Resilience Academy

Resilient urban solutions begin with education

UR West and Central Africa
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Climate change and floods make cities vulnerable

Example: Dar es Salaam

1. Rapid urban growth
2. 80% unplanned
3. Infrastructure gap
4. 10% Sewage service
The approach

Resilience Academy trains young people with tools, knowledge, and skills to address the world’s most pressing urban challenges and to discover solutions for resilient urban development.
The Strategy

Resilience Academy uses open, affordable and locally adaptable tools and technologies, with participatory mapping approaches to make learning widely accessible.
Digital skills and services of Resilience Academy

1. Climate Risk Database (CRD) with open access risk information
2. Online, open access learning materials and courses
3. Student internship and industrial training services
4. Research, innovations and partnerships
Tanzania Resilience Academy

Ardhi University (ARU)
University of Dar es Salaam (UDSM)
State University of Zanzibar (SUZA)
Sokoine University of Agriculture (SUA)
University of Turku (UTU, Finland)

University of Twente (Netherlands)
Delft University of Technology (Netherlands)
Technical University of Dortmund (Germany)

Led by four Tanzanian universities in coordination with the University of Turku

In partnership with
Climate Risk Database

“Access to digital data sets is a pre-requisite for understanding risks and developing evidence-based solutions for resilient urban development”
Climate Risk Database (CRD) is a digital geospatial data repository which supports research, education, and disaster-risk management practices.

To access CRD: [https://geonode.resilienceacademy.ac.tz/](https://geonode.resilienceacademy.ac.tz/)

CRD Geonode Map Service established in March 2019

> 50 digital data sets openly accessible

> 150 students trained with data collection and management skills

For developers: [https://github.com/resilienceacademy/geonodera](https://github.com/resilienceacademy/geonodera)

Based on Open Source technology: [http://geonode.org/](http://geonode.org/)
Dar es Salaam Land Use and Land Cover of 2016

The prototype high-resolution land cover map at 20-metre resolution is based on Sentinel Imagery observations. The main objective of the map release is to collect users feedback for.

Msimbazi Digital Elevation Model, UAV 2019

A Digital Elevation Model of the Msimbazi River. It has a spatial resolution of 0.50 m and is based on imagery collected with a photogrammetric drone. Horizontal datum: WGS84 UTM 37S

Msimbazi Digital Elevation Model, LiDAR 2019

A Digital Elevation Model of the Msimbazi River. It has a spatial resolution of 1 m and is based on data collected with a LiDAR drone. Horizontal datum: WGS84 UTM 37S Vertical datum:

Dar es Salaam Land Use and Land Cover of 2010

No abstract provided.
Academic modules for online learning

“Resilience Academy builds online learning materials and courses to educate the youth with relevant geospatial and risk management skills and competences”
Online course themes:

1. Open data for resilience
2. Flood resilience in a changing climate
3. Community mapping for improved spatial planning
4. Earth Observation for resilience
Example skills training:

Resilience Academy Data Visualization Challenge 2019

https://resilienceacademy.ac.tz/datviz

URTZ2019
Example course: Community Urban Risk Mapping

https://canvas.instructure.com/courses/1503162

Resilience Academy
Digital assets developed in Resilience Academy are placed into Tanzanian universities’ research and teaching practices, to provide society with community mapping and data analyses services for improved resilience management.

Expected outputs in Tanzania from 2020 onwards:

- > 40 academic courses with improved contents
- > 100 university staff members with Resilience Academy management and expertise skills
- > 400 students annually exposed to improved training
Internship programme

“industrial training exposes students to geospatial skills to map the unmapped and make community assets visible”
Skills/Knowledge

1. GIS training
2. Community engagement
3. Data collection tools
4. Drone and innovation
5. Thematic mapping
6. Household survey
7. Data quality control, metadata and data sharing

AND MORE
Example: State University of Zanzibar in 2019

Students: 50
Time: 8 weeks
Shehias: 42
Community members: 300+

Amenities: 1713
km of roads: 150
Buildings: 35,000
Businesses: 5801
Students placed for internships/industrial training to collect risk data

> 1000 Tanzanian university students since 2016

- Digital technology and community mapping skills in practice
- Data/knowledge gap reduced with openly accessible data sets
- Practical work life skills for improved employment
Student Research

“New knowledge, innovations and skills are generated from the research of the students. This creates the foundation for next generation of urban resilience experts”

Themes:

- Data sharing technologies
- Data quality and management
- Urban climate
- Flood monitoring and risk assessment
- Land use/cover changes
- Urban forests
- Mapping cultural and social resilience
- Urban planning/participatory planning
- Earth Observation and machine learning for exposure/vulnerability/risk mapping
Thank you!

Follow us at:
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