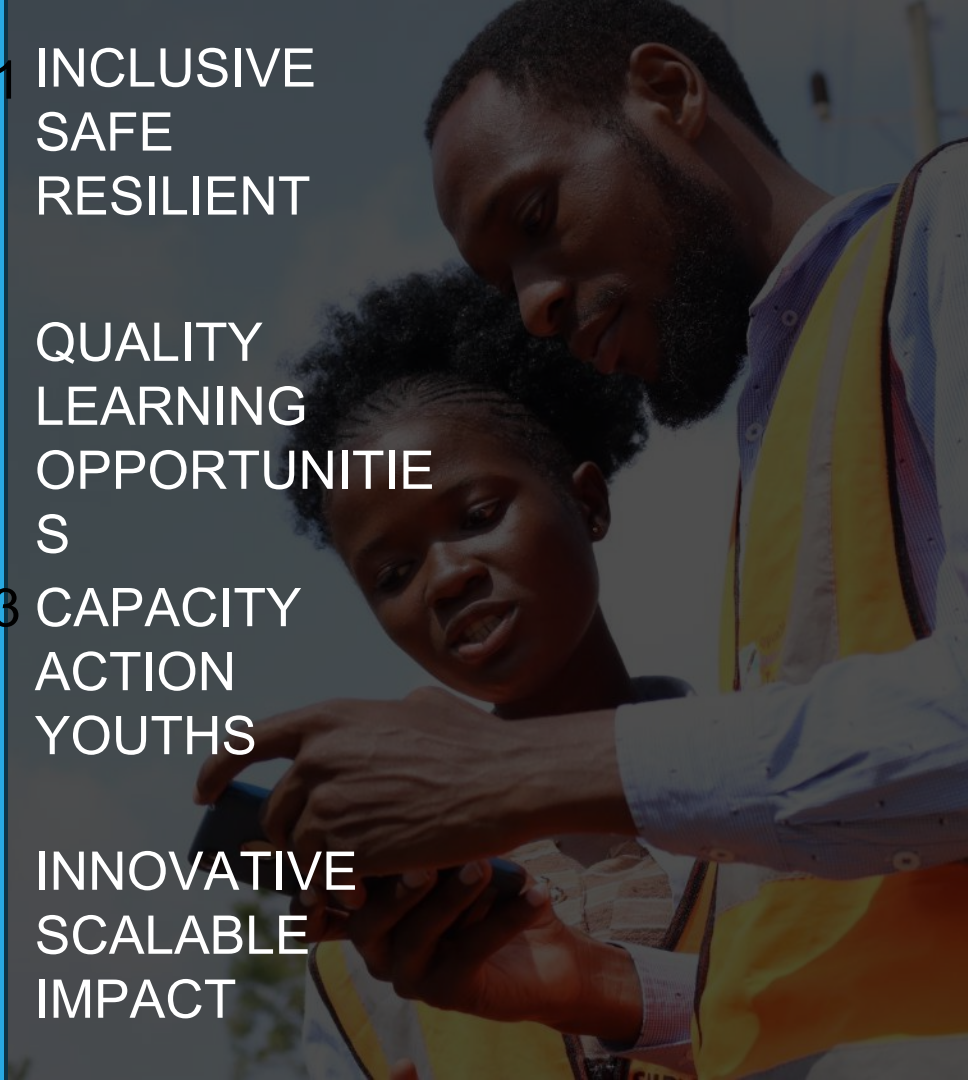
Youths – accelerators for
sustainability

SDG 11 INCLUSIVE
SAFE
RESILIENT

SDG 4 QUALITY
LEARNING
OPPORTUNITIES

SDG 13 CAPACITY
ACTION
YOUTHS

SDG 9 INNOVATIVE
SCALABLE
IMPACT



RESILIENCE ACADEMY AS AN URBAN OBSERVATORY



Co-creating transformative climate services for African cities

Responsive to demand, adaptive, context-smart and impactful

Thrives from synergies between actors

Mobilises global and local assets via localized co-production

Climate risk data in
demand

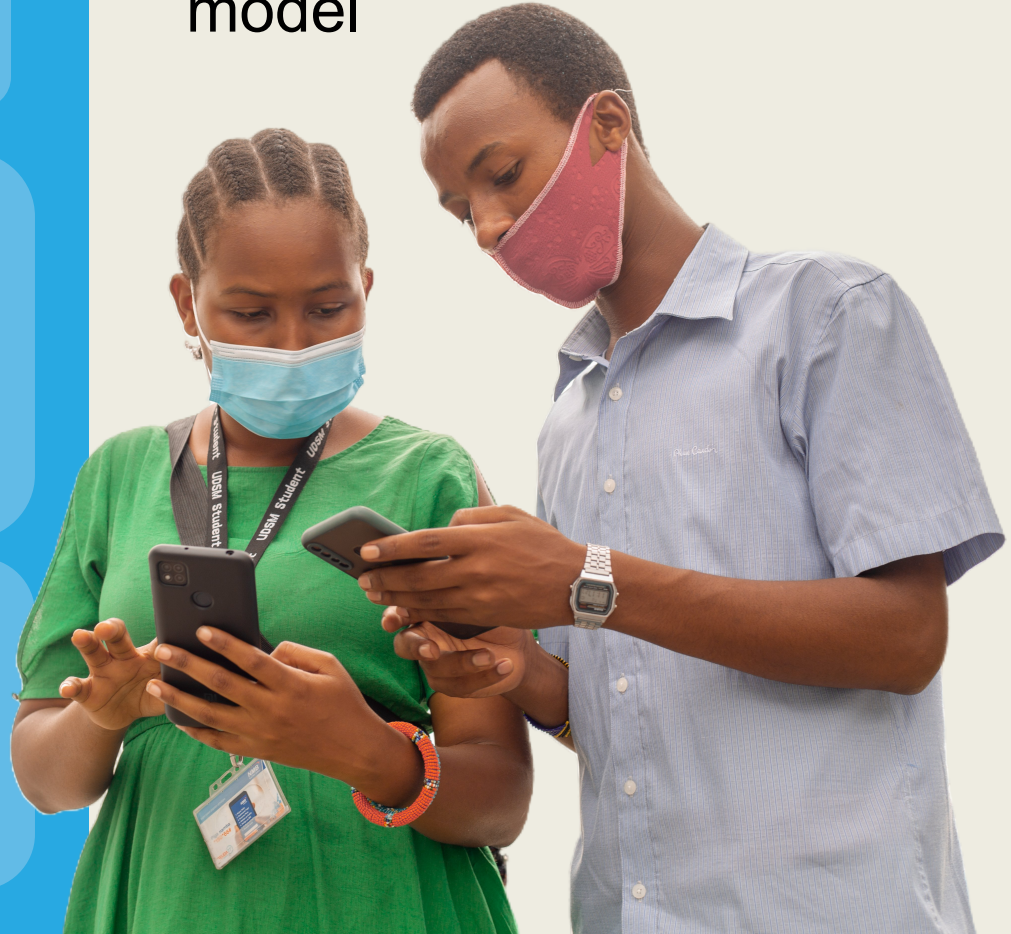
Data-Industry
Digital data
collection and
curation expertise

Secretariat
Marketing and
organising the
placement

**Students as interns
in the industry**
(new skills and
competences)

Universities
(supply of students,
securing learning
benefits)

RA mass industrial placement
model

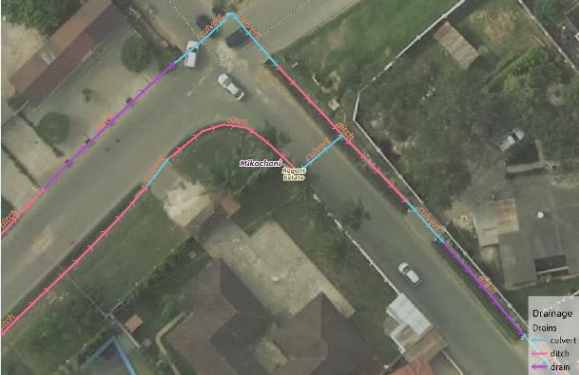


USE CASES OF CLIMATE RISK DATA COLLECTION IN TANZANIA



Drainage network

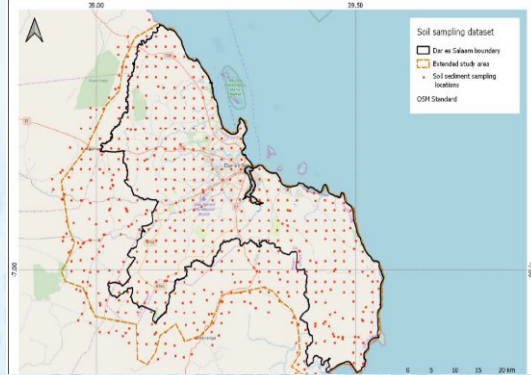
1



Link with TAHMO precipitation data to predict flash floods in the cities

Soil sample

2



Estimate sediment transport and erosion in flooded rivers

Exposure to floods

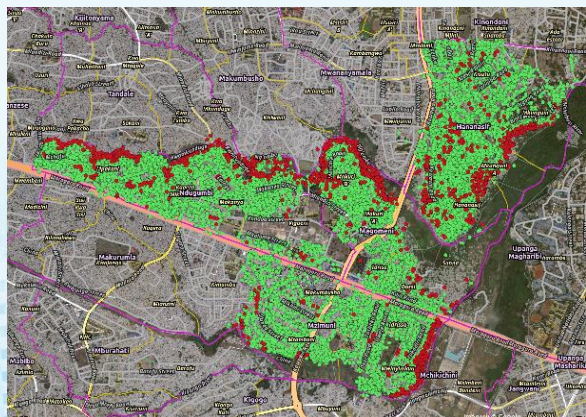
3



Digitizing buildings from VHR drone imagery to estimate exposure

Flood Histories

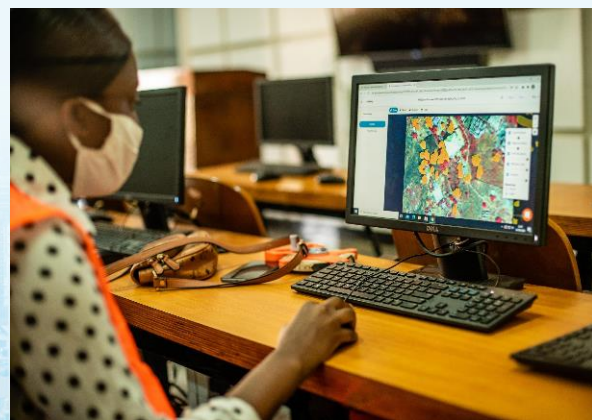
4



Link flood exposure to local flood experiences

Tree Canopy

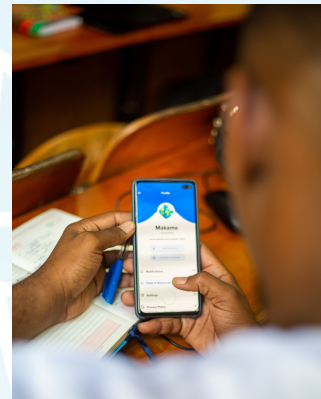
5



To model green infrastructures with EO and estimate heat

Litter mapping

6



Collecting litter images to model litter in the cities

Tandale
Air pollution experiences

We asked "Where have you most recently experienced poor air quality?"

And you answered.

Number of experiences:

1
44

0 100 200 m

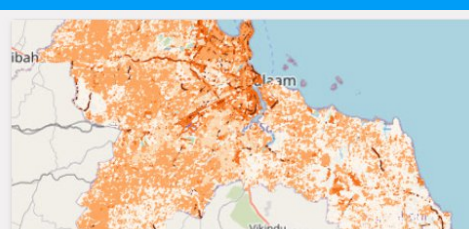
UNIVERSITY OF TURKU
Resilience Academy
KADI


Thank you OpenStreetMap contributors for place elements and boundary (2024), and Tandale community members for air pollution data (2023).



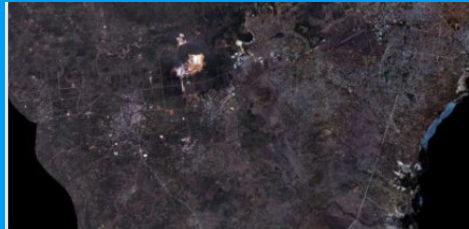
Stakeholder workshop to co-create climate service needs


ONLINE PLATFORM TO ACCESS DATA



 Dar es Salaam Roads 2022

The data was collected to provide updates on all roads in Da...



 Tanga Satellite Imagery, 50cm 2014

This KOMPSAT-3 product is a 3-band (RGB), true color ...



 Search

[Register](#) [Sign in](#)

Climate Risk Database

"The catalyst for resilient urban development in Tanzania"

<https://geonode.resilienceacademy.ac.tz/>

[Data](#) [Maps](#) [GeoStories](#) [Dashboards](#) [Featured](#)

[Home](#) [Resources](#) [Community](#)



168 Datasets



7 Maps



488 Community members

DIGITAL GEOSPATIAL DATA PLATFORMS

Open access to
digital data for
learning,
research,
innovations and
decision-making



Resilience
Academy

RESILIENCE ACADEMY ECOSYSTEM

DATA CO-PRODUCTION AND STUDENT ENGAGEMENT

Students,
communities,
industry
collecting,
validating and
refining data



ONLINE LEARNING RESOURCES AND SERVICES

Hands-on
training and
digital skills
integrated into
universities' learning
services



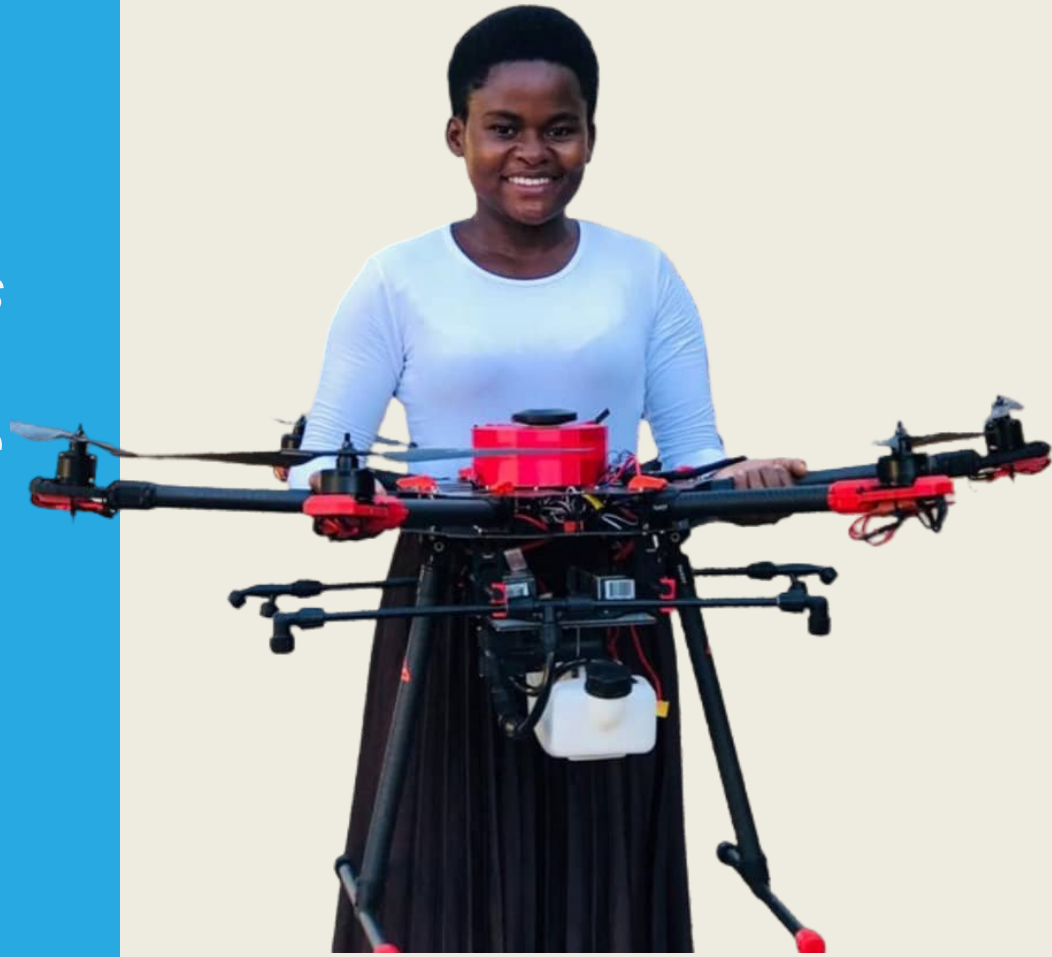
RESEARCH AND INNOVATION - LIVING LABS

Novel data,
tools and
solutions
through
research and
innovation



“My participation in the Resilience Academy helped me to understand more about geospatial . As an IT person, I am able to integrate the IT skills I have from class with geospatial to develop tools that will help my community”

— Tukupala Mwalyolo, Graduate
from University of Dar es Salaam



Interested? See examples of the Tanzania Resilience Academy resources at:

Niina Käyhkö
niina.kayhko@utu.fi
University of Turku
Finland

Resilience Academy: <https://resilienceacademy.ac.tz/>

Climate Risk Database (CRD): <https://geonode.resilienceacademy.ac.tz/>

RA video: <https://www.youtube.com/watch?v=6IT17SWlmds>

RA in YouTube: <https://www.youtube.com/channel/UC5DcYp5z13K-1eC9CVKEeog>

RA blueprint: <https://seafile.utu.fi/f/13c64dc745bc40feae37/?dl=1>

Blog: Mapping Dar es Salaam's trees through artificial intelligence:
<https://blogs.worldbank.org/digital-development/mapping-dar-es-salaams-trees-through-artificial-intelligence>

Blog: How citizen science can help realize the full potential of data:
<https://blogs.worldbank.org/opendata/how-citizen-science-can-help-realize-full-potential-data>



UNIVERSITY
OF TURKU



WORLD BANK GROUP



Resilience
Academy