



POSITION PAPER

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EGEC welcomes the European Commission's proposal on a Strategic Energy Technology plan. While not enough references are made for the heating & cooling sector.

EGEC shares the recommendations of the SET-Plan to develop geothermal energy:

- Establish a Coherent financial support mechanisms
- Initiate Additional incentives
- Adopt Appropriate regulations, standards, permit procedures
- Develop RD&D support
- Promote International collaboration and centralisation of existing knowledge
- Launch Vocational and training programmes

The sector of heating and cooling represents approximately half of the EU's final energy consumption and it is not enough addressed.

The geothermal heating and cooling is increasingly based on the use of ground source heat pumps (GSHP). It is a source of energy of growing popularity, with an excellent feed back from the leading countries. This energy answers to different energy needs: heating, cooling and hot water production. The shallow geothermal energy with ground source heat pumps, can be present virtually everywhere in Europe (and the world) and is permanently available for heating and cooling. It saves from 40 to 80% of the energy bill, and is largely independent of the conventional energy price.

As mentioned, some of the main instrument to achieve a sustainable growth of Renewable Energy Source Heat (RES-H) are technical guidelines, standards, and training (creating the necessary skilled workforce).

This assessment leads to adopt the following objectives:

- Development of education and of appropriate training structures;
- Creation of a EU-wide certification scheme for both planners and installers of GSHP
- Defining of and assistance in development of the necessary EU-wide technical standards
- Dissemination of results through operation networks.
- Create new geothermal businesses and sustain a growing market

And, EGEC proposes to add **Geothermal Power Production everywhere through EGS** in the *Key EU technology challenges for the next 10 years to meet the 2020 targets*:

1) Why should it be an EU initiative in the SET-Plan?

After more than 30 years of R&D efforts, electric power generation using EGS technology now for the first time can be demonstrated in a pilot plant (Soulz-sous-Forêts, France). However, to unleash the full potential of EGS, a concerted action is required to transfer the technology from the one site to other sites in similar geological situation and later to sites in all possible geological framework.

The major problem with proliferation of EGS is the high cost of drilling. On the other hand, without a first drilling for a new site, the technical viability of a plant on a new site cannot be judged. Without a massive support of exploration, drilling and completion of deep wells on new sites, the replication of the EGS principle as demonstrated in Soultz cannot be done.

Business as usual here would mean to limit geothermal power production to the few high-enthalpy areas in Europe, or to the low-temperature binary systems. A major effort to introduce EGS, on the other hand, could create a substantial base-load electric power production, as geothermal energy is available independent from the time of day or year, of climate, weather, etc.

R&D still will be required to improve the system, even after being a proven technology. The initial cost is a barrier, European consortia might be established to overcome this barrier and exchange experiences.

A steady increase in geothermal power production could be expected in all EU countries.

2) Main objectives of the initiative

The sole objective of the initiative would be to proliferate the technology of Enhanced Geothermal Systems (EGS), from the one European R&D- and pilot-site in Soultz-sous-Forêts (Alsace, France) to other Member States and to different geological situations.

A target of the initiative will be **to create about 20 (a minimum of 15) operating EGS power plants**; the first group within geologically similar regions (Graben areas with lateral stress fields, e.g. Upper Rhine, Rhone, Limagne), the second group in other regions with favourable conditions (geothermal anomalies, crystalline rocks in suitable depth, tectonic stresses), and the third and last group in regions without any special advantage for EGS use. Milestones could be set in such a way that at least 3 plants have to be finished successfully in each category, before the practical work for the respectively more difficult regions starts; theoretical and geoscientific work could be done for all of Europe simultaneously.

Each power plant should have an installed capacity of at least 5 MW_{el}, with increasing size for replication of plants in similar category.

The goal should be to have at the end of the program about 200 MW_{el} of installed power operational, producing base-load energy with a load factor of >90%, and thus generating about 1580 GWh of electricity each year.

The amount of power produced through this plants will be ca. 4% of the goal of 41 TWh/a for 2020 as set forth in the EGEC targets, and would amount to about 20 % of the geothermal power produced currently in the classical high-enthalpy geothermal power plants.

3) Main elements of the initiative

The main element would be the construction of demonstration plants for the EGS-technology, based on the European EGS project in Soultz-sous-Forêts as a pilot plant. Due to the differences of the underground situation, each of the demonstration plants will also be a kind of pilot plant in new geological surroundings. Thus the boundary between pilot and demonstration character is not sharp, and a lot of R&D will be required to make the new plants possible. Also R&D is required for the understanding of the behaviour of the rocks at great depth and under stress, while artificial fracturing is run in order to create the necessary underground heat exchanger (e.g. for avoiding seismic events).

In the course of the identification and investigation of suitable sites, a linking of existing geoscience information at national or regional level, at research centres, universities, geological surveys, etc. should be attempted. A common European geoscience data platform could substantially support the application of EGS technology throughout the Member States, and will also be of great help for other geothermal technologies yet on the market.

Sincerely Yours,

Burkhard SANNER
EGEC President

A handwritten signature in black ink, appearing to read 'B. Sanner', written in a cursive style.