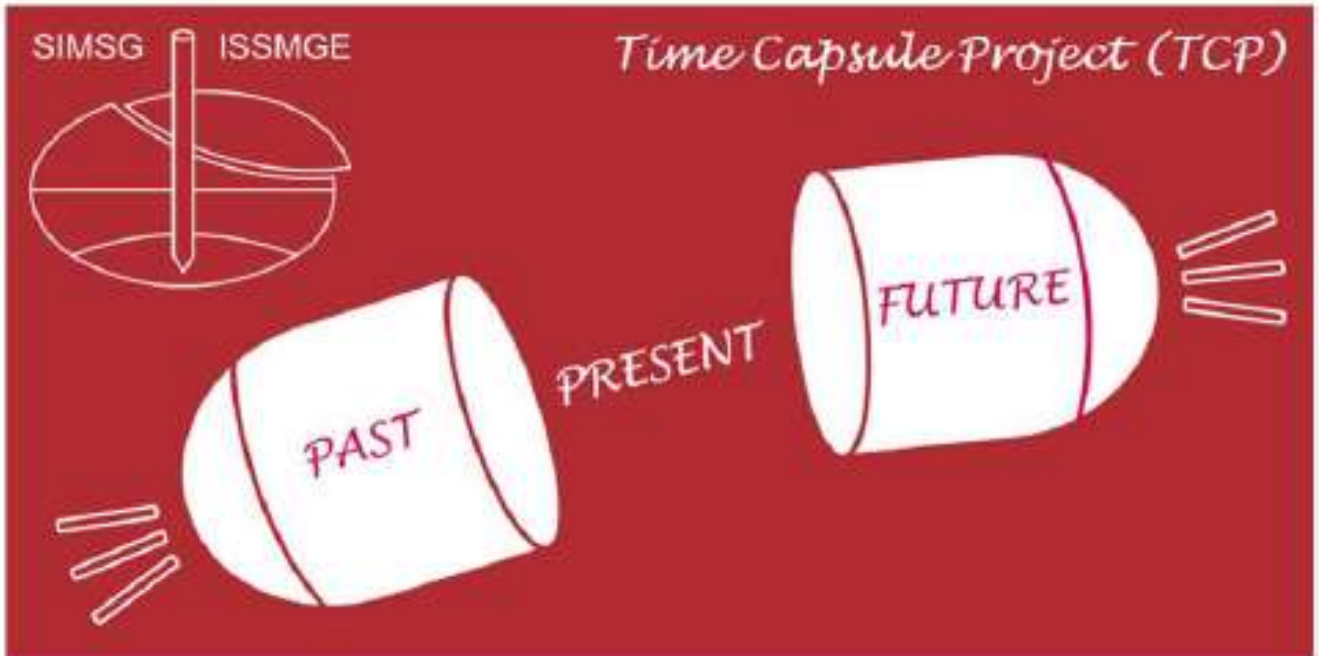


Macedonian Association for Geotechnics

Друштво за геотехника на Македонија

ДГМ
МАГ

ДРУШТВО ЗА ГЕОТЕХНИКА НА МАКЕДОНИЈА
MACEDONIAN ASSOCIATION FOR GEOTECHNICS

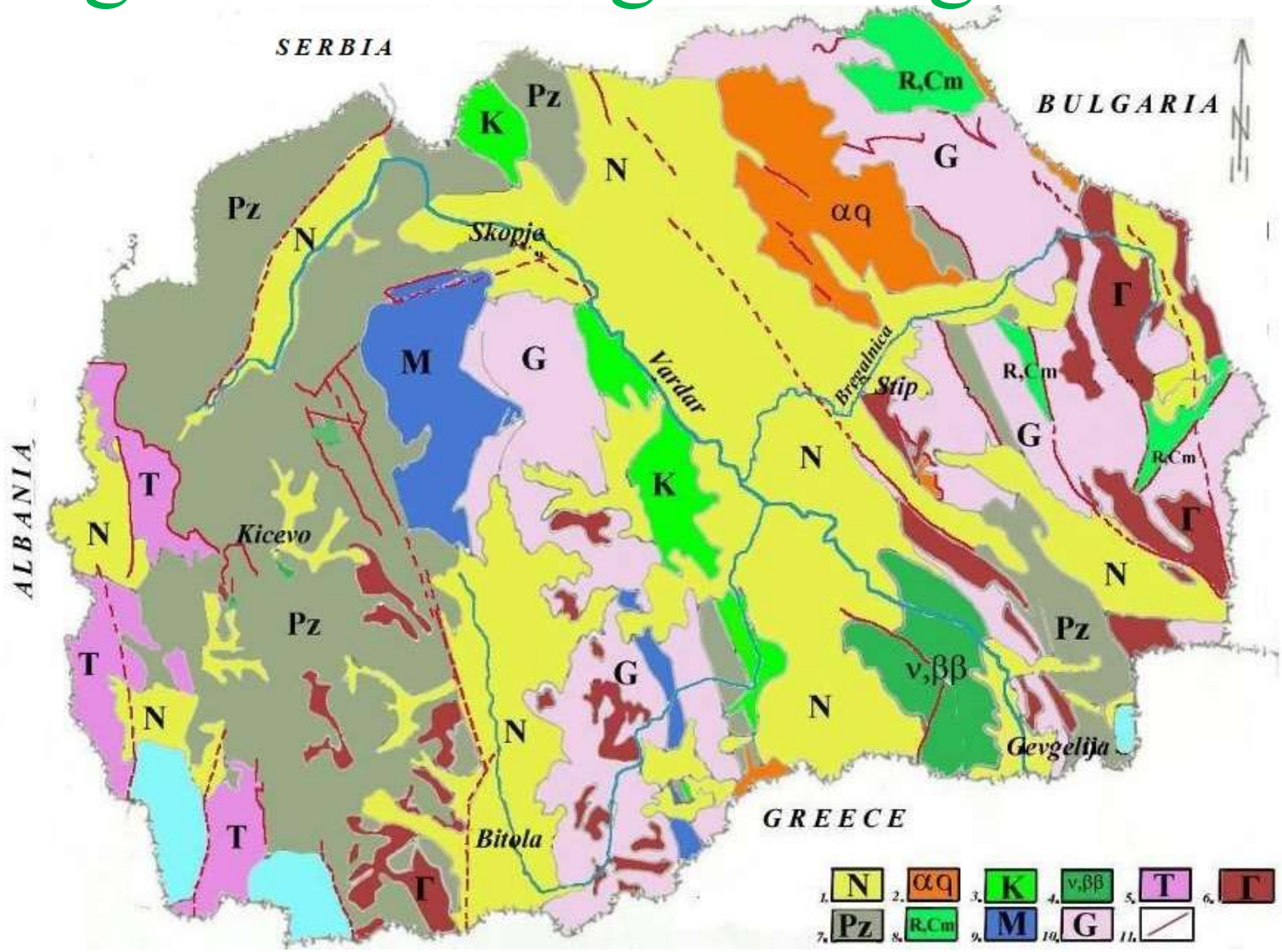
2022

Basic historical data on geological, mining and civil engineering tradition

- Favorable geographic location, complexity of geological composition, versatile and specific natural characteristics…
- Organized exploitation of stone and metals existed at Ancient Macedonian and Roman time
- Geotechnical methods were intuitively used in exploitations of such goods

PAST

Basic historical data on geological, mining and civil engineering tradition



Simplified geological map (Neogene; Volcanics; Cretaceous; Gabbros and Diabases; Triassic; Granites; Paleozoic; Marbles; Riphean-Cambrian; Gneisses; Faults)

Basic historical data on geological, mining and civil engineering tradition

- Sunrise at Kokino brdo (Kumanovo), world's fourth oldest megalithic observatory (Bronze Age)

- Pre-historic pile structure in the Bay of the bones, Ohrid Lake (12th century BC)

Basic historical data on geological, mining and civil engineering tradition

- Amphitheatre in Ohrid (3rd century BC)

- Amphitheatre in Stobi – Negotino (2nd century AD)

Basic historical data on geological, mining and civil engineering tradition

- Statues at Heraklea – Bitola

- Aqueduct in Skopje (1st / 6th / 15th century)

Basic historical data on geological, mining and civil engineering tradition

- Monasteries St. John the Baptist – Debar (left – 11th century) and St. Virgin Mary – Kičevo (below – 14th century)

- positioned in mountains, in water surrounding, due to which there are springs just below them: they serve both the monks, believers and visitors, and for draining the soil under the church, thus improving the slope stability.

Basic historical data on geological, mining and civil engineering tradition

- Stone bridge in Skopje, founded on wooden piles (6th / 15th century)

- Stone bridge in Kratovo (15th century)

Development of geotechnics

- Geological institute established in 1944
- Faculty of Civil Engineering – Skopje (FCE) founded in 1949
  - Beginning of teaching process in geotechnics, when Chair for soil mechanics, foundation engineering and geology was founded
  - Laboratory for geotechnics formed in 1952
- Institute of Earthquake Engineering and Engineering Seismology (IZIIS) - Skopje founded in 1965 (support of UNESCO)
  - Soil dynamics, dynamics of foundations…
- Faculty of Mining and Geology – Štip founded in 1977

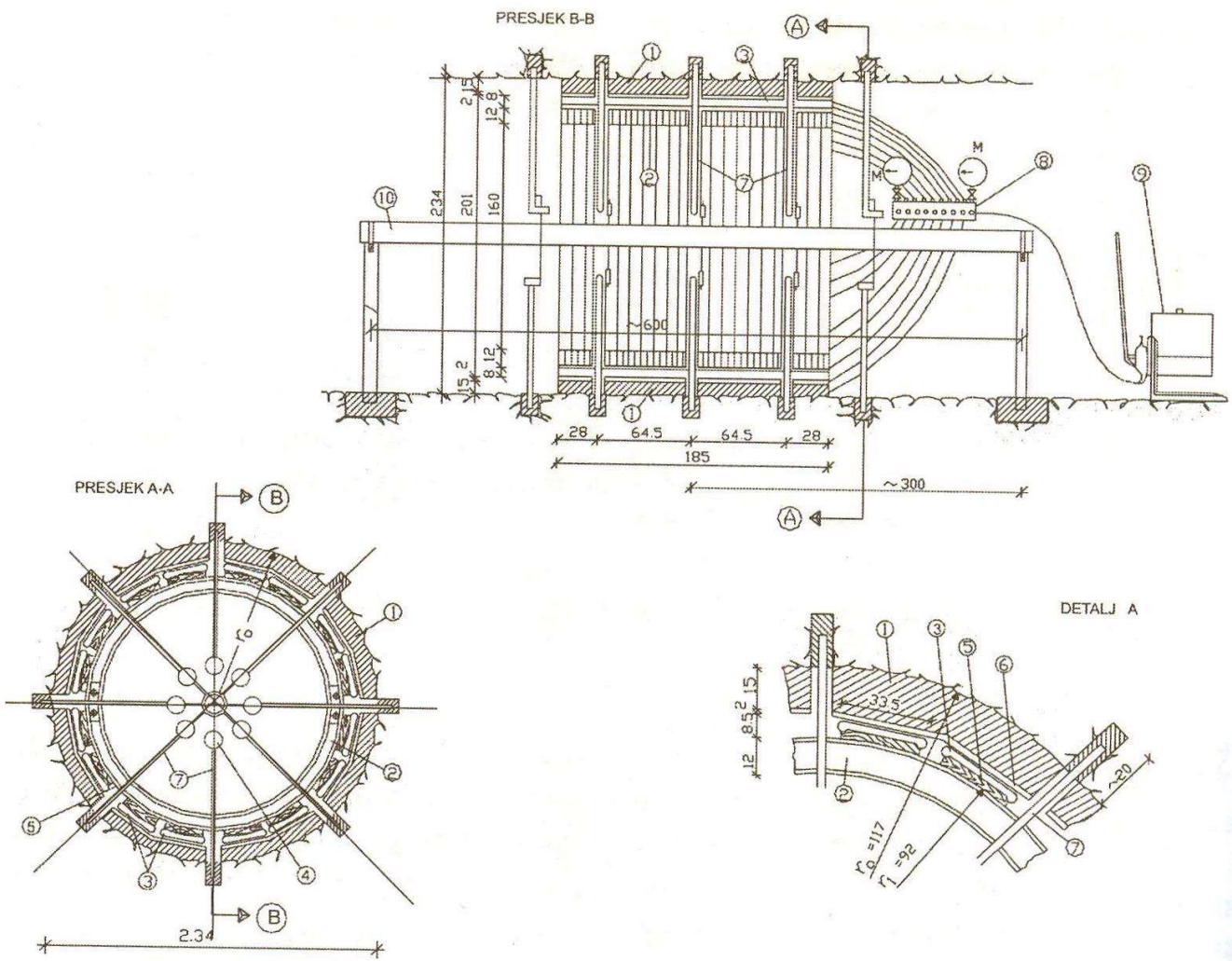
➢ The first provided instruments in the Laboratory for geotechnics (direct shear, 1952)

PAST

Development of geotechnics

- Growth of geotechnical engineering
  - Building of many dams, roads, highways, railways, irrigation systems…

➢ Method of radial flat jack, applied in 1951 for the very first time in the world in Macedonia, at the Mavrovo hydro system tunnel



Development of geotechnics

- Several state construction companies founded, with geotechnical division
  - Granit, Beton, Mavrovo, Pelagonija, Civil Engineering Institute "Makedonija", Institute for Testing Materials "Skopje", Ilinden etc.
- Mining industry in progress
  - Bučim, Sasa, Toranica, Zletovo, Oslomej...
- After 1990, many private companies, studios and laboratories dealing with geotechnics were established
  - Geing, Geoing, Geoproekt, Geohydroengineering, Geohydroconsalting, Geocontrol, GeoS-M, Euro Road Design Group, Euroconsulting, Geodesign, GeoMap, MN Engineering...

Application of geotechnics

- In progress:
  - Highways along Corridor VIII and Corridor X
  - Dams – Rečani (geomembrane), Konsko (asphalt core)
  - Tailing dams – Sasa, Bučim, Toranica, Zletovo
  - Mining – Borov dol
- Innovation in Eurocode 7
- Pricelist of costs of engineering services
- To be done:
  - Railways along Corridors
  - Dams – Galište, Čebren, Lukovo pole, Boškov most
  - Preparation of rulebook for geotechnics

Application of geotechnics

- Large scale direct shear 1,0x1,0x0,6 m

- Large scale oedometer D/H=50/25 cm

Application of geotechnics

- Landslide at Corridor X, section Negotino – Demir Kapija

- After stabilization

Application of geotechnics

- Landslide at road Bitola – Resen

- Construction

- After stabilization

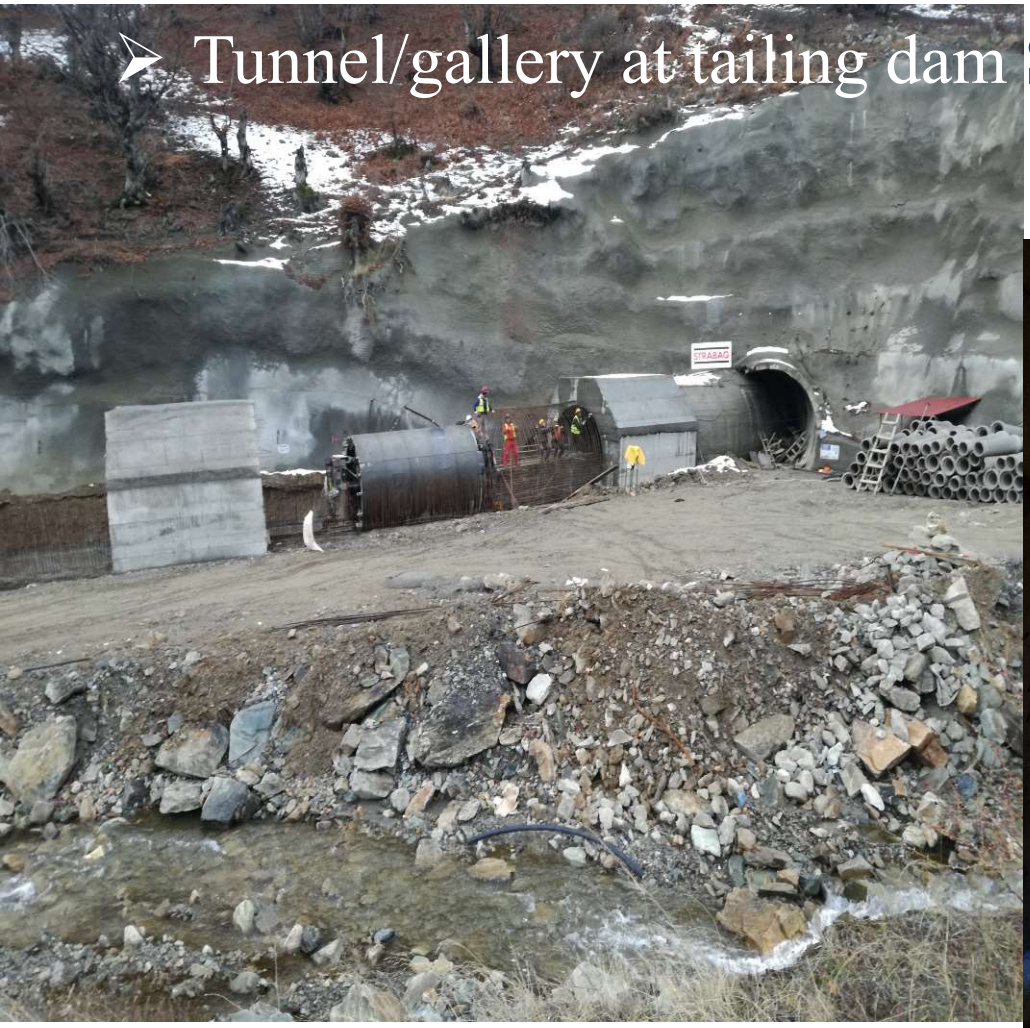
Application of geotechnics

- Repair of embankment dam Pišica (Probištip)

- Construction phase

Application of geotechnics

- Tunnel/gallery at tailing dam Sasa (Makedonska Kamenica)



Application of geotechnics

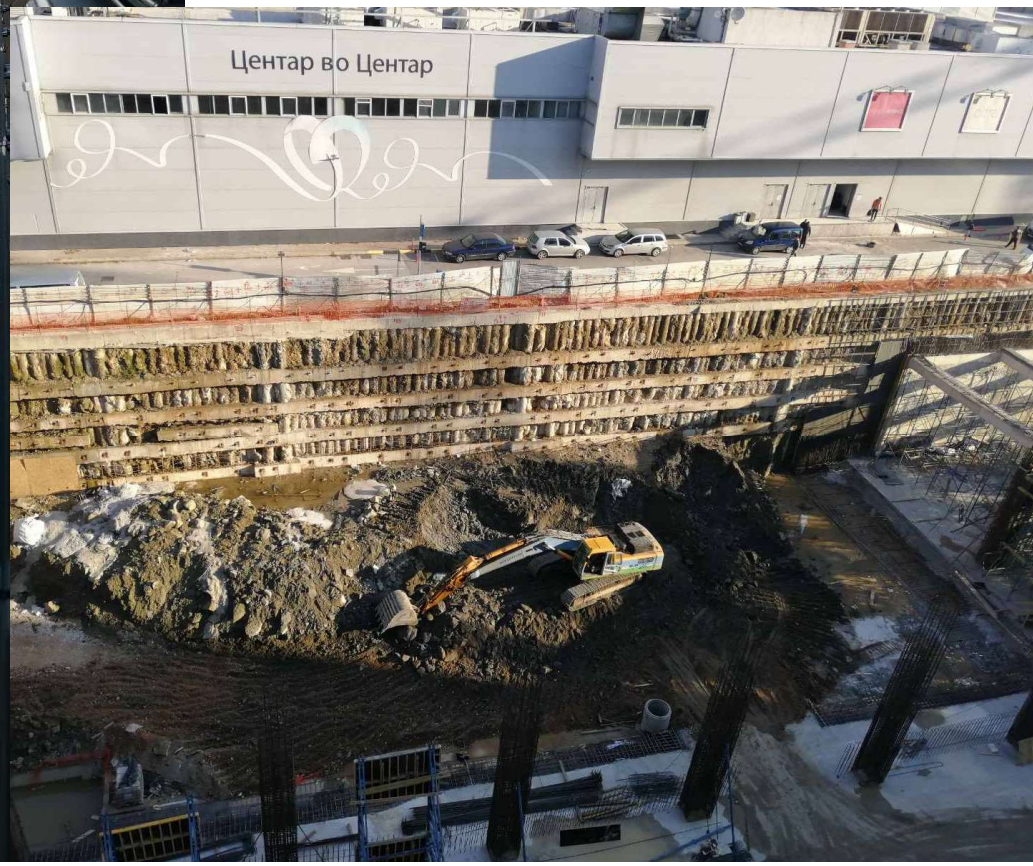
- Construction pits (Skopje)

Application of geotechnics

- Construction pit (Skopje)

Application of geotechnics

- Construction pit (Skopje)



Application of geotechnics

- Construction pit (Kumanovo)

Professional organization

- Macedonian Association for Geotechnics (MAG)
  - Established in 1998 (registered in 1999)
  - Member of – since: ISSMGE – 2001; ISRM – 2017; ICL – 2021
  - **Activities**
    - **2002, 2006, 2010, 2014, 2022 – symposiums**
    - **2008 – host of seminar for Eurocode 7 and Eurocode 8 (with ISSMGE)**
    - **2018 – host of XVI DECGE (under auspices of ISSMGE) & ITA seminar**
    - **2022 – 5th symp. = ISRM Specialized conf. + 2nd Conf.of regional geotech. societies**

➢ Participants of XVI DECGE in 2018

➢ Opening speech of the 1st Symposium

Professional organization

- Boards of ISSMGE and ITA on the ceremony of awarding emer. prof. Heinz Brandl with Medal of Merits for Macedonia (2018)

Professional organization

- Chamber of licensed architects and licensed engineers
  - Division for Geotechnics – separate licenses for geotechnical engineers
- Engineering Institution of Macedonia
- Institute for standardization

Република Македонија
КОМОРА НА ОВЛАСТЕНИ АРХИТЕКТИ
И ОВЛАСТЕНИ ИНЖЕНЕРИ

Врз основа на член 24 став 2 од Законот за градење („Службен весник на Република Македонија" бр.70/2013-пречистен текст, 79/2013, 137/2013, 163/2013, 27/2014, 28/2014, 42/2014, 115/2014, 149/2014, 187/2014, 44/2015, 129/2015, 217/2015, 226/2015, 30/2016, 31/2016 , 39/2016, 71/2016 и 132/2016, 35/2018, 64/2018), Комората на овластени архитекти и овластени инженери издава

ОВЛАСТУВАЊЕ А

ЗА РЕВИЗИЈА НА ПРОЕКТНА ДОКУМЕНТАЦИЈА
од
ГЕОТЕХНИКА
на
д-р МИЛОРАД ЈОВАНОВСКИ
дипломиран инженер геолог

Овластувањето е со важност до: 02.02.2024 год.

Број: 6.0001
Издадено на: 03.02.2019 год.

Претседател на
Комората на овластени архитекти
и овластени инженери
Проф. д-р Миле Димитровски
дипл.маш.инж.

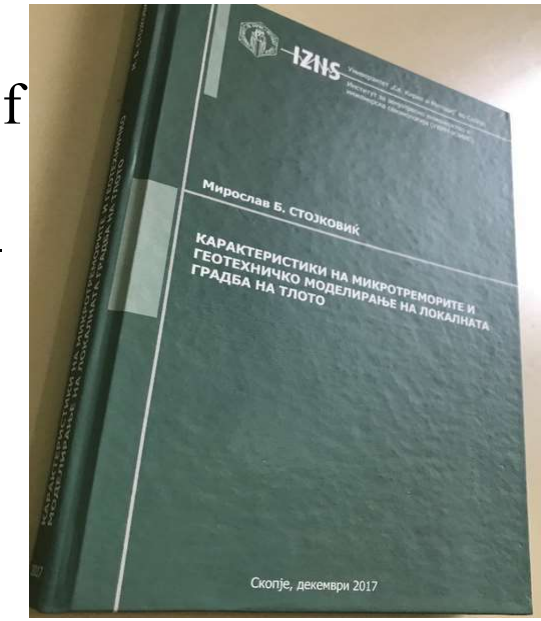
Publications (selected)

- Foundation engineering I, II (Фундирање) – Boris Šendov
- Shallow foundation (Плитко темелење) – Spasen Gjorgjevski
- Soil mechanics (Механика на почви) – Ljupčo Dimitrievski
- Geosynthetics (Геосинтетици) – Lj. Dimitrievski
- Earth works and structures (Земјани работи и конструкции) – Lj. Dimitrievski

- Engineering geology (Инженерска геологија) – Milorad Jovanovski, Naum Gapkovski, Biljana Abolmasov, Igor Peševski
- Rock mechanics (Механика на карпи) – M. Jovanovski, I. Peševski, N. Gapkovski
- Rock improvement (Подобрување на карпи) – M. Jovanovski, N. Gapkovski

Publications (selected)

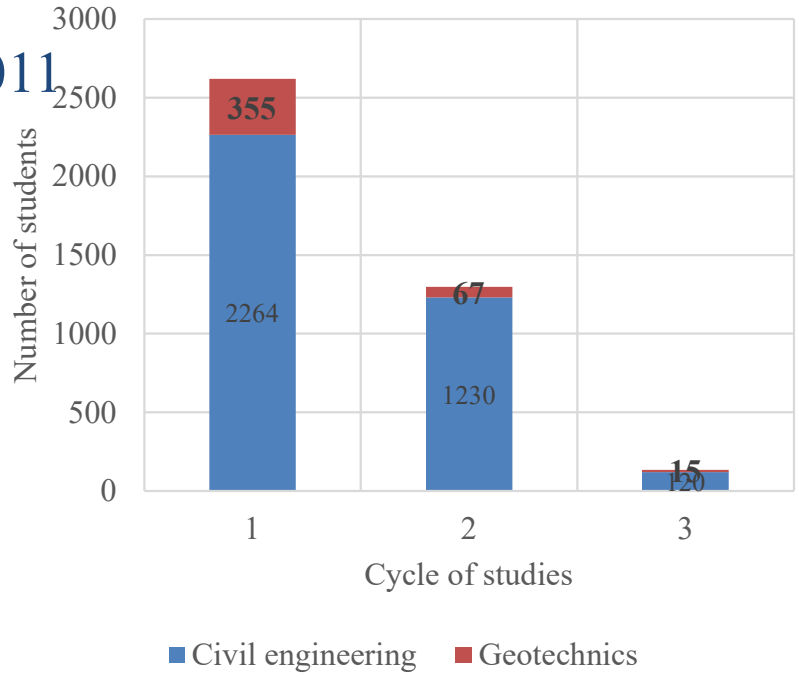
- Guidelines for design of foundations and anchor structures according to Eurocode (Прирачник за пресметување на темелни и анкерни конструкции според еврокод) – Josif Josifovski, Bojan Susinov
- Soil improvement (Подобрување на почви) – J. Josifovski
- Geotechnical aspects of landfills (Геотехнички аспекти на депонии) – Jovan Br. Papić
- Landslides and slope stability (Свлечишта и стабилност на косини) – M. Jovanovski, I. Peševski, J. Br. Papić
- Characteristics of microtremors and geotechnical modeling of local soil conditions (Карактеристики на микротремори и геотехничко моделирање на локалната градба на тлото) – Miroslav B. Stojković



Education of geotechnical engineering

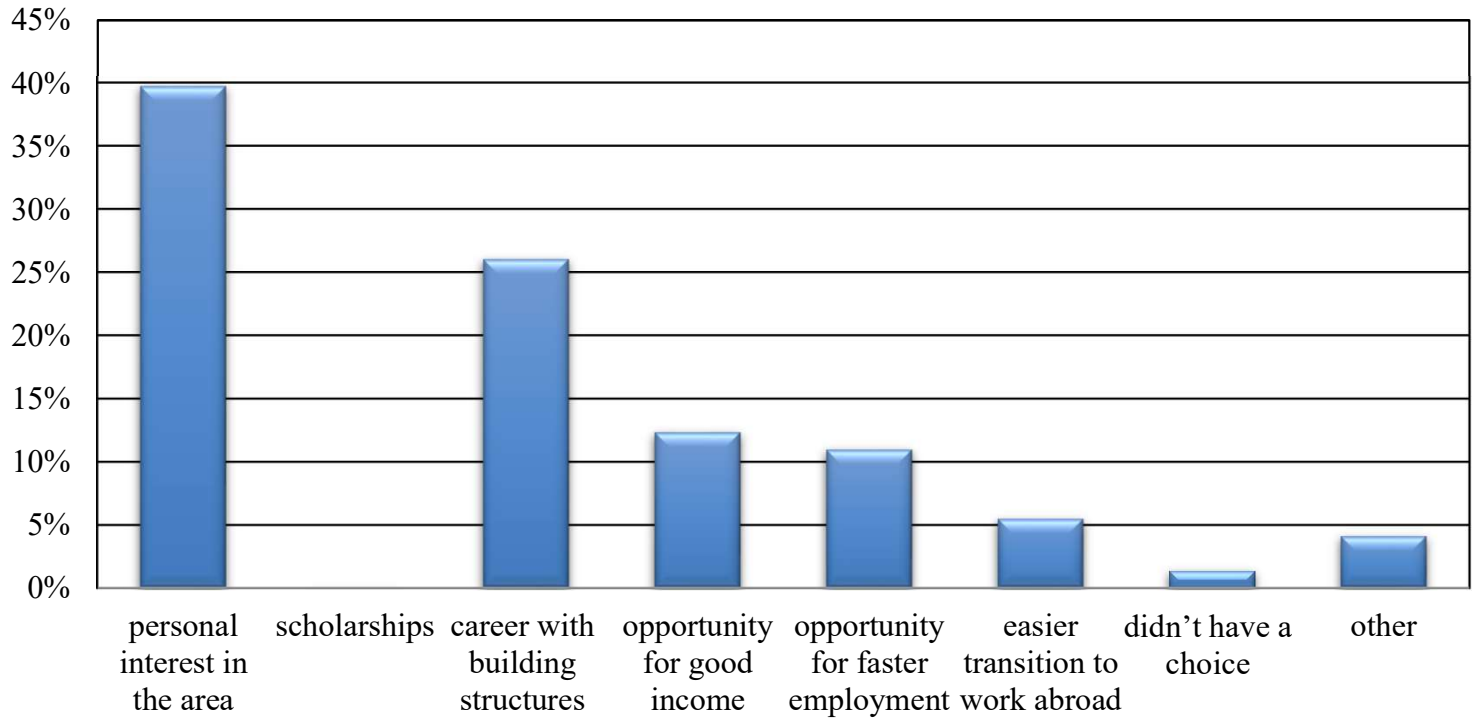
- Education of geotechnical engineering cherished at
  - Faculty of Civil Engineering – Skopje (FCE)
  - Institute of Earthquake Engineering and Engineering Seismology (IZIIS)
- Study program for geotechnical engineering
  - Initiated in 2005 at the First cycle of studies at FCE in Skopje as separate study program (5 students each year granted with scholarship by MAG)
  - Second cycle of studies present even before
  - Third cycle of studies (doctoral) started in 2011

➢ Number of students after establishing studies in geotechnical engineering in 2005



Findings from MAG's survey (2021/22)

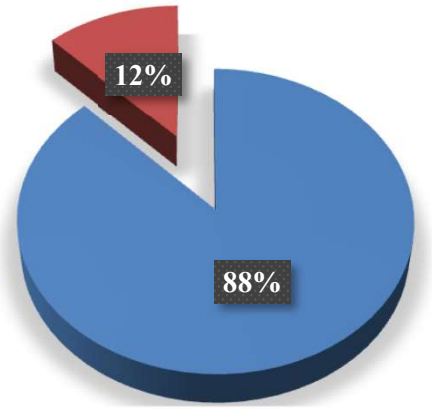
- Reasons for choosing geotechnical engineering
  - Love (for the profession) is the best motivator!
  - Economics still comes as close second



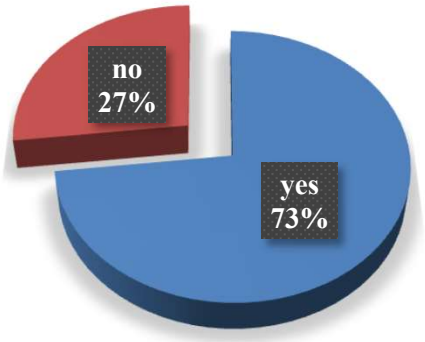
Findings from MAG's survey (2021/22)

- Satisfaction with the job
  - On high level!
  - Education
    - to be continued;
    - almost equal interest for branches

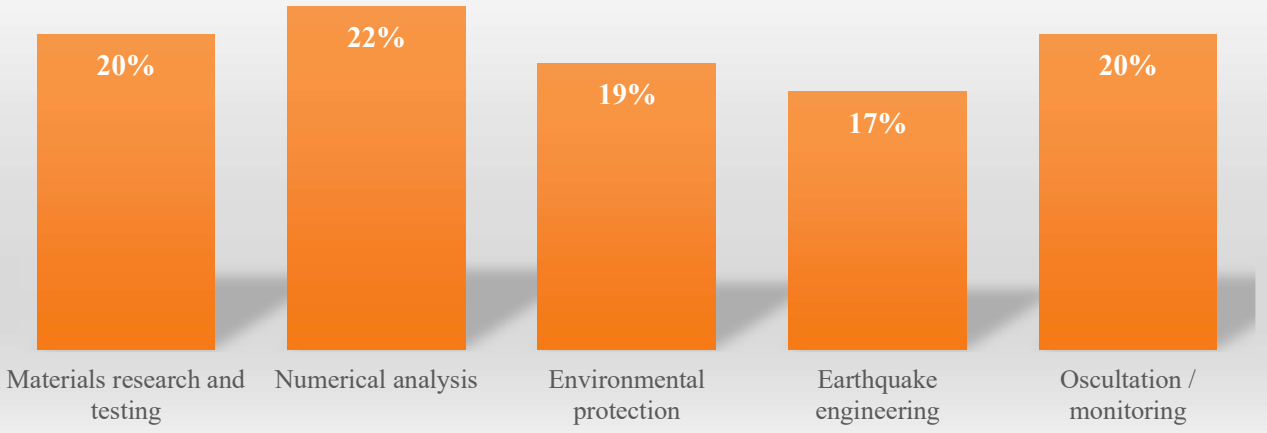
Are you satisfied with your job?



Would you continue your education?

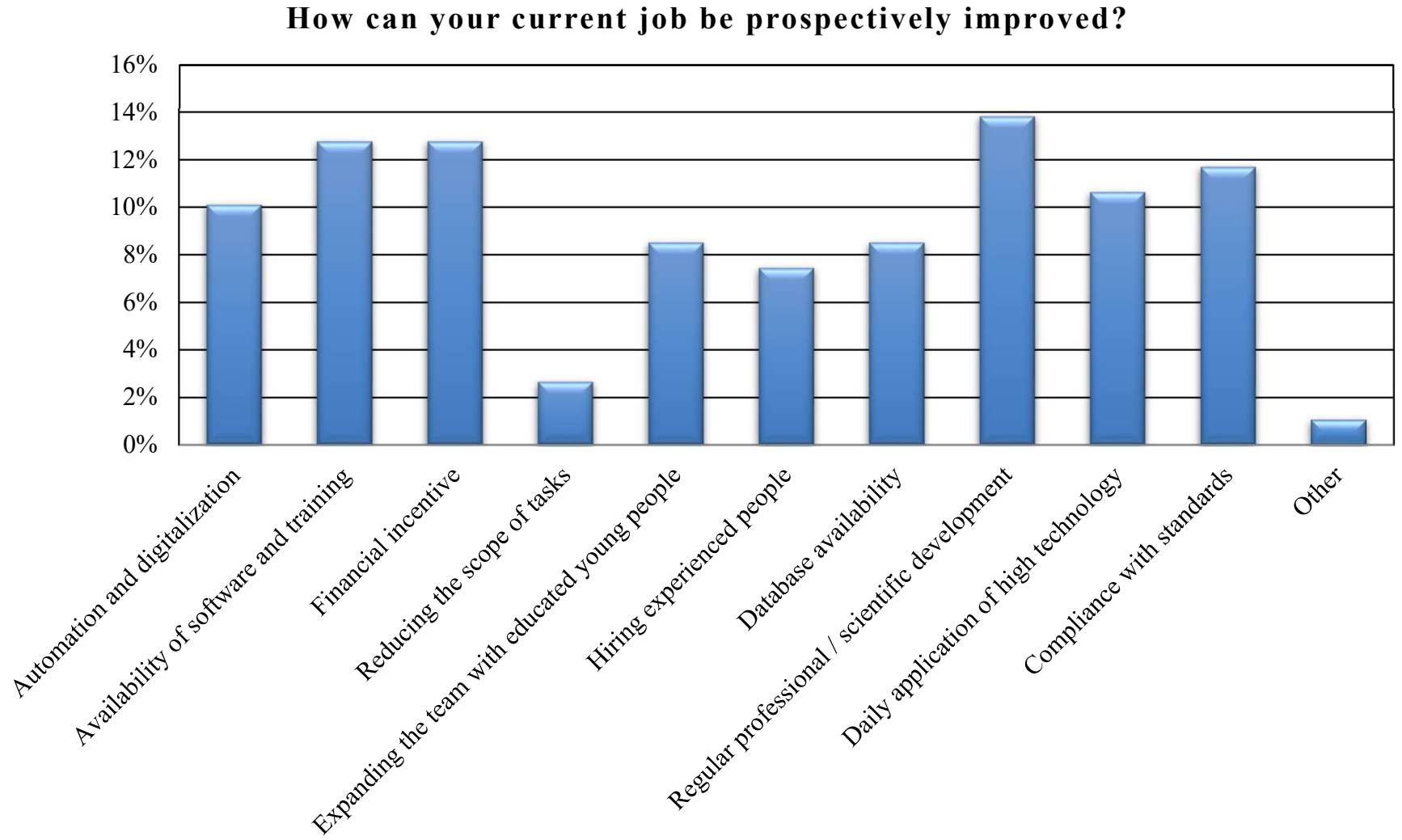


In which branch of geotechnics would you like to continue your studies?



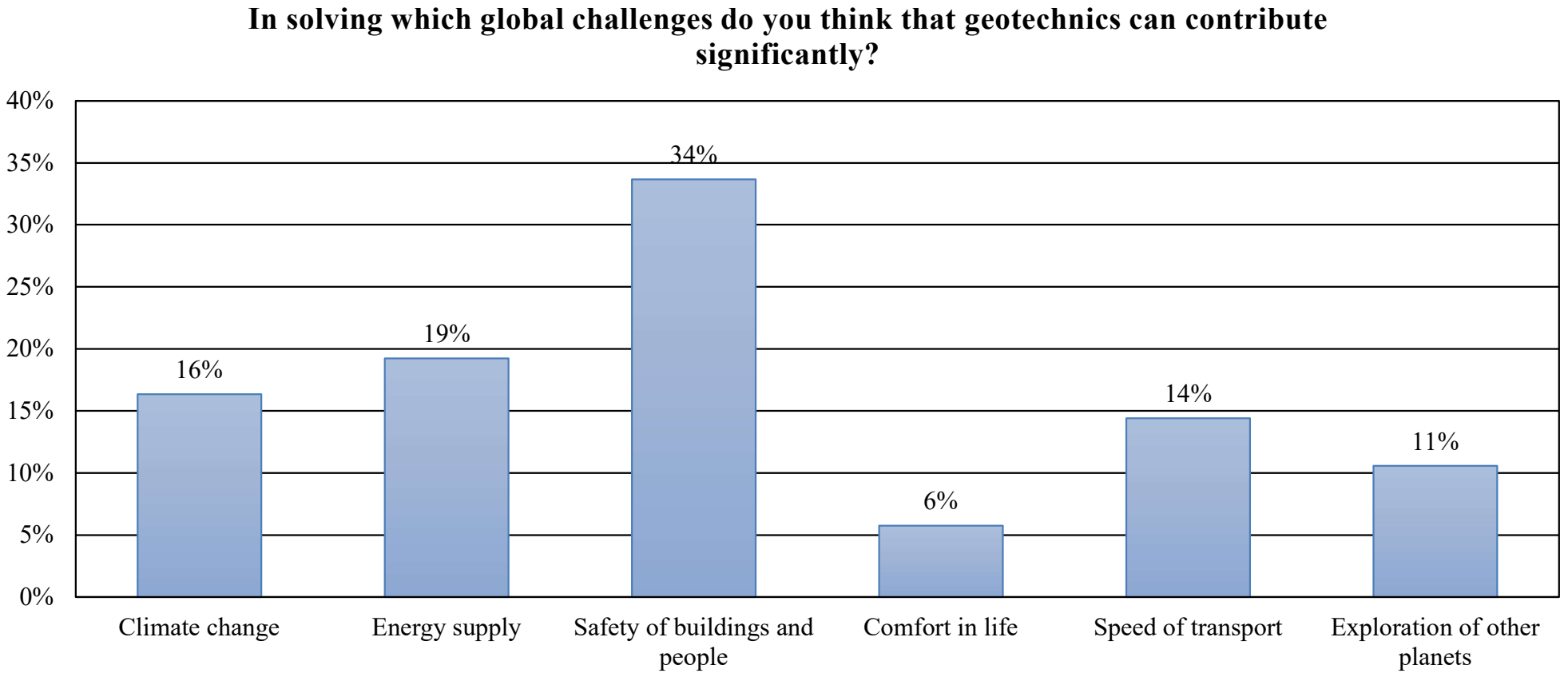
Findings from MAG's survey (2021/22)

- Satisfaction with the job
  - Still – elements can/should prospectively be improved!



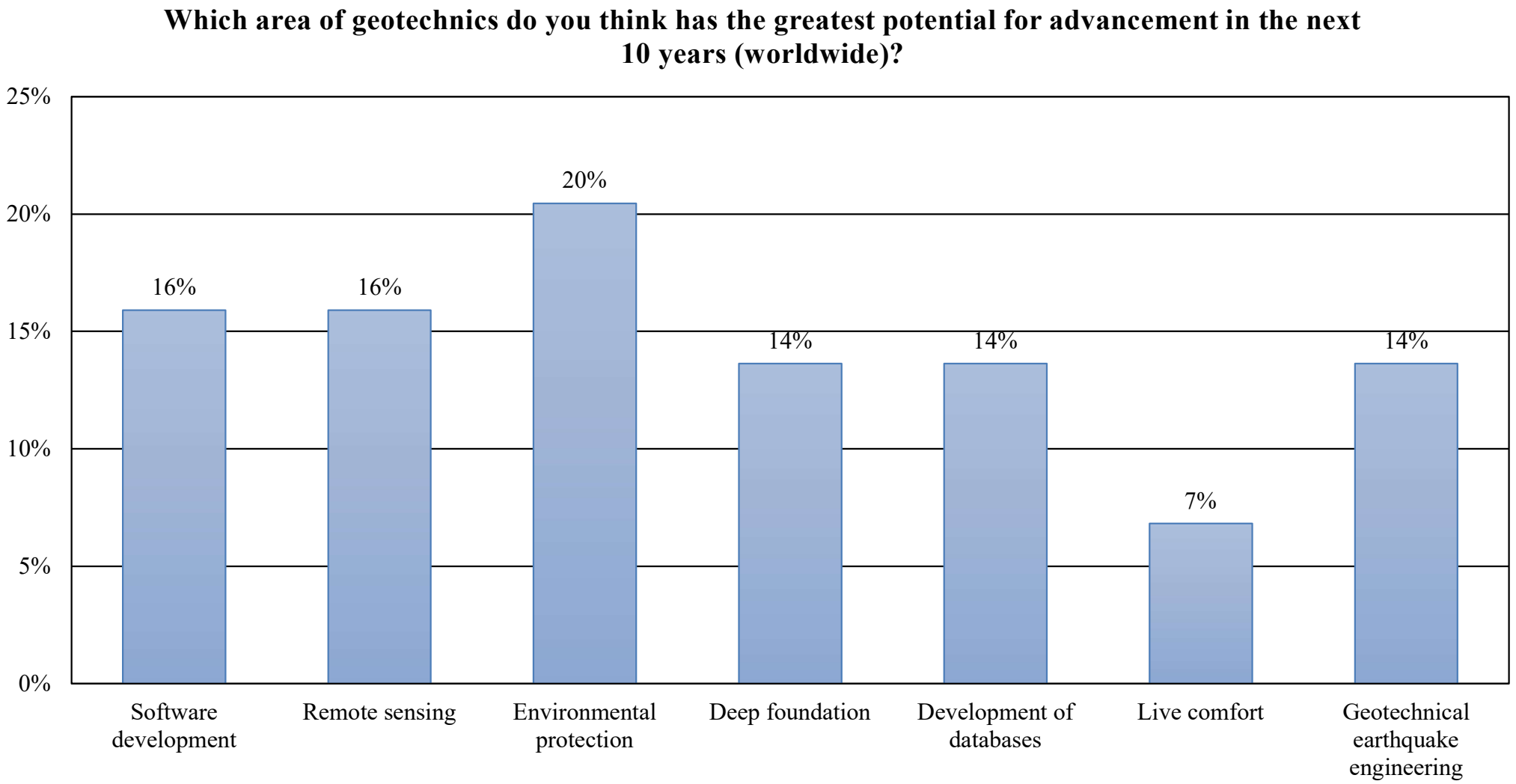
Findings from MAG's survey (2021/22)

- Foreseeing the future
  - Is safety not at required level now?
  - People are concerned about climate deviations…
  - Exploration of other planets is on geotechnical engineers' mind!



Findings from MAG's survey (2021/22)

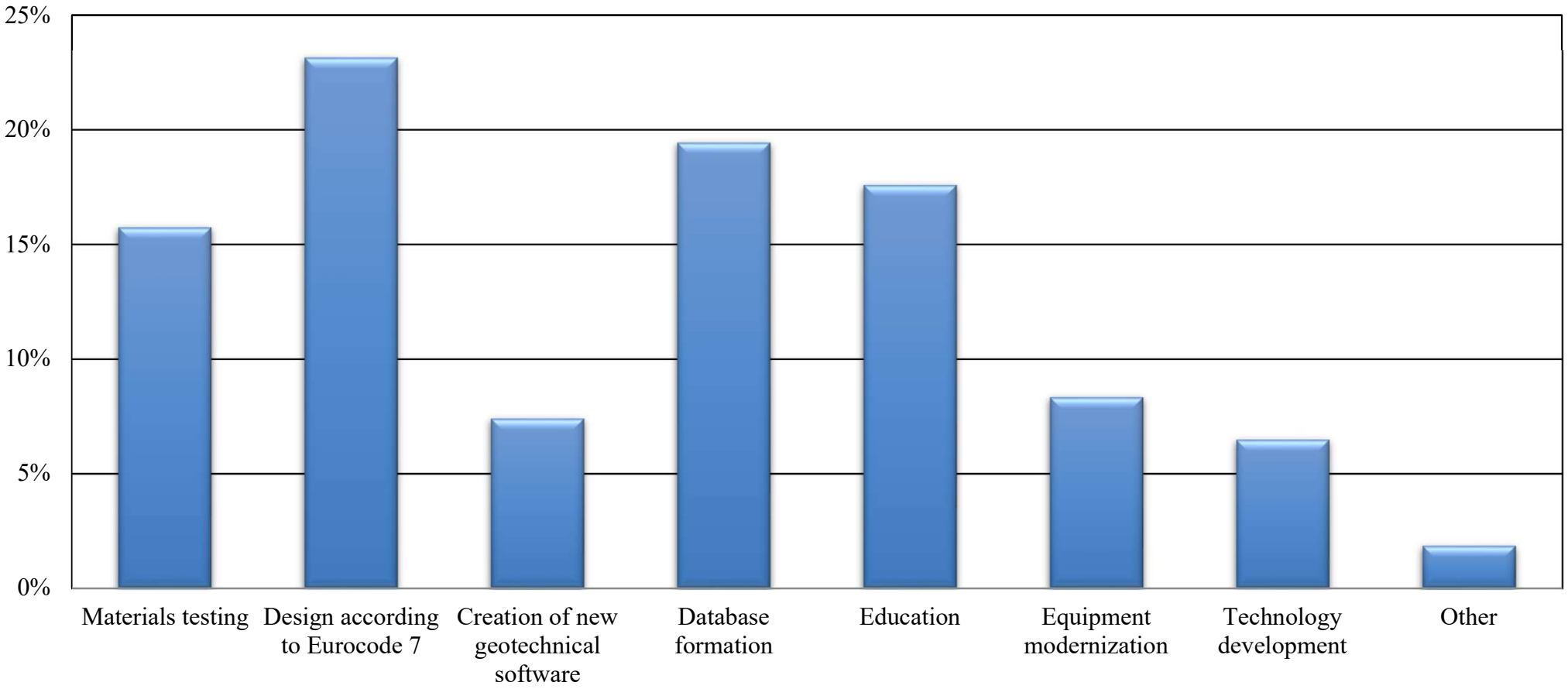
- Foreseeing the future



Findings from MAG's survey (2021/22)

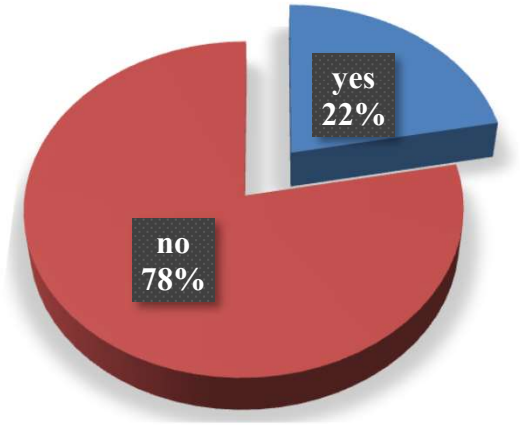
- Foreseeing the future
  - Implementation of Eurocodes – highest priority!
  - Education and preparing databases

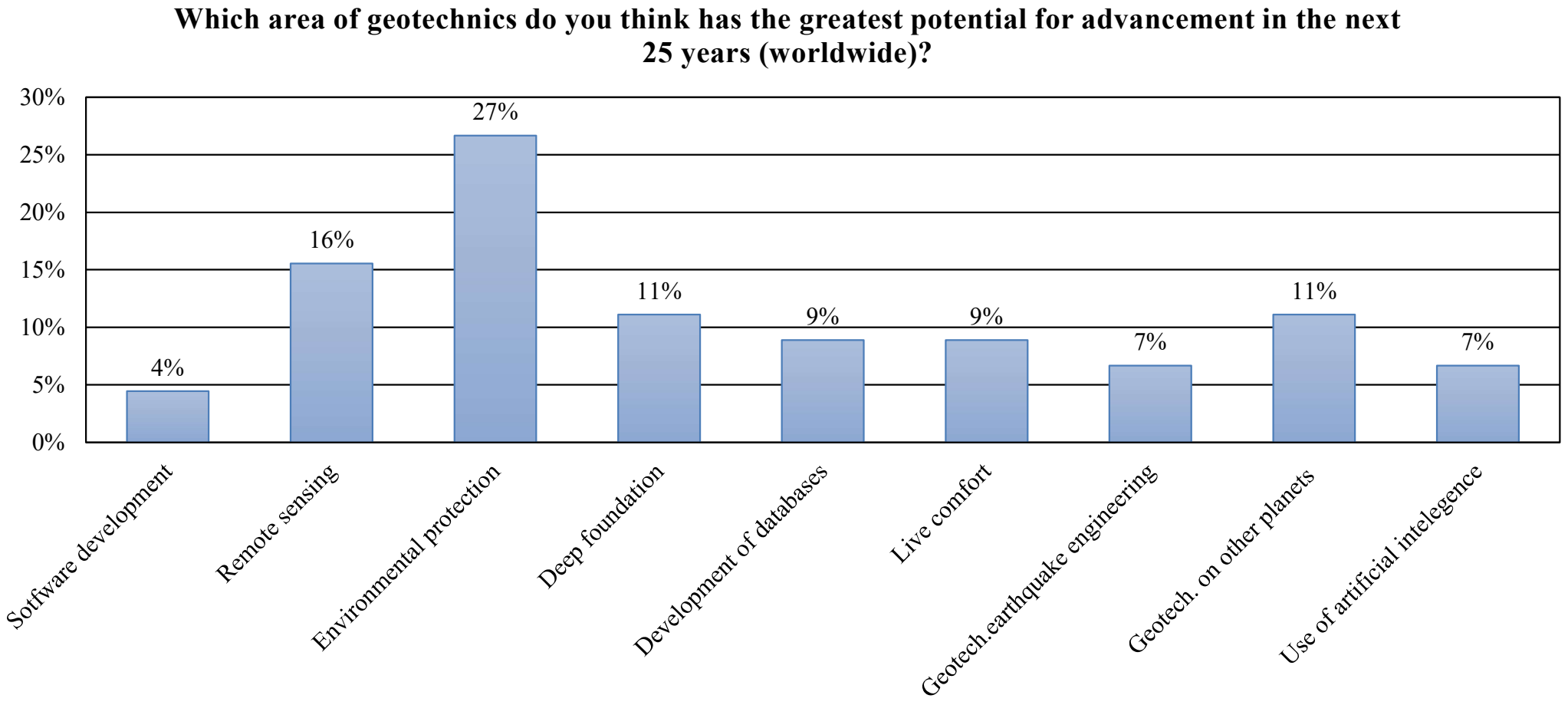
Which area of geotechnics do you think has the greatest opportunity for progress in our country in the next 15 years?



Findings from the survey

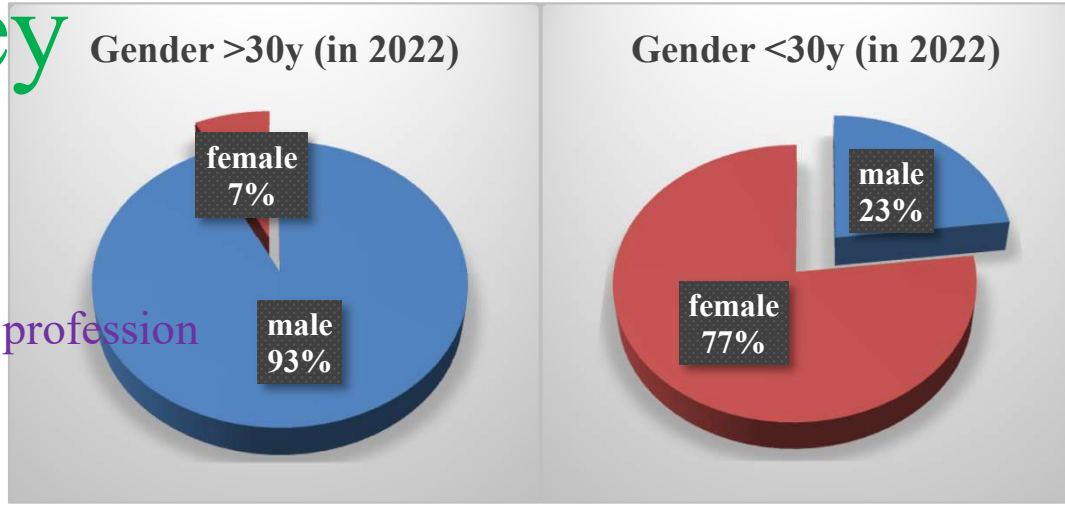
- Foreseeing the future

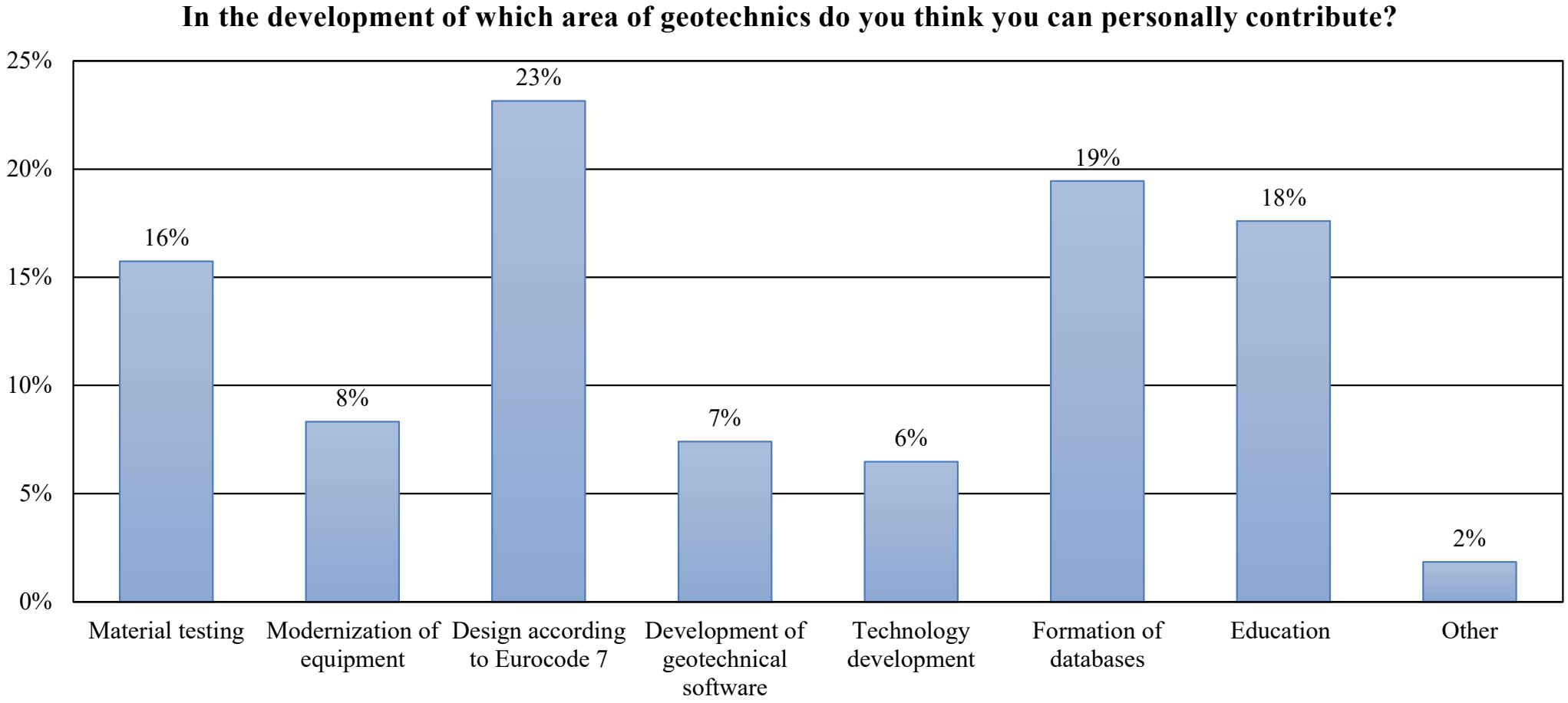




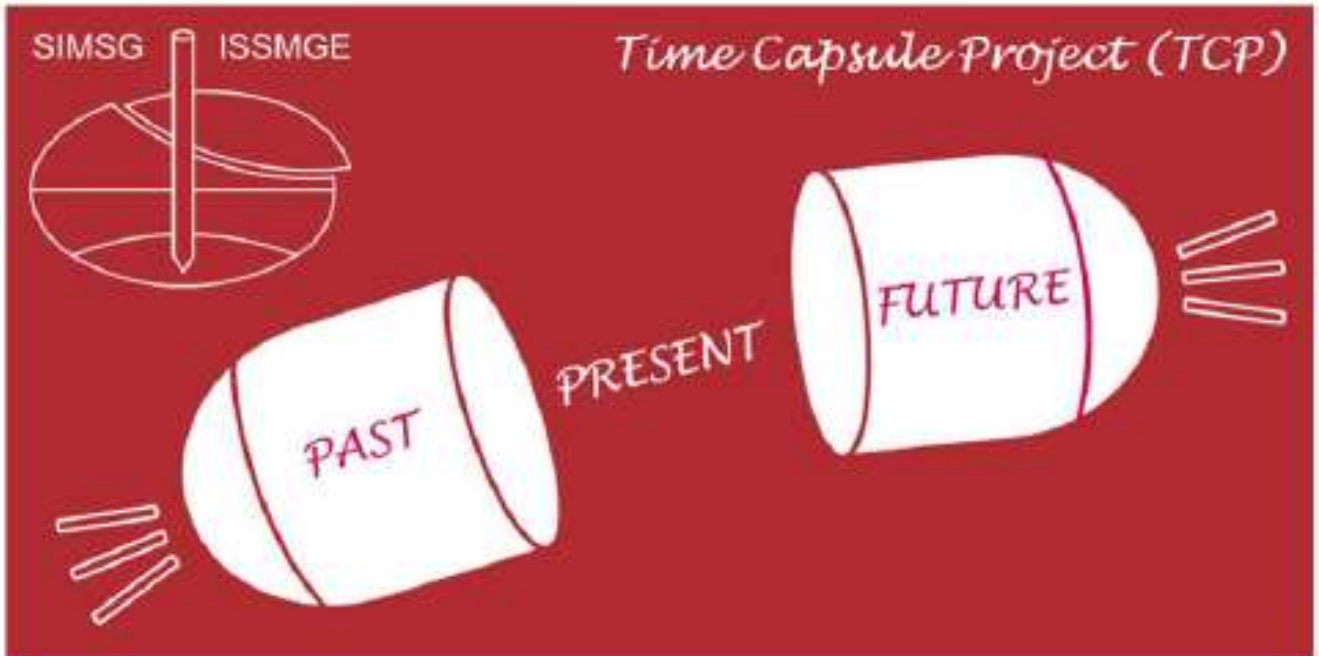
Findings from survey

- Foreseeing the future
  - Promising gender balancing engineering profession





STAY TUNED
AND
LET'S SEE!



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