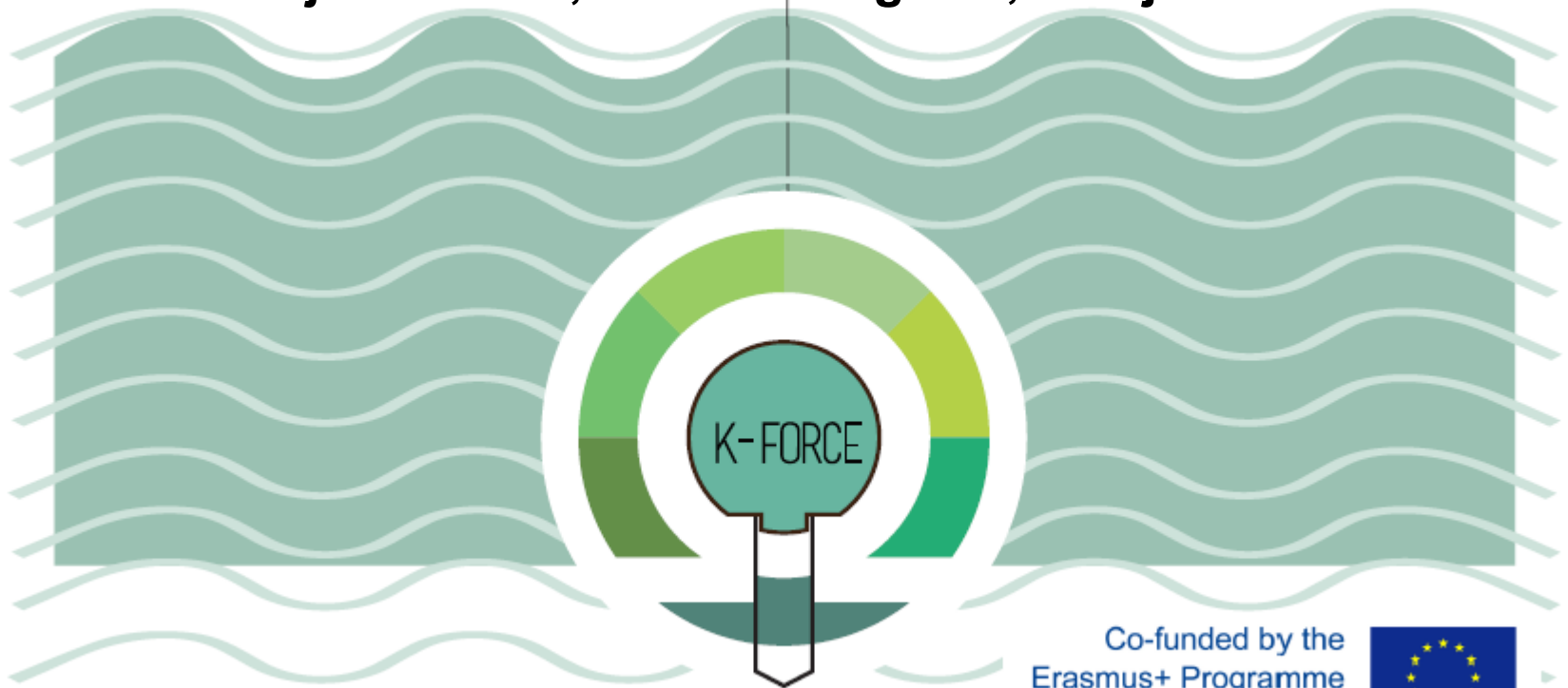


# HIGHER EDUCATION IN DISASTER RISK MANAGEMENT AND FIRE SAFETY FIELD IN BALKAN REGION

Mirjana Laban, Suzana Draganić, Danijela Ćirić



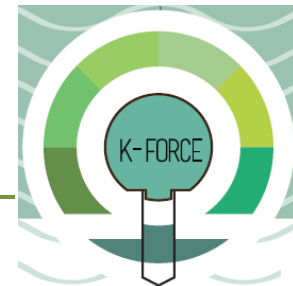
University of Novi Sad  
Faculty of Technical Sciences  
Department of Civil Engineering and Geodesy

Co-funded by the  
Erasmus+ Programme  
of the European Union



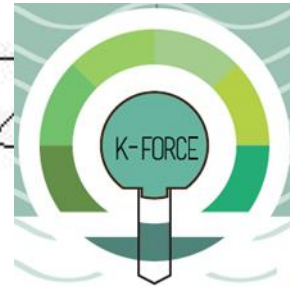
# The Project CV

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<b>Project Title</b>	Knowledge FOr Resilient soCiEty		
<b>Project acronym</b>	K-FORCE		
<b>Project Number</b>	573942-EPP-1-2016-1-RS-EPPKA2-CBHE-JP		
<b>Project duration</b>	3 years		
<b>Start</b>	15 <sup>th</sup> October 2016		
<b>Programme</b>	ERASMUS+		
<b>Key Action</b>	Cooperation for innovation and the exchange of good practices		
<b>Action</b>	Capacity building in the field of higher education		
<b>Total cost of the project</b>	1.237.129,00 EUR		
	Grant for Project Activities:	985.474,00 EUR	
	Additional Grant for Special Mobility Strand:	251.655,00 EUR	
<b>Coordinator</b>	University of Novi Sad <a href="mailto:k-force.pmt@uns.ac.rs">k-force.pmt@uns.ac.rs</a>		

# Consortium

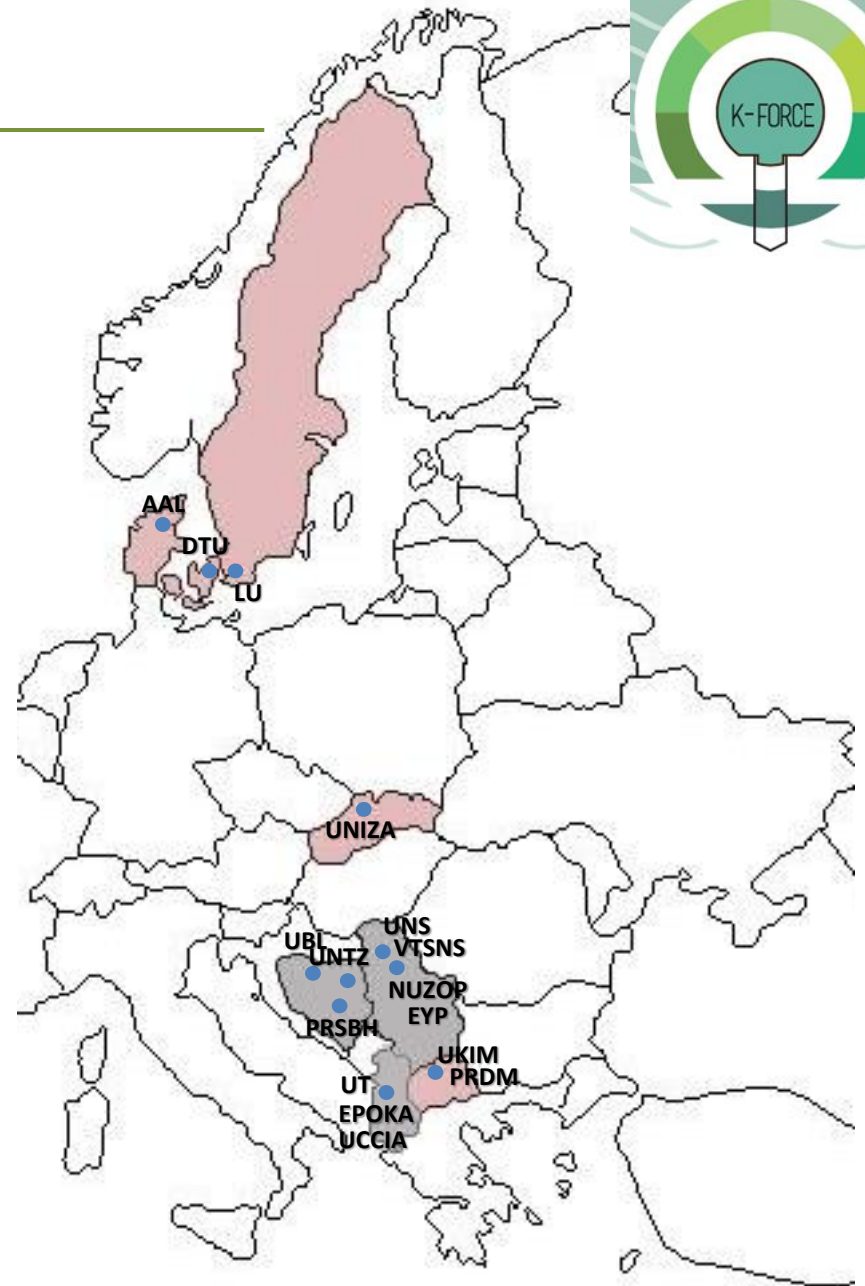


**Number of partners:** 14 + 2 associated partners

- University of Novi Sad, Serbia
- The Higher Education Technical School of Professional Studies, Serbia
- The University of Tuzla, Bosnia and Herzegovina
- The University of Banja Luka, Bosnia and Herzegovina
- The University of Tirana, Albania
- Epoka University, Albania
- Technical University of Denmark, Denmark
- Aalborg University, Denmark
- The Lund University, Sweden
- The University of Žilina, Slovakia
- Ss. Cyril and Methodius University in Skopje, FYROM
- Protection and Rescue Directorate of the Republic of Macedonia, FYROM
- National Fire Protection Association – NUZOP, Serbia
- European Youth Parliament Serbia – EYP, Serbia

Associated partners:

- Ministry of Security of Bosnia and Herzegovina, Protection and Rescue Sector, Sector for International Cooperation and European Integrations
- Union of chambers of commerce and industry of Albania



# THE HYSTORY OF THE IDEA

- *PRELIMINARY SURVEY (2015): VERY FEW SIMILAR STUDY PROGRAMMES AT ALL BOLOGNA LEVELS IN SERBIA, ONLY FEW MODULES IN WESTERN BALKANS AND SE EUROPE, NOT ENOUGH AVAILABLE RECOURCES TO IMPROVE EXISTING OR ESTABLISH NEW STUDY PROGRAMMES*
- *NO DOCTORAL STUDY PROGRAMME = NO SUSTAINABILITY OF STUDIES*
- *WE NEED ASSISTANCE FROM MORE DEVELOPED HEIs AND EU*



MAY 2014

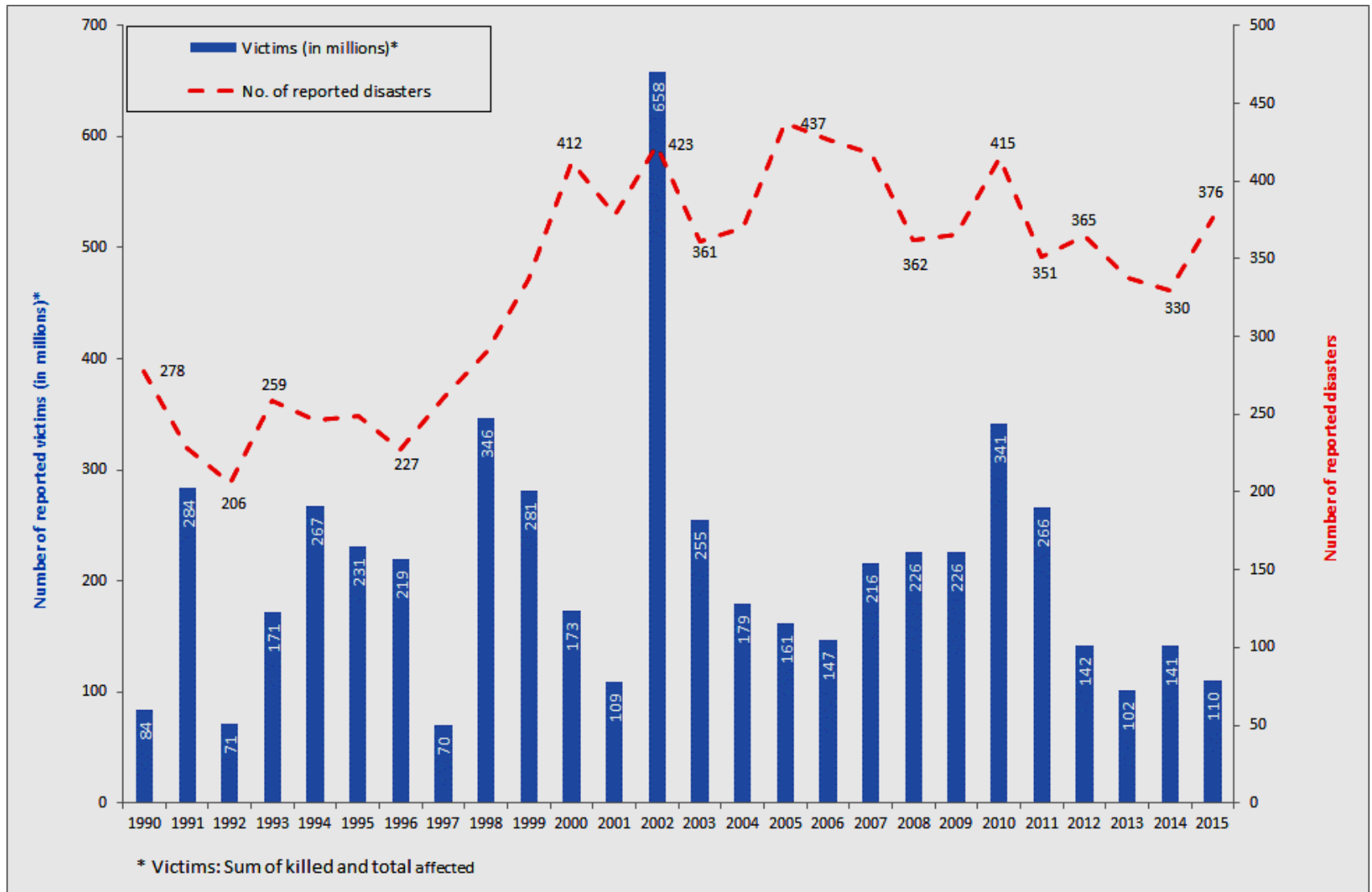
Floodwaters in Balkans covered an area larger than 22,000 km<sup>2</sup>

Dozens of killed

Estimated damage was 3 billion euros

# Centre for Research on the Epidemiology of Disasters (CRED)

## Trends in occurrence and victims







# SURVIVAL

FLOODS

EARTHQUAKES

LANDSLIDES

FIRES

DROUGHTS

.....

**COMMON REGIONAL NEEDS** TO IMPROVE THE RESILIENCE OF THE  
REGION TO HAZARDS  
ARE RECOGNIZED AS THE NEEDS FOR EXPERTS CAPABLE TO IMPROVE  
REGIONAL CAPACITY/COOPERATION IN RISK PREVENTION AND  
RESPONSE

It took two years, dozens of meetings, telephone calls and hundreds of e-mails,  
many working hours, lots of efforts and truly good will to come to this point,

**BU WE DID IT!!! WELCOME TO  
K-FORCE PROJECT!**

## THE AIM OF THE K-FORCE PROJECT:

- to **improve regional resilience to hazards** and capability for regional cooperation in risk prevention and response and
- to ensure national professional resources and regional capacities in order to build regional-based disaster preparedness and a culture of safety and resilience at all levels according to EU Integration Strategies and National relevant strategies.

**The overall broader objective** to which K-FORCE project will contribute is to ensure national professional resources and regional capacity for resilient society.

In order to achieve this, K-FORCE project will create effective, contemporary and sustainable Study Programs in the field of Disaster Risk Management and Fire Safety Engineering (DRM&FSE).

# Knowledge FOr Resilient soCiEty



Kick-off meeting, Novi Sad, October 2016



# RESEARCH METHODOLOGY

- Visit to the website of the national accreditation body of each of the countries to find the full list of accredited HE institutions and their programmes where available;
- Selection of the accredited programmes that may refer to the subject area, Disaster Risk Management and Fire Safety;
- Making of the list of HE institutions with the programmes;
- Searching for the information on the selected programmes at the websites of the HE institutions;
- Narrowing the list of programmes to those actually dealing with some aspects of Disaster Risk Management and Fire Safety;
- Preparation of the cumulative table with data on relevant programmes;
- Commenting the results.

# RESEARCH METHODOLOGY

- Country offering the program
- Academic Title of program
- Host Higher Education Institution (University/Faculty/ Department), offering the program
- Risk Area
- Number of years Since the program has been operational
- Number of students enrolled
- Duration of program in years and semesters
- Tuition Fee
- Programme Description, including objectives and target audience
- Admission requirements
- Content, including organization and curriculum
- Teaching/Learning describing teaching methodology and assessment
- Academic staff

# Available DRM & FSE study programs in Balkan region

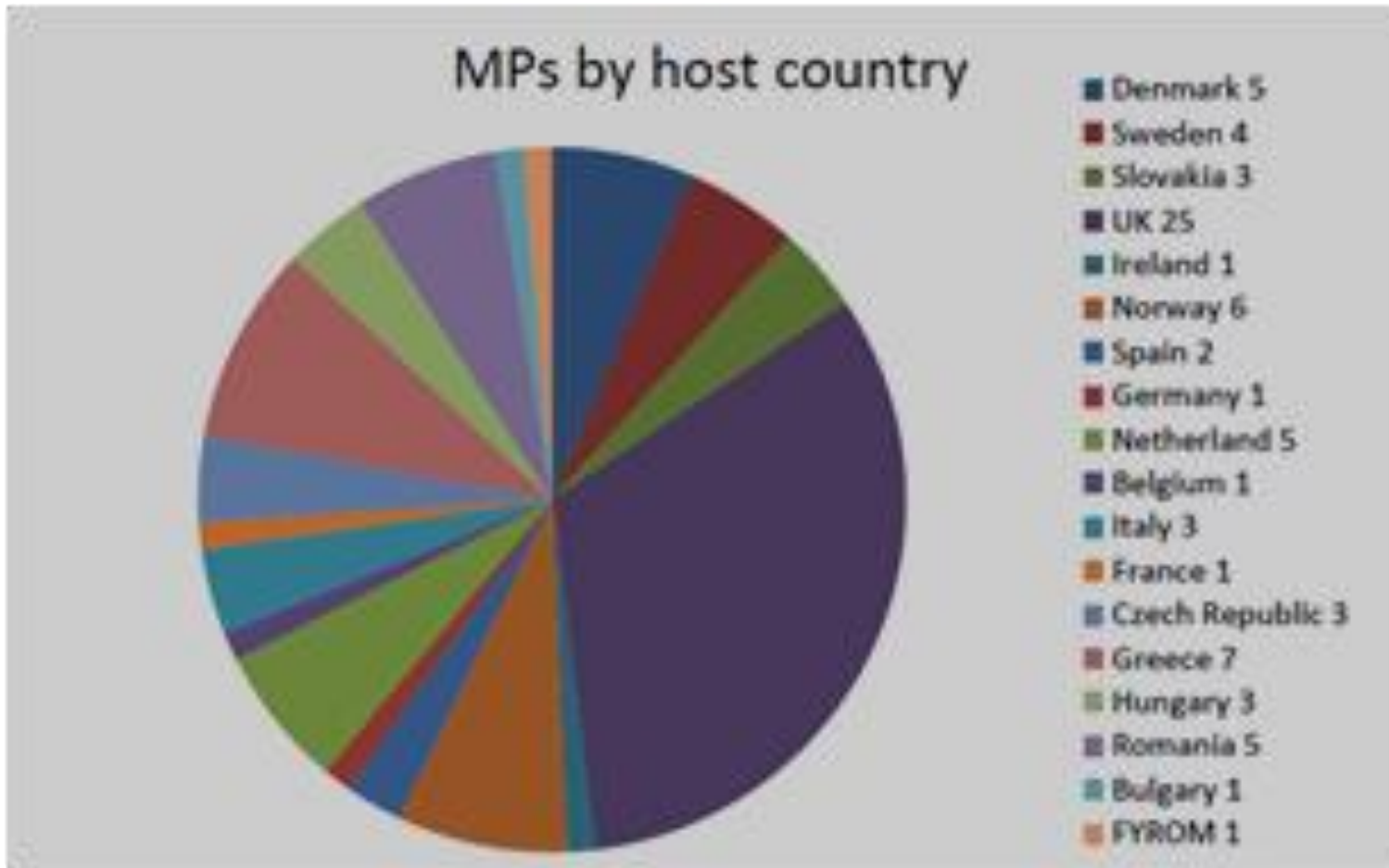
Country, Higher Education Institution	Bologna I level	Bologna II level
Serbia, University of Novi Sad, Faculty of Technical Sciences, Novi Sad <a href="http://www.ftn.uns.ac.rs/">http://www.ftn.uns.ac.rs/</a>	Disaster and Fire Risk Management Academic studies, Bachelor, (240 ETCS)	Disaster and Fire Risk Management, Academic studies, Master (60 ETCS)
Serbia, University of Nis, Faculty of Occupational Safety, Nis <a href="http://www.ni.ac.rs/">http://www.ni.ac.rs/</a>	n/a	Occupational safety - Fire Protection, Academic studies, Master (60 ETCS)
Serbia, University of Nis, Faculty of Occupational Safety, Nis <a href="http://www.ni.ac.rs/">http://www.ni.ac.rs/</a>	n/a	Environmental Protection Eng. - Emergency Management, Academic studies, Master (60 ETCS)
Serbia, University of Nis, Faculty of Occupational Safety, Nis <a href="http://www.ni.ac.rs/">http://www.ni.ac.rs/</a>	n/a	Environmental Protection Eng. - <b>Emergency Management</b> , Academic studies, Master (60 ETCS)

## Available DRM & FSE study programs in Balkan region

Country, Higher Education Institution	Bologna I level	Bologna II level
Serbia, Higher Engineering School of Professional Studies, Zemun	Occupational safety - Fire Protection and Rescue, Professional studies, Bachelor, (180 ETCS)	Occupational safety - Fire Protection and Rescue, Professional studies, Specialist, (60 ETCS)
Serbia, Higher Technical School of Professional Studies in Novi Sad <a href="http://vtsns.edu.rs/">http://vtsns.edu.rs/</a>	Occupational Safety – Fire Protection, Professional studies, Bachelor, (180 ETCS), Also available as on-line studies	Environmental Protection Engineering - Fire Protection and Rescue in Emergency Situations , Professional studies, Specialist, (60 ETCS)
Serbia, Higher Technical School of Professional Studies in Novi Sad <a href="http://vtsns.edu.rs/">http://vtsns.edu.rs/</a>	Environmental protection Eng. - Civil Protection and Rescue in Emergency Situations, Professional studies, Bachelor, (180 ETCS)	
Serbia, Higher Technical School of Professional Studies, Zvečan <a href="http://vts-zvecan.edu.rs/">http://vts-zvecan.edu.rs/</a>	Occupational safety - Fire Protection, Professional studies, Bachelor, (180 ETCS)	Occupational safety - Fire Protection, Professional studies, Specialist, (60 ETCS)



# RISK STUDIES IN EUROPE / 77



*Interdisciplinary curricula include subjects from various academic disciplines:*

- Engineering and engineering trades as the dominant academic discipline,
- Environmental protection,
- Architecture and Construction,
- Civil Protection,
- Fire Science,
- Rescue studies,
- Climatology,
- Hydrology,
- Seismology ,
- Economy,
- other disciplines (Health, Sociology).

# IMPROVING QUALITY OF EDUCATION AND TEACHING

***Educational ICT based laboratories*** (created in WBC HEIs with interoperability capacities), ***K-FORCE On-line Library***, ***Glossary of DRM&FSE key words and terms*** and ***ICT platform*** provide national/regional/international case-studies, integrated risk methodology assessment, hazard, risk and vulnerability cross-border/regional mapping and results publication.

*That insures continuous common regional problem-based approach and knowledge/skills compatibility, also aligned with contemporary EU trends in DRM&FSE field.*

# BLENDDED LEARNING

-an education program that combines **traditional classroom methods** with **online digital media**.



Face to face – attending classes, going on consultation, take a standard written and oral examination

- graphical and seminar papers

- printed materials for learning



Face to face – **LIVE STREAMING** (attending classes online in real time)

Flex – e-library (curriculum, audio and video recordings), teachers are available for face-to-face online consultation

Labs - All of the curriculum is delivered via a digital platform but in a consistent physical location.

Online driver – Students complete an entire course through an online platform with possible teacher check-ins



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# **CANVAS**

## **learning management system**



[www.canvaslms.com](http://www.canvaslms.com)

**CANVAS is a platform of the most modern 'interface', it is extremely easy to use and has all the digital tools and satisfies all the needs of online learning and courses.**

**Since its launch in 2011 it has been used by more than 1800 universities, school districts and institutions around the world.**

**On one platform are associated features of all the previous platforms and popular social networks which has led to such an expansion in short time and made world universities convert from existing to canvas platform.**

**Selected by Cisco Networking Academy (global educational program for career development and IT skills) to power “the world’s largest classroom”.**

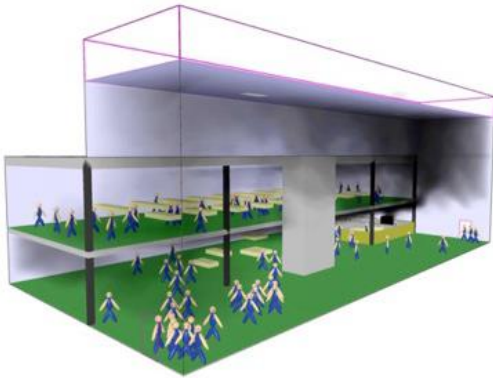


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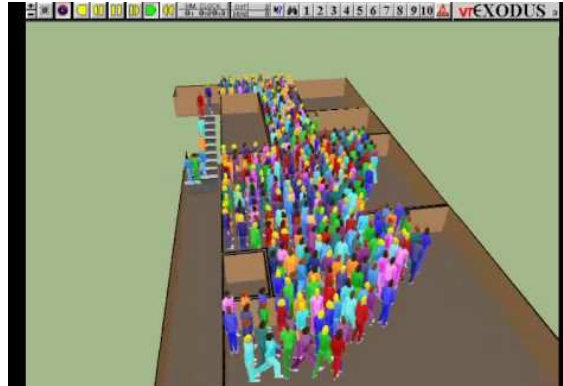


# ***SOFTWARE - Evacuation modelling***

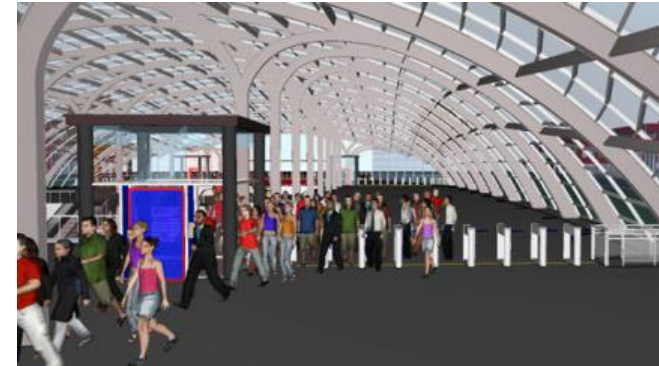
## **Most known models (Top 5)**



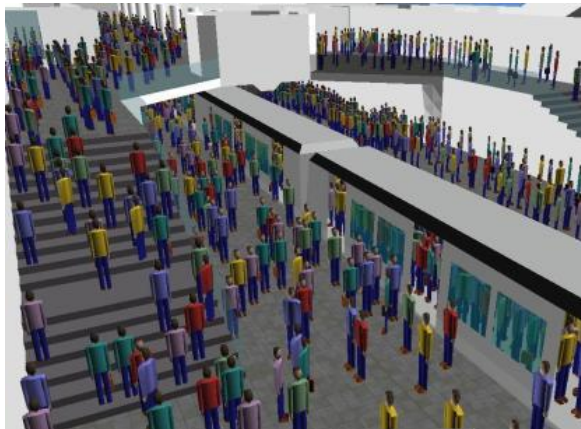
**FDS + Evac (OpenSource)**



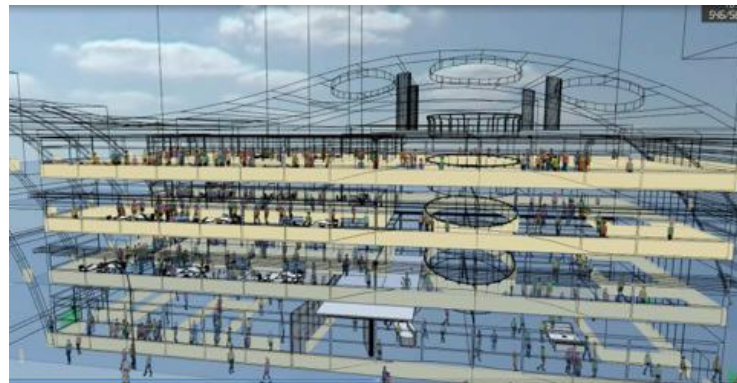
**BuildingEXODUS (FSEG)**



**PathFinder (Thunderhead)**



**STEPS (MottMac)**



**Simulex (IES)**

Ronchi E (2013). Testing the predictive capabilities of evacuation models for road tunnel safety analysis.

Safety Science Volume 59, pp.141-153

# Review of selected models

## PyroSim

- Field Model / Miscellaneous
- A graphical user interface for the Fire Dynamics Simulator (FDS)
- It is used to create fire simulations that accurately predict smoke movement, temperature, and toxin concentrations during a fire

## Licencing

- **Free Educational Licensing**
- **Standard Perpetual License:**

Node-Locked      **\$2750**

Maintenance      **\$550**

## Volume Licensing Discounts

- **50% off all additional licenses**

PyroSim and Pathfinder orders can be combined for volume licensing.



User-exchangeable TG, TG/DTA or TG/DSC sample holders are available for this apparatus, shown in Figure 2

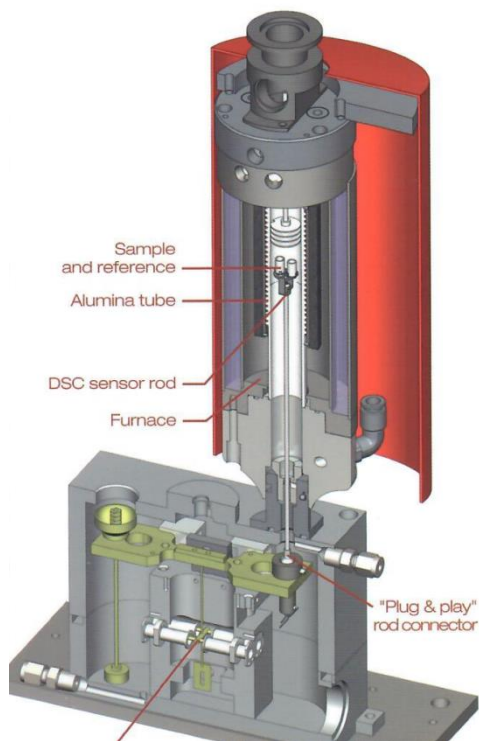
# Hyphenated Thermal Analysis - FTIR Spectroscopy

Equipment for **Thermal Analysis (TA)** -simultaneous TG-DTA and TG/DSC analysis up to 1150°C and DSC rod for analysis up to 1600°C

**TA**-enables qualitative and quantitative information about the effects of various heat treatments on mainly solid materials

**TG**-allows monitoring of mass change as a function of temperature during heating and cooling

**DTA/DSC**-allows the determination of endothermic and exothermic processes (physical and chemical)



DSC plate rod



DTA rod



TGA rod

User-exchangeable sample holders



Co-funded by the  
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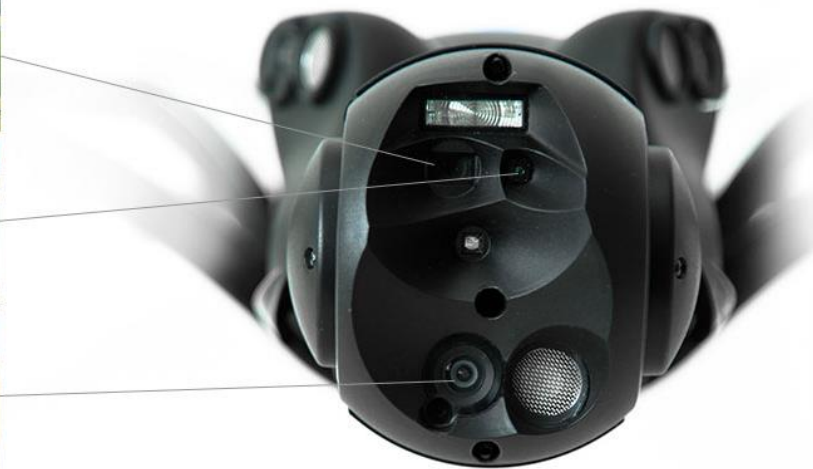
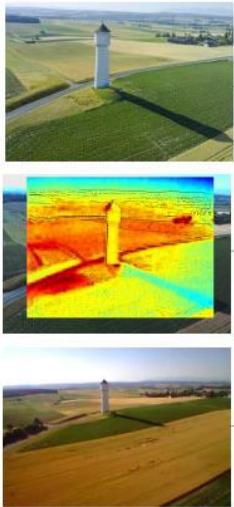




## Albris senseFly FEATURES makes him unique in the world market:

### *1 flight, 3 types of imagery*

Fully stabilised TripleView camera head allows you to switch between HD and thermal video imagery, live during your flight, plus you can capture high-resolution still images on demand, without landing to change cameras.



The TripleView head features a 180-degree vertical range of motion, 6x digital zoom, active gimbal stabilisation and, thanks to the albris' shrouding frame design, an unobstructed field of view allowing you to capture clear and stabilised imagery ahead, above and below the drone.



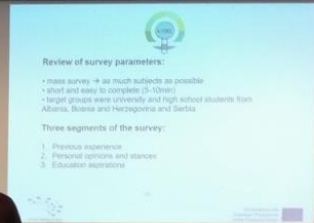
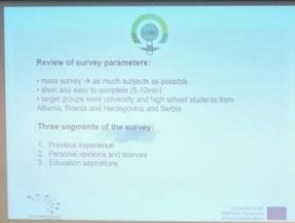
Co-funded by the  
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of the European Union





**Meeting and training at EPOKA University, Albania**





Meeting in Aalborg University, Denmark



Meeting and training at Lund University / Sweden and DTU/ Denmark





## YOUTH SAFETY CULTURE SURVEY RESULTS

### Who filled out the survey?

**Albania**



**486**

**Bosnia and Herzegovina**



**469**

**Serbia**



**396**

**+13 = 1364**

### Cities:

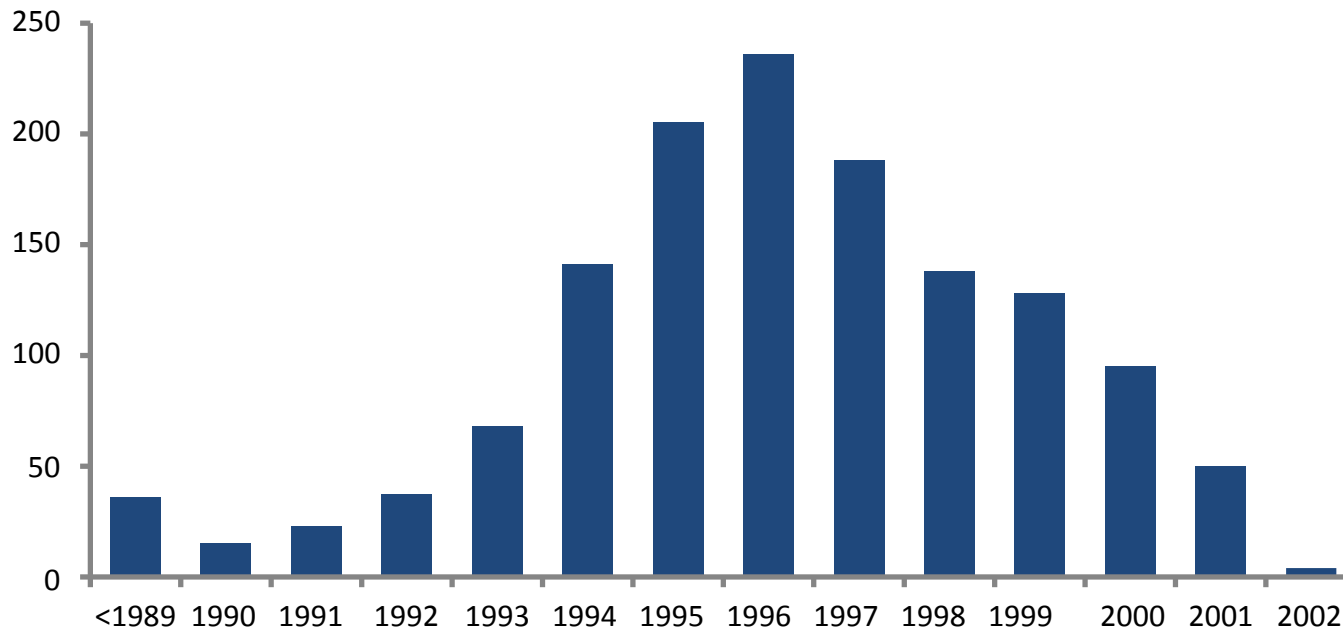
- |                   |                     |
|-------------------|---------------------|
| 1. Tirana (386)   | 5. Banja Luka (114) |
| 2. Novi Sad (189) | 6. Sarajevo (45)    |
| 3. Belgrade (161) | 7. Tuzla (45)       |
| 4. Teslić (146)   |                     |



# YOUTH SAFETY CULTURE SURVEY RESULTS

## Who filled out the survey?

### Year of birth:



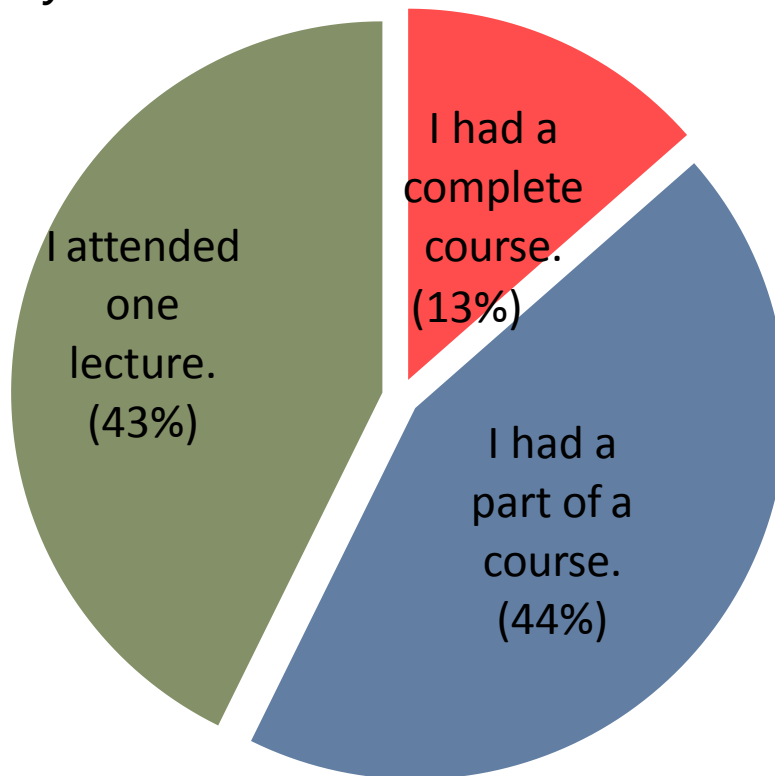
**University:**  
**978**  
**71.7%**

**High School:**  
**370**  
**27.1%**

## YOUTH SAFETY CULTURE SURVEY RESULTS

### Previous experience: formal

*I had a chance to learn about DRM & FSE as part of my High School/University curriculum or during a lecture organized at my School/University.*

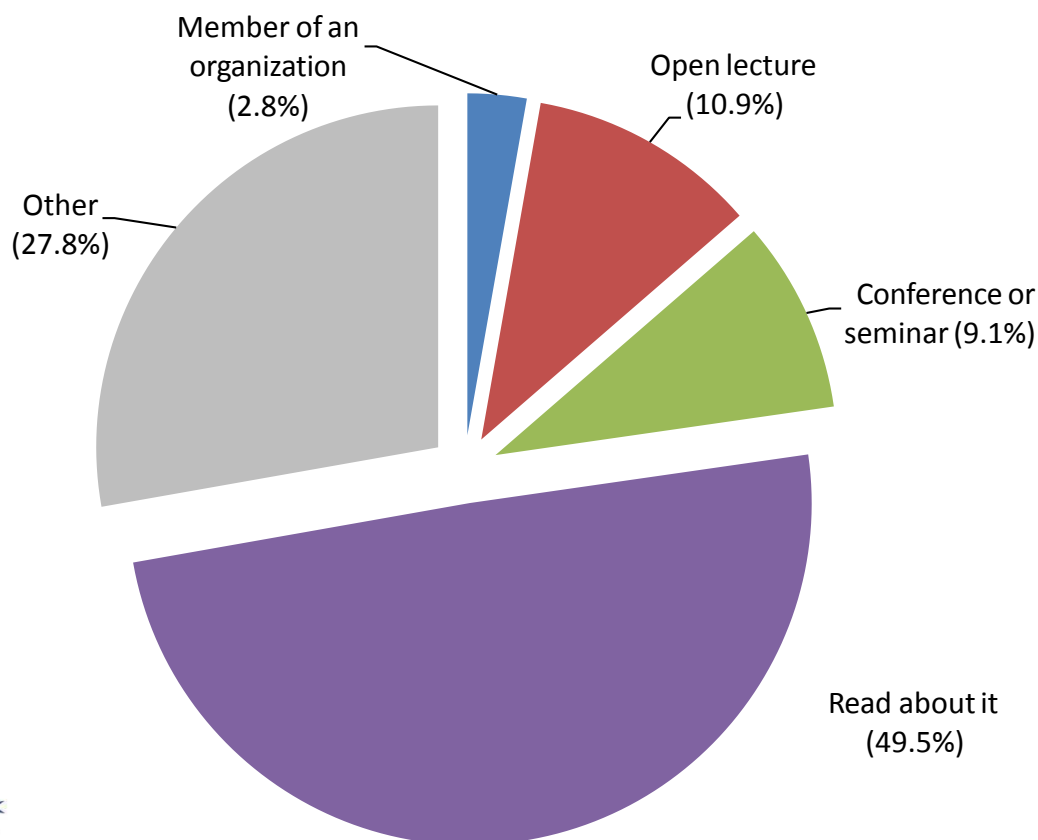


**Yes: 41.2%**

## Previous experience: un-formal and informal

*I had a chance to learn about DRM & FSE outside of my School/University.*

**Yes: 61.5%**



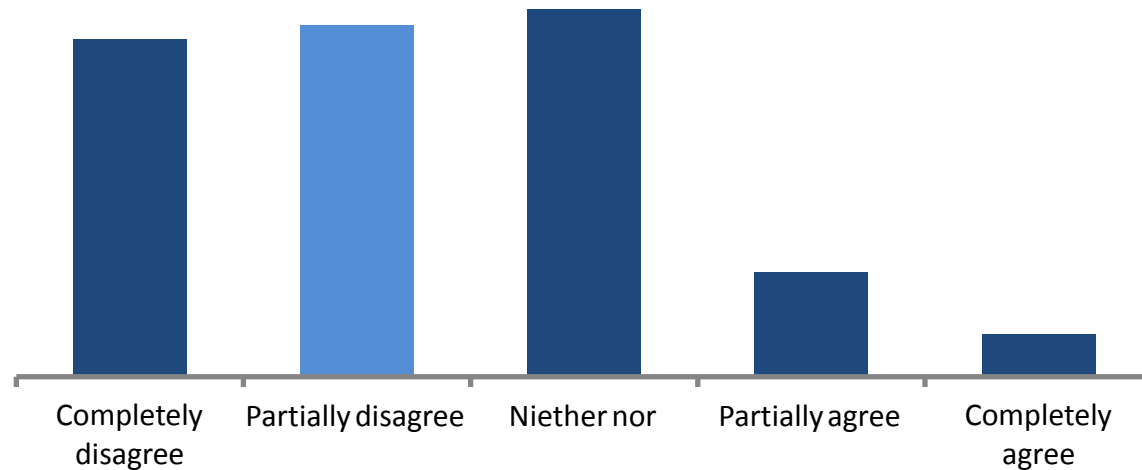
# YOUTH SAFETY CULTURE SURVEY RESULTS

## Personal opinions and stances

*I know which institution(s) deal with disaster risks and fire safety in my country.*

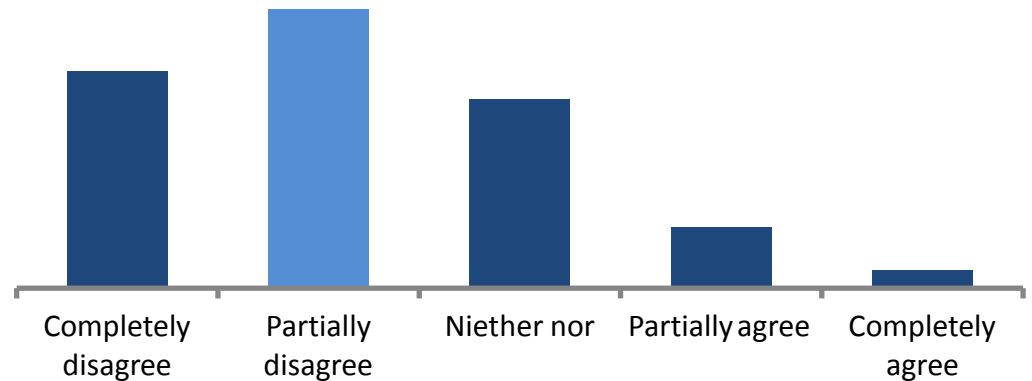
**Yes: 45.4%**

*I am familiar with actions the institutions in my country take in order to deal with disaster risks and fire safety.*

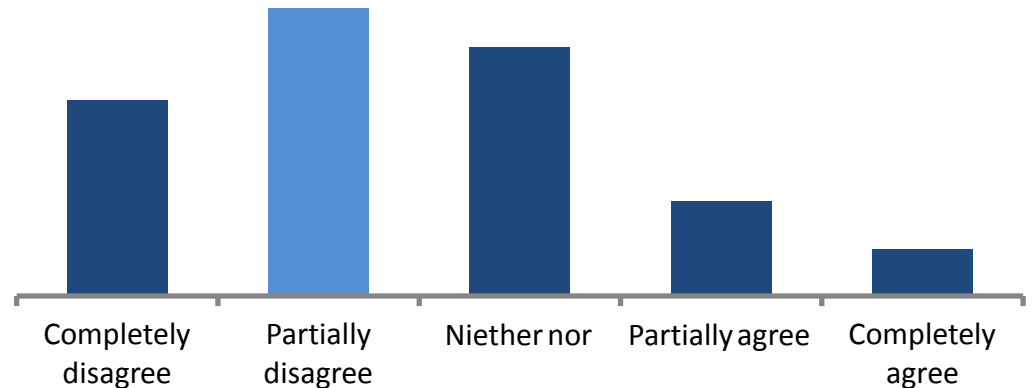


## Personal opinions and stances

*Enough attention is being given to disaster risks and fire safety in the general public and media.*



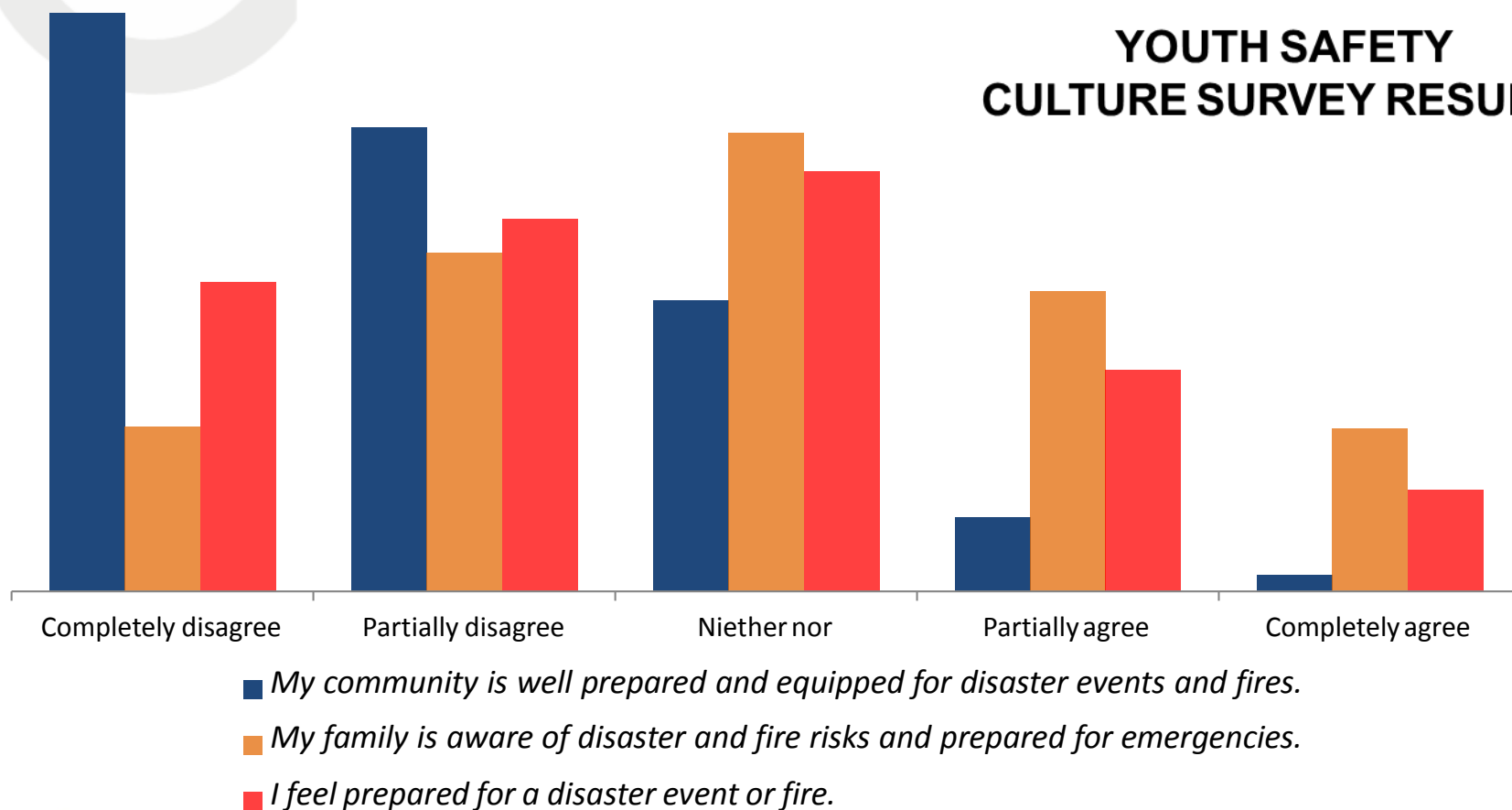
*My community is well aware of the dangers of disaster events and fires.*





## Personal opinions and stances

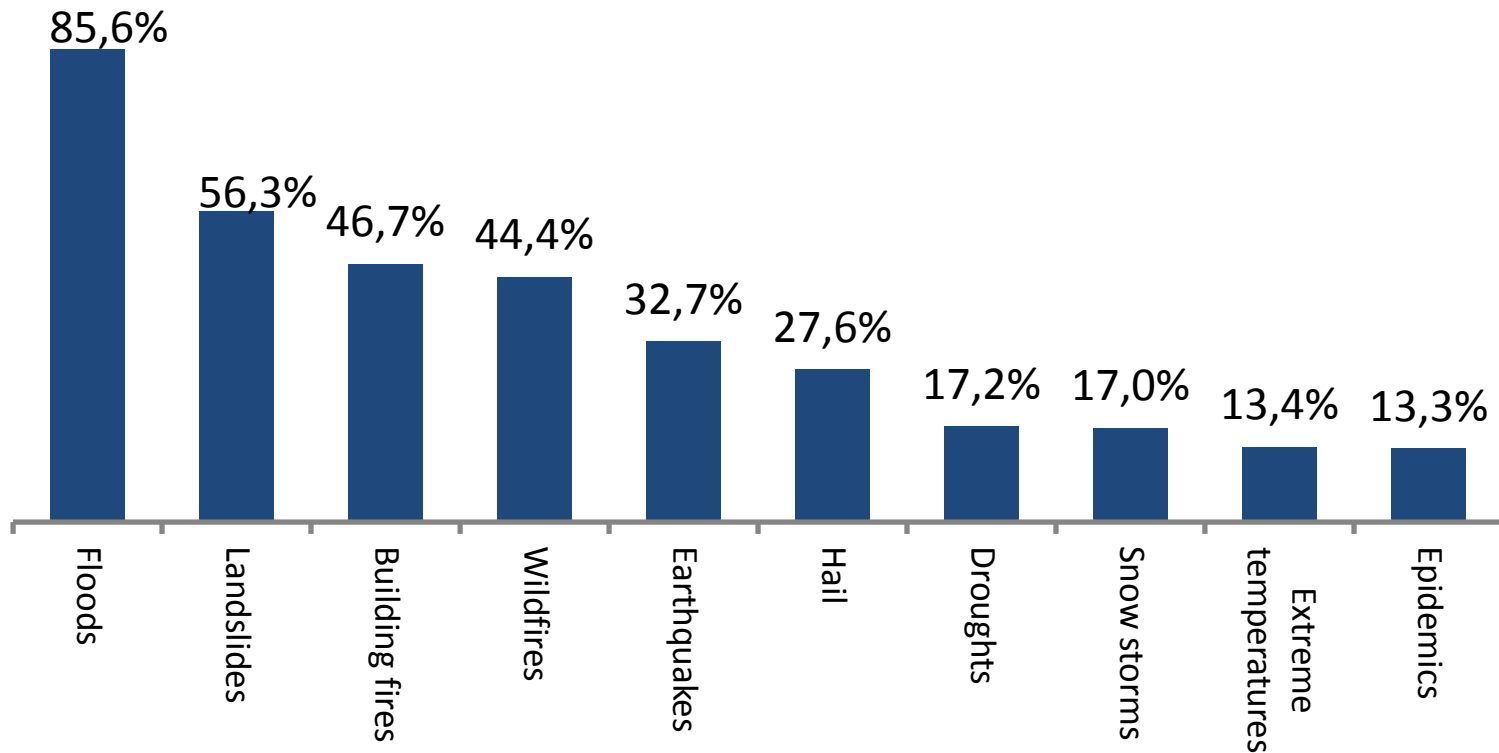
### YOUTH SAFETY CULTURE SURVEY RESULTS

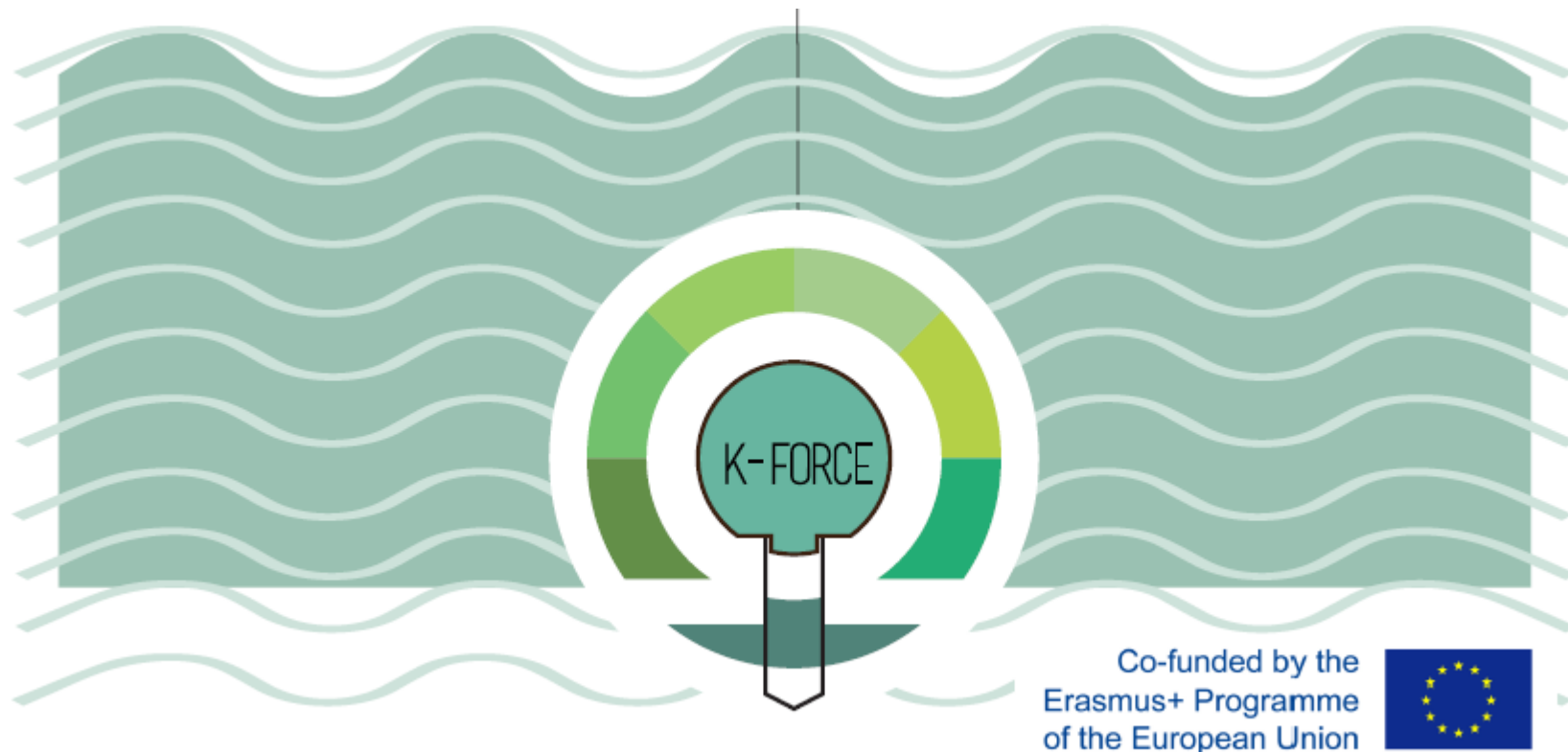


# YOUTH SAFETY CULTURE SURVEY RESULTS

## Personal opinions and stances

*The main hazard(s) in my country are:*





**Thank you for your attention!**

[k-force.pmt@uns.ac.rs](mailto:k-force.pmt@uns.ac.rs)