

GEO4CIVHIC SUMMER SCHOOL 2023

Heating and cooling our buildings with green energy

CONCEPT NOTE

28 September 2023 - Venice, Italy

Rationale

Energy is at the core of the 2030 Agenda. As identified by the UN Conference on Sustainable Development - RIO+20, there is a need to address energy as the main and critical driver of sustainable development and the new global climate change deal (the Paris Agreement). Renewable sources of energy are considered to be a powerful solution to increase diversity of energy supplies while reducing environmental impacts and mitigating climate change affects. Their use in place of fossil fuels can substantially reduce greenhouse gases and other pollutants. The diffusion and deployment of newly developed renewable energy technologies into markets are particularly important for renewable energy market acceleration. UNESCO has a specific mandate on science upon which it advocates for renewable energies, giving priority to sustainability within the use of renewable energies and the provision of related policy advice; the Organization develops national and human capacities and disseminates scientific knowledge and technology upon the topic. Given the growing awareness of the role that renewable energies can play in the global energy system, many scientists started developing renewable projects. UNESCO Regional Bureau for Science and Culture in Europe took part in the GEO4CIVHIC project dedicated to developing shallow geothermal energy systems.

[GEO4CIVHIC \(Most easy, efficient and Low Cost Geothermal Systems for Retrofitting Civil and Historical Buildings\)](#) is a 4-year lifespan Innovation Action project, funded by the European Union's Horizon 2020 Research and Innovation Programme under the grant agreement № 792355. The project further expands the main outcomes of the previous EU Horizon 2020 project, Cheap-GHSP, which worked to increase the inherent potentiality of shallow geothermal power systems for heating and cooling purposes. This project contributes to the promotion of sustainable development through the achievement of several Sustainable Development Goals, namely SDG 7, 13 and 11.4.

The overall technological approach is to reduce cost, increase efficiency and ease installation of each of the main components of the geothermal energy systems. Within the project, innovative new geothermal heating and cooling systems were designed to replace old and inadequate heating systems at the 4 real demonstration sites under different climatic conditions and backgrounds. Three are historical buildings (based in Italy, Ireland and Malta) while the remaining is residential (based in Belgium). To install GEO4CIVHIC systems, drilling machines tailored specifically for the built environment were used. UNESCO Regional Bureau for Science and Culture in Europe is involved in the historical building of Angel's Gate in Ferrara (Italy), a UNESCO World Heritage site, and supports the project which communicates the added value of geothermal heating and cooling systems. Newly developed renewable energy technologies are key solutions for the mitigation of climate change and the promotion of sustainable development. Involving and engaging young students and researchers is vital for the achievement of the Sustainable Development Goals as youth are and will be future actors and leaders. Education and training are a priority for UNESCO to develop the necessary skillset in future experts. Provided with necessary skills and knowledge, young people can be a major driving force for implementing more sustainable and green energy systems.

Objectives

The [summer school](#) for students and young scientists will explore sustainable energy technologies developed within the GEO4CIVHIC project, along with the opportunities and challenges of applying sustainable energy to residential and historical buildings. Therefore, the event is expected to fulfil the following objectives:

- Build necessary skills and facilitate knowledge transfer to the youth on renewable energy solutions, including shallow geothermal systems;
- Foster youth's engagement in dialogues and discussions on the implementation of geothermal energy technologies by integrating the promotion of renewable energy technologies in their educational practice;
- Strengthen UNESCO's regional network of young leaders;
- Stimulate and support innovative renewable energy initiatives by showcasing achievements of the GEO4CIVHIC project in enhancing shallow geothermal technology in built environments;
- Strengthen the dissemination of information and know-how on sustainable energy potentials in the construction field and in particular for UNESCO designated sites and cultural heritage in general.

Methodology and Programme

The summer school is composed of 3 sessions:

1. A keynote on renewable energy and geothermal systems, and presentations from experts on geothermal systems and application of solutions;
2. Poster session with GEO4CIVHIC demonstration site managers from Europe;
3. Roundtable discussion on education and career paths and new project ideas.

The summer school will bring the experience of GEO4CIVHIC project to the course and will discuss the various technologies developed and their practical application specifically for each demonstration site. A poster session will enhance discussion and allow students to be highly interactive and encourage them to pose questions directly to project members involved in developing each demonstration site, share comments and ideas with them exploring the best approaches to renewable energy implementation. The event envisages group activities (e.g. ice breakers and discussions) to reflect knowledge and skills obtained by students during the summer school. Lectures will include experts and project partners, selected to present a particular subject and drive discussion. The diversity of speakers will ensure overall quality and will motivate the participants to be fully engaged in discussions: the workshop will gather various renewable energy sector stakeholders, including geologists, engineers and technology experts, scientists and professionals actively operating in the implementation of shallow geothermal systems, plus UNESCO officers. The young participants, interested in energy and the environment, will be able to interact with the speakers.

Dates and venue

The summer school will take place on **28 September 2023** from 9:30 to 17:00 at UNESCO Regional Bureau for Science and Culture in Europe, Palazzo Zorzi, Venice, Italy. The summer school will be organised on the basis of a hybrid model combining on-site meeting with an online webinar.



Eligibility

The summer school is intended for secondary school students during their last 2 years of their studies, as well as university students (Bachelor's degree) in their first and second year, seeking career paths in geothermal energy. The course is intended for students with a basic understanding of sustainability, clean and renewable energy.

Language

The workshop will be delivered in English.

Organisers

This event is organised by [UNESCO Regional Bureau for Science and Culture in Europe](#) together with the project coordinator the [Institute Of Atmospheric Sciences And Climate – National Research Council](#) (CNR-ISAC) and project partners [Universita' Degli Studi Di Padova](#) (UNIPD), the [Research And Environmental Devices S.r.l.](#) (RED S.r.l.) and [Terra Geoserv Limited](#) (GEOSERV).

Application form

Interested participants are requested to apply [here](#) by 15 September 2023.

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