In 2018, the negotiation process for the European Union’s post-2020 climate and energy framework is coming to an end. The discussion had recognised geothermal as a relevant energy source for the future of Europe.

This year, EGEC celebrates its 20 years of activity. To mark the occasion, EGEC publishes a new declaration where we highlight the contribution of geothermal to the energy transition and the decarbonisation of the European economy.

GEOTHERMAL IN EUROPE

Within the last five years, after nearly a decade of only small development in Europe, we have witnessed a resurgence of interest in geothermal power and heat. A substantial number of projects have been developed throughout Europe, and geothermal energy is on its way to become a key player in the European energy market.

The current market conditions, however, do not allow this development, as many regulatory and financial barriers still need to be removed. A new generation of geothermal technologies is also needed for answering the challenges that the European energy system will face in the next few decades.

If the energy transition is to be successful, we have to think about optima scenario in terms of both costs and affordability, for customers and citizens. As a local and stable source of renewable energy, geothermal will be a key enabler for the decarbonisation of our economy and with a crucial role to play in the future energy system.

A LONG HISTORY

Geothermal development in Europe dates back more than a century but, up to present day, only a tiny portion of its potential is explored and used in Europe. The market is still at the infancy stage. Increasing the use of geothermal energy and strengthening the geothermal industrial sector, will allow a substantial reduction of CO2 emissions, the saving of primary energy, and the creation and sustainment of a work force with considerable skill levels.

The first geothermal power plant dates back to 1913, but development has been really low until the seventies. The growth during the last thirty years, although lower than the one experienced by other renewable energy sources, has been noteworthy. When looking at the current capacity deployment, which reached a capacity of 2.85 GW, we can be sure that it is just the beginning of a much larger development.

The heating and cooling sector represents half of our energy demand and, with the growing need to decarbonise this share whilst securing the provision for heating at an affordable price for consumers, geothermal is becoming more and more attractive as a competitive renewable heating source.

The first regions to install geothermal heat systems in Europe (Iceland, France, Hungary) were those with the best hydrothermal potential. However, with new technologies and systems, there is an increasing batch of regions that are developing geothermal technology for heating and cooling applications. Systems can be
small (from 0.5 to 2 MWh) or large, with capacity of 50 MWh. In 2018, around 300 geothermal district heating systems are in operation, and thousands of applications for the agri-food industry, fish farming, balneology or recreational and leisure, are running based on geothermal.

Around 20% of the EU population is located in regions where the temperature at 2000 m deep is higher than 60°C, so are directly suitable for geothermal heating and cooling.

The potential of shallow geothermal energy is also significant. Shallow geothermal energy is available everywhere. More than 2 millions units of shallow geothermal systems are installed in Europe today.

Often forgotten today, one of the main arguments for the promotion of renewable energy sources in Europe is their local aspect. The local production of energy leads to a decentralised approach and a reduction of system costs. It also ensures security of energy supply with carbon free sources. Having a local production of energy empowers the consumers who also become prosumers. The choice of the energy mix can therefore be more democratic.

A SMART FUTURE

We are surrounded by several inexhaustible energy resources that would allow us to meet our energy needs and those of future generations without taking uncontrollable risks with the life and well-being of our planet.

A single technology, a single renewable energy can never meet this demand alone. Each alternative has its specific advantages and disadvantages and has to be applied intelligently by targeting those places where it can deliver at its optimum strength, in synergy with other technologies. If used in combination, renewable energy sources have a chance to meet the current energy demand, especially for heating and cooling, a sector which represents half of the final energy demand in Europe.

We cannot look at an energy technology without considering its integration in the energy system and its role within the economy anymore. This is where the role of geothermal comes more into play.

Geothermal is truly a local source of energy, which can produce power and heat for cities, industries, and rural communities. Geothermal fosters local economic development through many indirect positive effects, such as jobs creation and air quality.

In the power sector, it will be a stabilizer ensuring security of supply for the grid and the society. Geothermal power plants could be developed in all European regions. This should be taken into account in the current reform of the market design, adding a regional dimension between the centralised and decentralised approaches.

The structure of the heating and cooling sector is more complex than the one for electricity, but geothermal has a key role to play for its decarbonisation. From the many technologies and sources available, the market will decide the optimal mix of energy sources for each region. Together with other renewables, geothermal will offer solutions for a clean, competitive and secure heating, cooling and domestic hot water for buildings and the industry through major technologies such as geothermal district heating systems and industrial applications.

A sustainable energy transition needs a coherent mix in all energy sectors, which cannot be accomplished without the versatile, key contribution of geothermal energy.

Europe has been a global leader in the geothermal sector for decades. We should aim at maintaining this global leadership and at further expanding it by developing the next generation of geothermal technologies.

The European geothermal industry is up to the challenge of maintaining this leadership, delivering affordable energy and constant innovation to achieve this goal.