



International Conference

# GEO4CIVHIC

**Most Easy, Efficient and Low Cost  
Geothermal Systems for Retrofitting  
Civil and Historical Buildings**

15th November 2023

**Grand Hotel Excelsior** - Great Siege Road, La Valletta - Malta



# TRAINING TOOLS PACKAGE (TTP)

## NAME

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# ❖ TRAINING TOOLS PACKAGE (TTP)



Training course for specialists  
Romania – Oradea – 50 Romanian trainees -  
October 31 to November 2, 2023



ECoE course – 100 trainees from all  
around Europe –  
25-26 September 2023

## ❖ TRAINING TOOLS PACKAGE (TTP)

- ❑ A **Scientific Project Committee** coordinated the whole TTP from the content and up to the scientific verification, from the beginning of the project and up to the final edited version.
- ❑ All the 19 partners in the project, i.e., more than 70 researchers, were directly or indirectly involved in the creation of the TTP.
- ❑ The TTP was realized in **English** version and was translated into 6 European languages: **French, German, Greek, Italian, Romanian, Spanish** (the partners' languages).
- ❑ The **quality of the TTP was validated** in the training courses and workshops organized in the 8 partner countries: **Belgium, Germany, Greece, Ireland, Italy, Romania, Spain, Switzerland**.
- ❑ An important exam that TTP successfully passed was the first course organized by the network of **European Centers of Excellence**, targeted to PhD students and high specialists in the shallow geothermal field.
- ❑ The whole package in English and 6 national languages uploaded in **GEO4CIVHIC website**: <https://geo4civhic.eu/training-education/> can be **freely accessed** by any interested person.

## ❖ CONTENT OF THE TTP

- ❑ One **TRAINING MANUAL** (7 volumes)
- ❑ Two **BROCHURES**
- ❑ Two **USER MANUALS**
- ❑ Two **MOVIES**
  - **Animation movie reflecting the shallow geothermal applications** (2.3 minutes)
  - **Main research results obtained GEO4CIVHIC project** (12 minutes)



- ❑ The TTP is mainly focused on the scientific results obtained in the project but also include scientific information obtained in previous or current European projects in the shallow geothermal domain.
- ❑ The PPT in English were rigorously scientifically verified by the Project Scientific Committee partners and linguistically verified by the native English partners.
- ❑ The TTP are uploaded in the project website before starting the national training courses and workshops.

## TRAINING MANUAL – 7 volumes focused on the main aspect of shallow geothermal technology

- VOLUME 1 – Energy needs and technical solutions for efficient buildings
- VOLUME 2 – Geology and mapping
- VOLUME 3 – Drilling methodology, machines and heat exchangers
- VOLUME 4 – Geothermal heat pumps technology
- VOLUME 5 – Sizing GSHP and hybrid technologies
- VOLUME 6 – Environment and standards
- VOLUME 7 – Historical and World Heritage Buildings



**TRAINING USER MANUALS and the access to DSS software - <https://geo4civhic.onyxsoft.co/GEO4CIVHIC>**

- **DSS - Decision Support Systems for geothermal retrofit**
- **Application for support on field for workers in Geothermal domain**

**TWO BROCHURES:**

- **GEO4CIVHIC - Technical Brochure**
- **GEO4CIVHIC – Historical Buildings Brochure**



# European Centers of Excellence for Shallow Geothermal Application in Civil and Historical Buildings

## NAME

Miguel Ángel Mateo Pla

## ORGANISATION

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## ❖ What is missing in the context of Shallow Geothermal Energy in Europe?

### ▪ ***Training and Skilled Workforce:***

Shortage of skilled professionals and technicians with expertise in designing, installing, and maintaining shallow geothermal systems.

### ▪ ***Technology Standardization:***

Lack of standardized technology and installation practices that can lead to inconsistencies and challenges in system performance.

### ▪ ***International Cooperation:***

Limited cooperation between European countries in sharing knowledge and experiences related to shallow geothermal energy, hindering a unified approach.

### ▪ ***Public awareness:***

Lack of awareness among the general public, policymakers, and even some industry professionals about the potential and benefits of shallow geothermal energy.

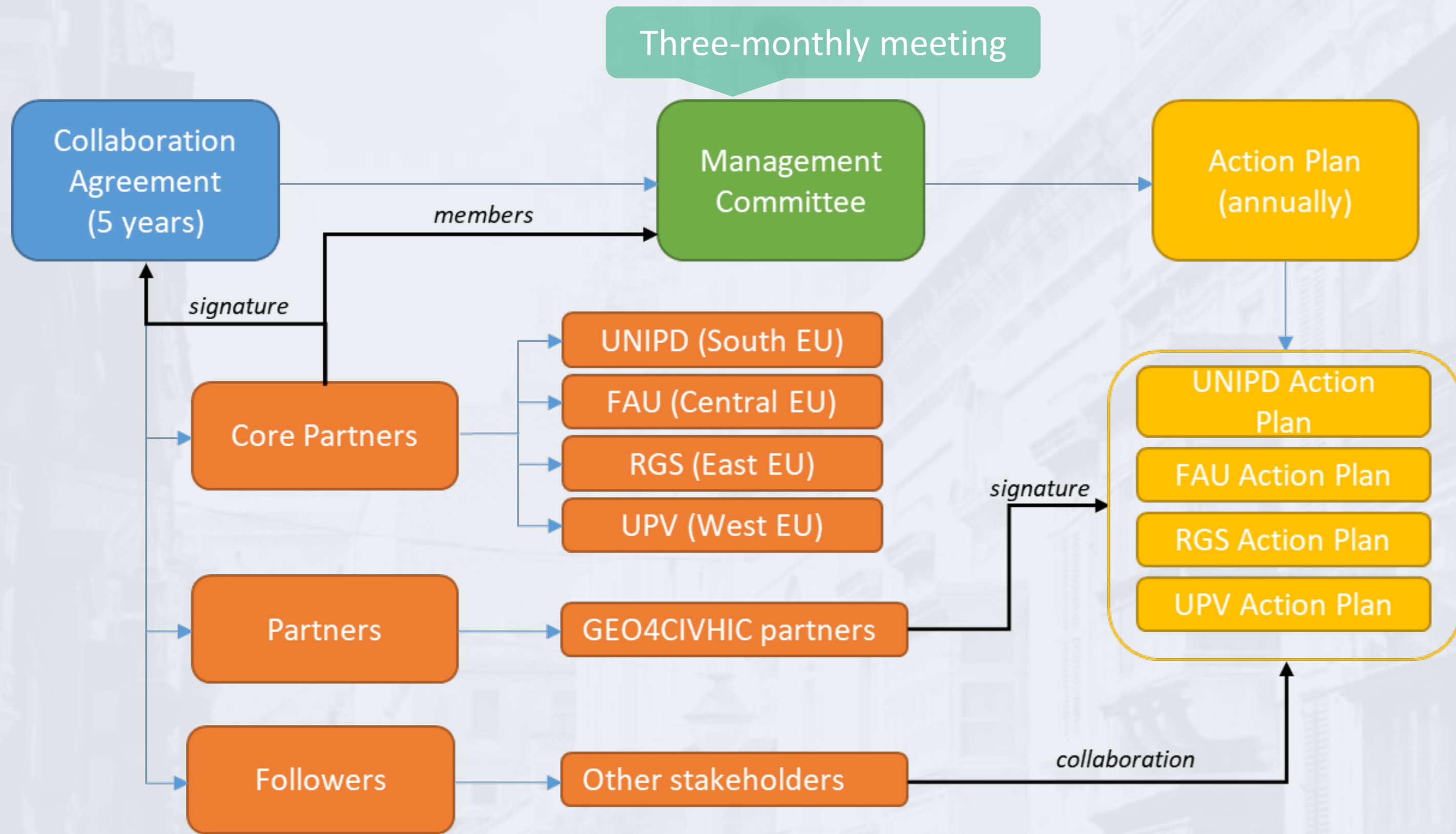
### ▪ ***Policy and Regulatory Framework:***

Insufficient and inconsistent policies and regulations across European countries, which hinders the widespread adoption of shallow geothermal systems.

## ❖ The Creation of European Centers of Excellence (ECoE) in Shallow Geothermal Energy

- A network of European organizations expert in shallow geothermal energy
- To improve expertise in a certain area and make the most of its resources to help the business to improve
- To find the best practices and to disseminate them to the others
- To offer guidance and provide training and oversight of the employees

# ❖ Layout of the European Centers of Excellence (ECoE)



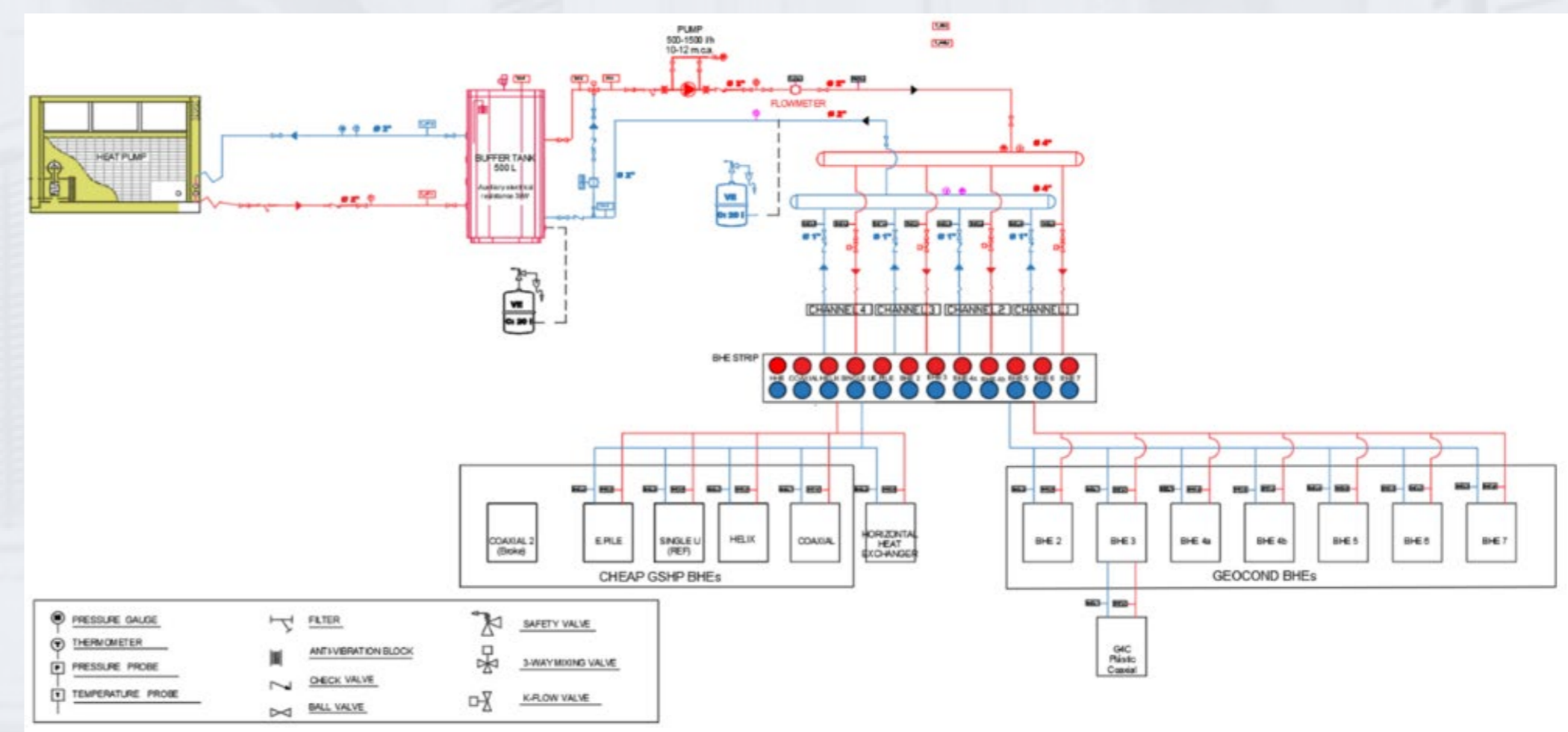
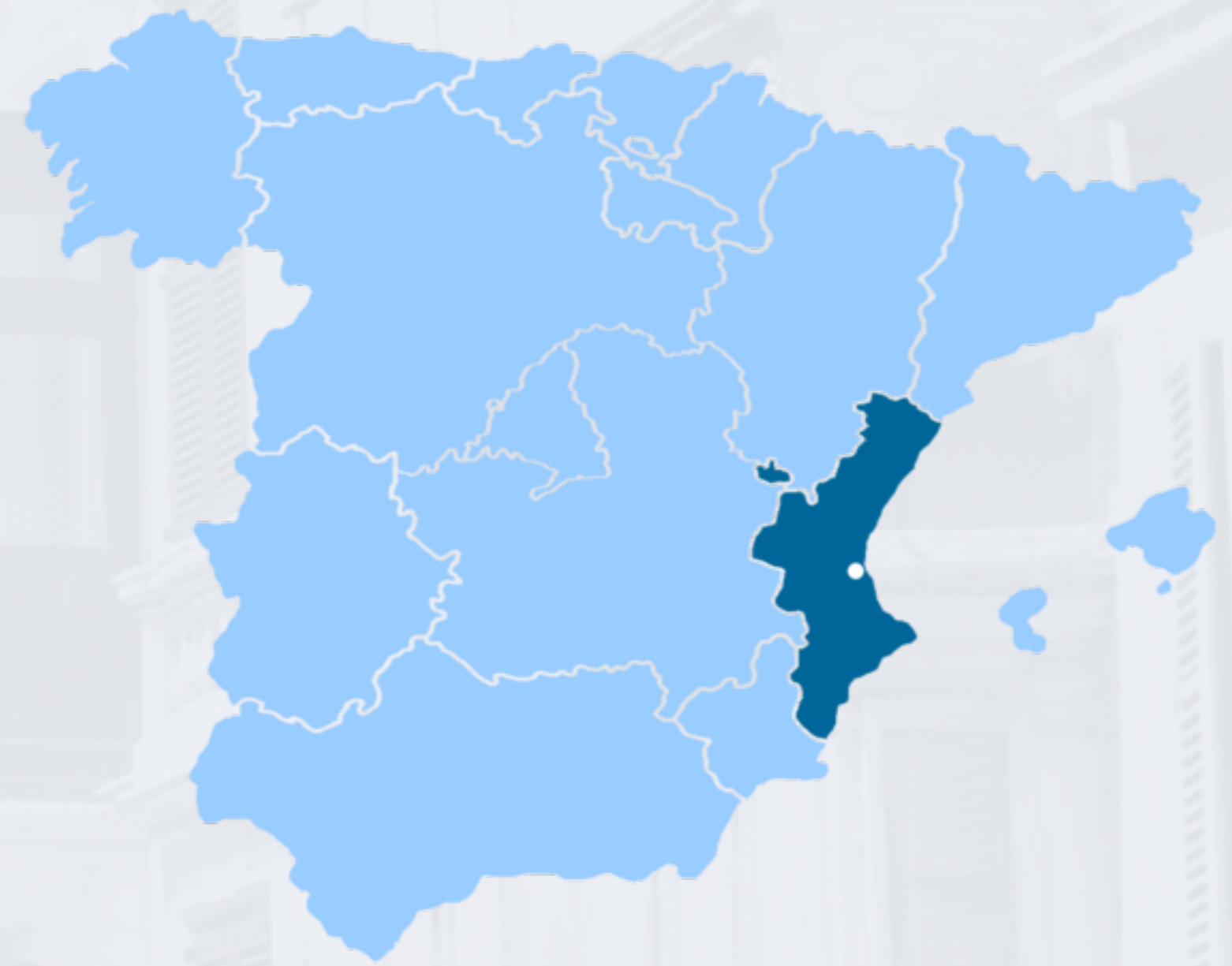
# ❖ Who are the European Centers of Excellence (ECoE)?



## West ECoE

Universitat Politècnica de València, València, Spain  
<https://www.upv.es/>

Javier Fermín Urchueguía Schölzel  
 jfurchueguia@fis.upv.es



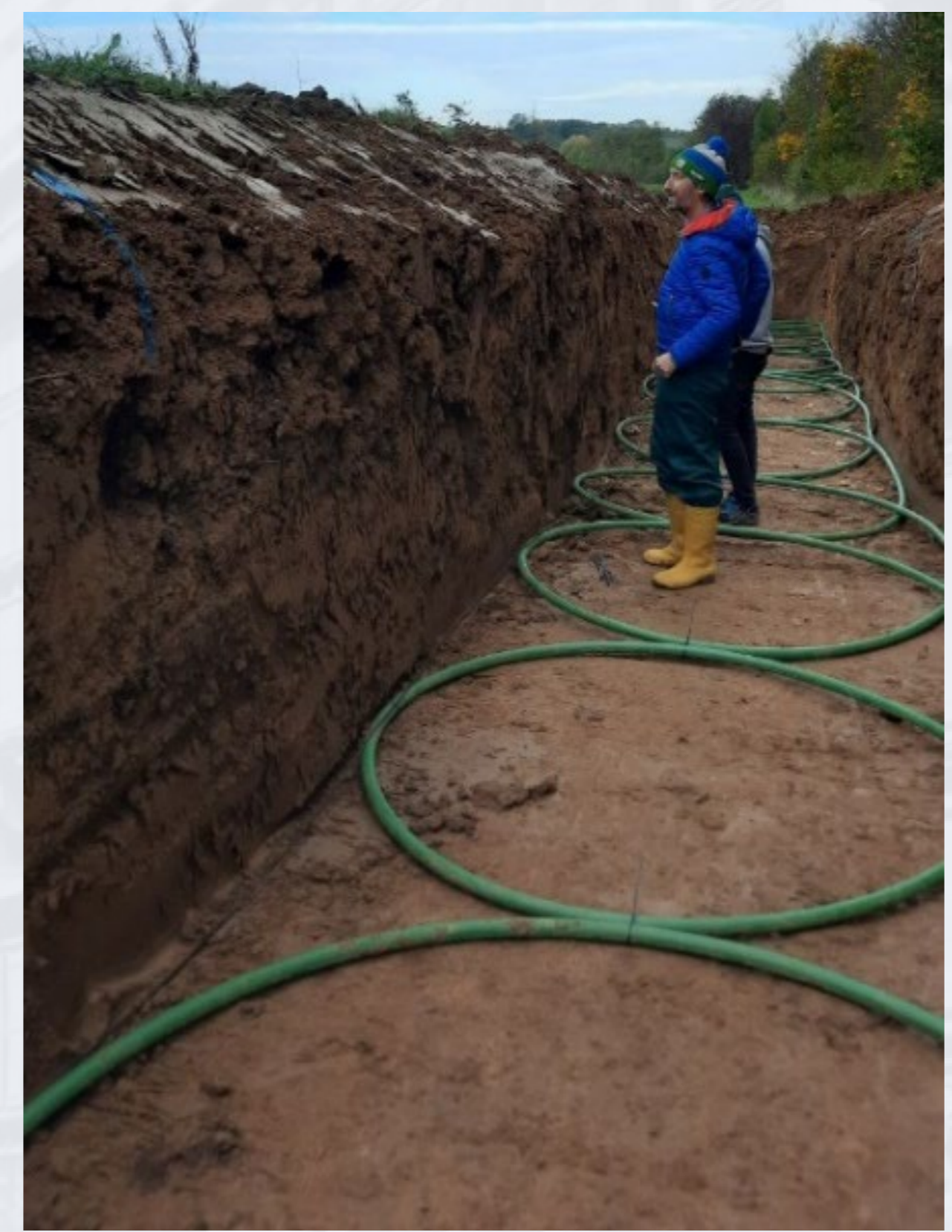
# ❖ Who are the European Centers of Excellence (ECoE)?

## Central ECoE



University of Erlangen-Nuremberg, Erlangen, Germany  
<https://www.fau.de/>

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# ❖ Who are the European Centers of Excellence (ECoE)?



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## East ECoE



# ❖ Who are the European Centers of Excellence (ECoE)?



UNIVERSITÀ  
DEGLI STUDI  
DI PADOVA

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## South ECoE



# ❖ How will the European Centers of Excellence (ECoE) Meet their Objectives?



## ❖ What has been accomplished by the European Centers of Excellence (ECoE)?

### ECoE Course (As an example)

- **High-level scientific course** organized by ECoE in shallow geothermal energy on **September 25th and 26th, 2023**
- Targeted students at the **Master's level, postgraduates, and PhD students**
- Conducted in a **hybrid format** at the **headquarters of the four ECoE member organizations**
- Instructors included **prestigious scientists, researchers, and university professors**
- Featured **four modules**, each lasting 2 hours and 30 minutes (two modules on each day)
- Over **60 participants** received the **Diploma of Attendance**
- Graduates gained **access to a comprehensive training manual**
- Graduates have **ongoing access** to updates in the shallow geothermal field and **direct contact** with ECoE specialists

## ECoE Course (September 2023)

Country	Registered
Ethiopia	1
Germany	3
Greece	11
Ireland	3
Italy	25
Lithuania	1
Macedonia	1
Mexico	2
New Zealand	1
Norway	1
Peru	2
Portugal	2
Romania	31
Slovenia	1
Spain	26
Switzerland	2
Turkey	6
Ukraine	2
United Kingdom	2
<b>Total</b>	<b>123</b>

Place	Attendance
Italy ECoE - Padova Università di Padova	6
Romanian ECoE - Oradea TERMOLINE Company	10
Spain ECoE - Valencia – Universitat Politècnica de València	3
Online	61
<b>Total</b>	<b>80</b>



# ❖ NEXT THREE-YEAR PRELIMINARY ROADMAP

Year	Month	Actions	Addressed stakeholders	Cooperating organizations
2024	February - March	Action organized independently by each ECoE according the local technical / scientific interests (at national or regional scale)		GEO4CIVHIC partners, Universities, SMEs, local / central authorities.
	May - June	ECoE workshop “Historical buildings”		
	October - November	ECoE course (replication of the training course held in 2023)	High level Studentes (MS’C, PhD and PostDoc)	GEO4CIVHIC partners
2025	February - March	Action organized independently by each ECoE according the local technical / scientific interests (National or Regional scale)		
	May - June	ECoE workshop “Energy from the Ground”		
	May-July	“Geothermal Urban Energy Communities” Conference		
	October - November	ECoE course (replication of the training course held in 2023)	High level Studentes (MS’C, PhD and PostDoc)	GEO4CIVHIC partners
2026	February - March	Action organized independently by each ECoE according the local technical / scientific interests (at national or regional scale)		
	May - June	ECoE workshop “Geothermal city planning”		
	October - November	ECoE course (replication of the training course held in 2023)	High level Students (MS’C, PhD and PostDoc)	GEO4CIVHIC partners

# THANK YOU

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