Geospatial and ICT data, technologies and skills for sustainable social innovations

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Transformative change happens in the social matrix, where local power combines with tech potential

"New generation university graduates need to be competent with novel technologies, but equally they need to master the interface between technologies’ potential and societies’ emerging needs"
Geospatial and ICT skills and competence development through institutional research, education and development cooperation between Finnish and Tanzanian universities (since 2003-, https://tanzania.utu.fi/)

University partnership and service delivery to improve digital skills, competences and employment of the African youth for more effective disaster risk management and climate resilience (since 2018-, https://resilienceacademy.ac.tz/)
Students are able to design climate-smart and resource-efficient solutions for social, environmental and economic sustainability and improved resilience.

Climate, sustainability and resilience skills

Geospatial data and technology skills

Students are able to use digital geospatial data and open-source geo-ICT technologies in a novel and need-based manner.

Students are capable of solving real, complex spatio-temporal problems of the surrounding society and in relation to the challenges presented for them.

Theme-specific problem skills in space and time

Students’ competences develop via co-creative learning spaces organized in close cooperation with the innovation ecosystem actors and problem owners.

Entrepreneurial and innovation skills

Students are able and professionally confident to work in teams towards innovative, contextually relevant and influential solutions.
What transformative spaces have we co-created in GeoICT4e and Resilience Academy for social innovations?
Resilience Academy
Data Visualization Challenges

https://resilienceacademy.ac.tz/datviz

2019 statistics

<table>
<thead>
<tr>
<th>Student participants</th>
<th>260</th>
</tr>
</thead>
<tbody>
<tr>
<td>Andhi University</td>
<td>107</td>
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<tr>
<td>Sokos University</td>
<td>68</td>
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<tr>
<td>University of Agriculture</td>
<td>55</td>
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<td>Mwalimu Nyerere</td>
<td>01</td>
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<tr>
<td>Memorial Academy</td>
<td></td>
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The Statistics

Student participants applied for the challenge
Climate Risk Database (CRD) as a community maintained open data service

https://geonode.resilienceacademy.ac.tz/
Smart phones and mobile apps enable **students to collect missing data:** example of State University of Zanzibar student interns in 2019

**Students:** 50

**Time:** 8 weeks

Municipalities mapped: 42

Community members: 300+

Skills obtained:

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**
Cloud platforms as learning spaces of data science skills

SANORD Webinar 2021 “Innovations for sustainable development”
Mapathons as virtual learning and community action events

SANORD Webinar 2021 “Innovations for sustainable development”
Mini-MOOCs as open-access virtual learning environments

**Mini-MOOCs**

**SANORD Webinar 2021 “Innovations for sustainable development”**

**Themes:**

**THEME 1: OPEN DATA FOR RESILIENCE**

**MODULE 1**
Geospatial Content Management System – Geonode (3 ects)
This module aims to provide knowledge and practical experiences on principles, skills and practices on the Geonode Platform. It starts from the installation, usability and maintenance of Geonode to administration and customising the platform.

**MODULE 2**
Geospatial Data Quality and Management (2 ects)
This module aims to provide knowledge on principles, critical skills and good practices of geospatial data management and dissemination. The module includes information and methods on data description, maintenance, updating, quality assessment, and data sharing through an SDI, Geonode.

**MODULE 3**
Geospatial Data Visualisation (1-3 ects)
This module includes geovisualisation principles, tools and methods. Students learn geospatial data visualisation principles and practical skills through an (Urban) Resilience Visualisation Challenge based on real visualisation needs coming from the actors.

**Steps:**

- **2A**
  - **STEP 1:** Introduction
  - **STEP 2:** Lectures 1-3
  - **STEP 3:** Practicals 1-4

- **2B**
  - **STEP 4:** Lectures 1-2
  - **STEP 5:** Practical 1 & Exercises 1-2
  - **STEP 6:** Voting

- **2C**
  - **STEP 7:** Lectures 1-3
  - **STEP 8:** Exercise

**Resources:**

- Story-telling
- Mini-lectures
- Quizzes
- Hands-on practical
- Mini-exams


“Innovations for sustainable development”
Reflections

1. "Digital data, teach and online learning tools are widely available, but only their successful ‘localization’ brings true impacts”

2. “Participation and community-driven actions generate genuine ownership and resilience to learning and local impacts”

3. “Magic often happens outside the comfort zone – what is our capacity to take risks and innovate?”

4. “Success paths lie beyond any single project or initiative – how can we facilitate integration of actions for larger impacts?”
Questions & discussion

https://tanzania.utu.fi/
https://www.geoict.org/
https://resilienceacademy.ac.tz/
https://geonode.resilienceacademy.ac.tz/

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