



*Date: 12th March,  
2018  
Place: DTU*

# Knowledge **FO**r Resilient **soCiEty**

**Dr. sc. Edisa Nukić**  
**Assistant professor**

*University of Tuzla*  
*Faculty of Mining, Geology and*  
*Civil Engineering*



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## ***University of Tuzla / Faculty of Mining, Geology and Civil engineering***

- ***University of Tuzla*** was founded in 1958
- *Became university in 1976*
- *Today is one of the major institutions of higher education in Bosnia*
- ***Faculty of Mining, Geology and Civil Engineering*** was established as the Faculty of Mining in 1960
- *1958 first established as Higher Technical School*
- *1976 Faculty became a member of the University of Tuzla (until then was a member of the University of Sarajevo)*



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**Edisa Nukic**

***Fields of interest / Teaching:***

- *Fire safety*
  - *Coal mine safety*
  - *Ergonomics*
  - *Civil protection*
- 
- *Master thessis: „Risk assessment and crisis situations management in road-tunnel fires in FB&H“*
  - *PhD thessis: „Risk assessment of ventilation failure in coal mine isolated areas“*



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### ***Membersip:***

1. *Geotechnical Society of Bosnia and Herzegovina*
2. *AtEx Tuzla, Association for Explosion Protection and Safety in the Working and Living Environment*

### ***Publications:***

- *"Forensic Engineering and Risk Management", Book 2:  
Conducting Investigation Procedures;*
- *conference papers*



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## ***Projects:***

### ***1. DEMOS SfP:***

- *Development of a Monitoring System to Counter manage the Risks of Subsidence Deformation on the Population of Tuzla (Bosnia), Investor: NATO Science for Peace, 2008- 2010*

### ***2. NIK1 & NIK2:***

- *Youth Scientific and Research Camp, Financed by USA Embassy in Bosnia and Herzegovina, 2016-2017*



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*Development of a Monitoring System to Counter manage the Risks of Subsidence Deformation on the Population of Tuzla (Bosnia) - **DEMOS**, Investor: NATO Science for Peace, 2008- 2010*

✓ *Problem:*

- *Long history of coal and salt exploitation leaving abandoned mines*
- *Industrial production of salt water started in 1886*
- *Salt mines - hazard to infrastructure and population in this area due to severe ground deformation and sink holes*
- *Uncontrolled extraction*
- *The massive exploitation from 150 wells at an average depth of 400-500 meters.*



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*Development of a Monitoring System to Counter manage the Risks of  
Subsidence Deformation on the Population of Tuzla (Bosnia)*  
**DEMOS Project**

✓ *Consequences:*

- *subsidence - ground about 4 million m<sup>3</sup>,*
- *ground water level decreased - about 100 m,*
- *approx. 15.000 people had to move*



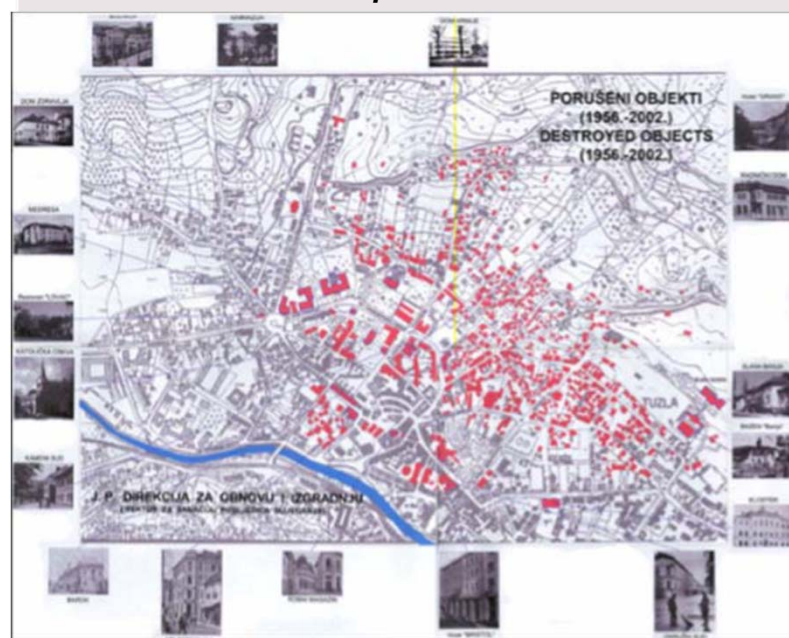
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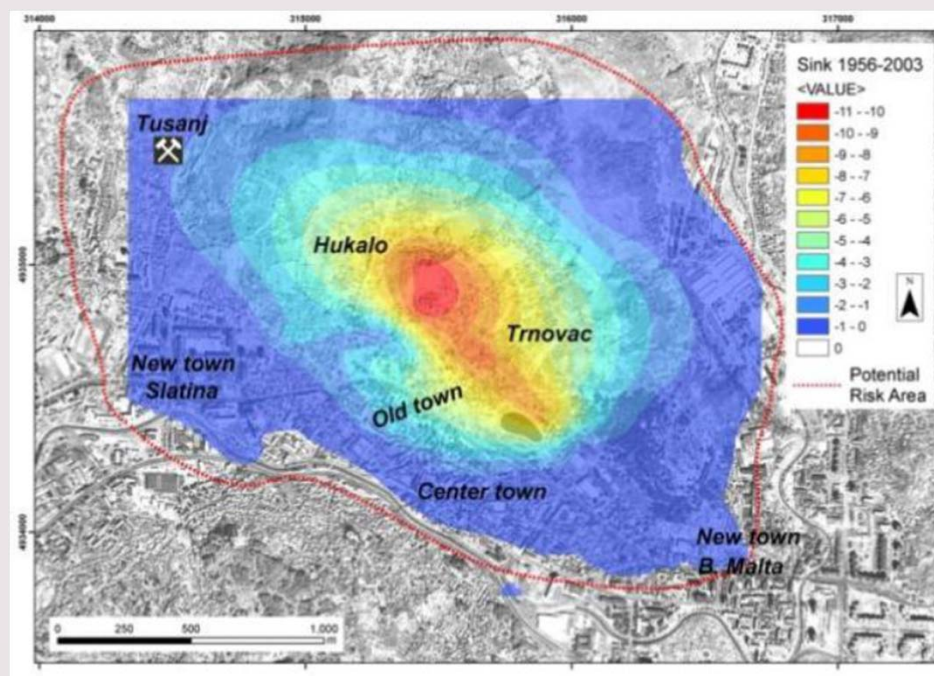


## DEMOS Project

✓ Consequences:



Devastated buildings  
(1956-2002)



Affected urban area



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## **DEMOS Project**

### ✓ *Project goals:*

- *Knowledge and modern technologies for remediation, urbanization and urban development in destructed populated areas,*
- *Status of investigated area,*
- *Compare results with historical records of previous measurements,*
- *Risks map,*
- *Basis for future measurements/monitoring,*
- *Exchange professional experience,*
- *Acquisition of equipment and software,*
- *Form and train the BH team,*
- *Define scenarios to estimate future subsidence*



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## DEMOS

### ✓ Institutions and contribution:

- **University of Bologna:** integrating nets and more productive approaches, define the level of subsidence in Tuzla area, guidelines;
- **CIRSA: GIS & WebGIS;** geologic and hydro geological setting; urban, structural and tectonic deformation analysis; geochemical analysis; topographic and geodetic investigations.
- **Politecnico di Bari:** remote sensing and topographic-geodetic investigation;
- **University of Tuzla:** measurements; verification of sinkholes; control of consolidation; methods to backfill; GIS database; education.
- **Tuzla Canton:** application of (IT) instruments and models (GIS, WEBGIS, etc), urban planning and environmental survey.
- **Municipality of Tuzla:** Urban planning.



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### ***DEMOS Project results:***

- *A series of training: GIS, Remote Sensing, GPS, Geophysics and Flow Tracers*
- *Identified very useful information for understanding the deformation phenomenon in Tuzla town*
- *Geological map of Tuzla area was updated*
- *Current ground vertical movements have been studied by means of levelling and GPS surveys*
- *Obtained equipment and software*
- *Risk map*
- *Defined scenarios to estimate future subsidence*



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## **NIK1 & NIK2 PROJECT**

*Youth Scientific and Research Camp,  
Financed by USA Embassy in Bosnia and Herzegovina,  
2016-2017*

### *Participants:*

1. *Faculty of mining, geology and civil engineering - UNTZ,*
2. *Faculty of Physical Education and Sport - UNTZ,*
3. *European University Brčko,*
4. *"ToPeer" Dobo,*
5. *„EkoLeonardo“ Priboj,*
6. *„Radio Klub Kreka“,*
7. *„Eko-Zeleni“,*
8. *NGO „Vrisak“ Mostar &*
9. *Art Group “Lucido” Lukavac*



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## **NIK1 & NIK2**

- *Students divided into six teams*
- *Conducted research during their stay in Camp (under university professors supervision)*
- *Sports and volunteer activities*
- *Research results have been published and promoted*



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**NIK1 & NIK2**  
*Youth Scientific and Research Camp*  
2016-2017



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## **NIK1 & NIK2**

### *Field work*



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## NIK1 & NIK2 Field work



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## NIK1 & NIK2

Lab work



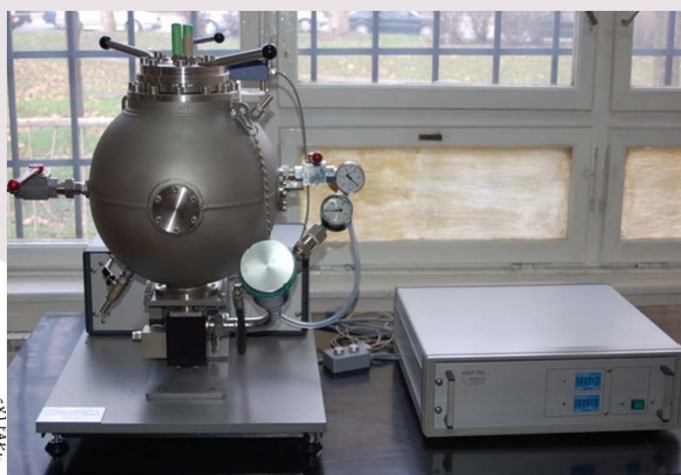
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## OUR LABS:

*Laboratory for natural hazards and geoenvironmental research*



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## *Laboratory for natural hazards and geoenvironmental research*



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## *Laboratory for Mineral Processing and Material Testing*



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## *Laboratory for Geomechanics*



**1. Classification testing of soil and rock**



**2. Shear strength soil testing**



**3. Deformability of soil**



**4. Strength of rock**



**5. Deformability of rock**



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## *Laboratory for Applied Geophysics, Seismic Survey and Non-destructive Testing of Structures*



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## *Our students*



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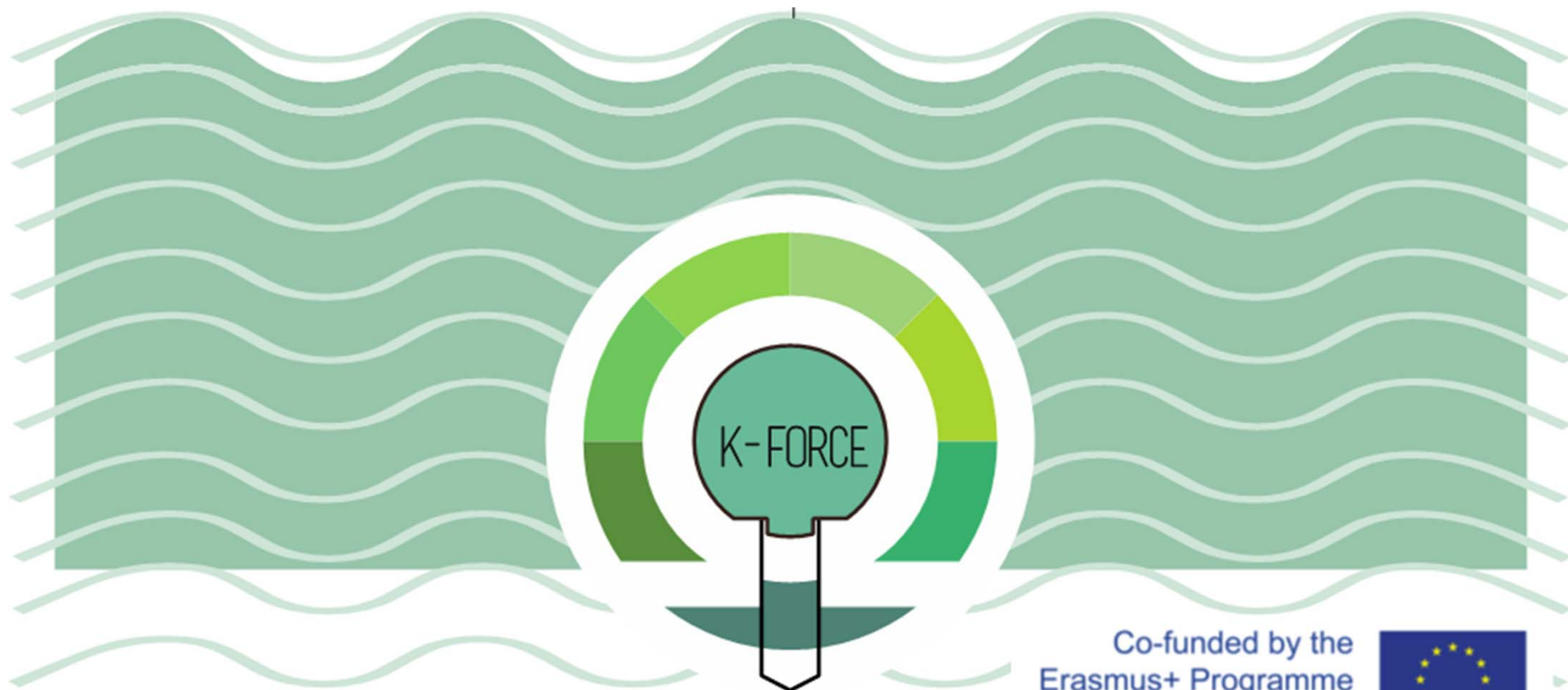
# ***Our students***

*EADRCC consequence  
management field exercise  
"BOSNA I HERCEGOVINA 2017"*



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Thank you  
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