



# EGEC

## European Geothermal Energy Council

Renewable Energy House  
63-65 rue d'arlon  
B-1040 Brussels  
Belgium

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### **EGEC's response to the EC Public consultation exercise on the European Strategic Energy Technology Plan (SET-Plan)**

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EGEC welcomes the intention and initiative of the European Commission to show the path towards a European Strategic Energy Technology Plan.

EGEC is committing itself to actively support a transition into an energy economy which is fair to all EU citizens, provides a level playing field for all actors on the EU scene, and aims at the goals of efficiency, sustainability, security and conservation of the local and world-wide environment.

EGEC hence will co-operate with all levels of EU politics, administration and industry to achieve these goals.

#### **What is your opinion about the need for a European Strategic Energy Technology Plan (SET-Plan)?**

EGEC supports the idea of a European SET Plan. It could permit geothermal energy to reach ambitious targets for 2020 (14 TWh –electricity, 8 Mtoe heating & cooling).

Geothermal energy is one of the possible topics for this Plan on strategic energy technologies, both for electric power and in the heating and cooling sector. With geothermal energy, also the otherwise difficult base-load part of the renewable energy supply can successfully be met.

Although geothermal energy has a quite some research tradition, there are still many fields that need a further development. Since geothermal power generation is still in its infancy, considerable cost reductions must be achieved. This applies to the exploration and exploitation of the geothermal resource, as well as to the energy conversion technologies best suited for geothermal power plants. Intensive research and development work is to be done also to

speed up the progress of electricity generation, geothermal district heating and shallow geothermal heating and cooling installations, in order to reach the desired targets.

Furthermore, continuing R&D and increased investments are needed to develop innovative concepts for geothermal energy in agriculture, aquaculture, drying processes, desalination, absorption cooling, storage of heat and cold...

### **What elements do you think are essential for the success of the SET-Plan?**

All renewable energy technologies have to be taken into account in the SET plan, in order to create the necessary impact of renewable energies for the total energy supply.

In this framework, geothermal energy is the only renewable energy resource that can deliver heat and power 24 hours a day in a large scale, independent of external factors like weather and season. Its big advantage therefore is that it can be used as basic load in the energy supply system. Besides this, the geothermal energy resource is nearly infinite and ubiquitous.

All relevant actors of the geothermal sector have to be involved : Geothermal associations, Trade & Industry Associations, Geothermal Consultants, Geothermal construction companies, Research institutions, Component manufacturers, Drillers, Investors, Government agencies.

All areas of the technology innovation progress have to be taken into account: technical, financial, legal, social and economical issues.

General areas to be considered are: Exploration, Exploitation, Economy, Environmental and Social Impacts. Some specific elements to be named include : Development of holistic concepts for the management of geothermal resources, a combination of investment funding and feed-in support, technologically an optimized combination of house heating and cooling ; Systems analysis: impacts on society (acceptance, availability, cost calculation, CO<sub>2</sub> reduction aspects,...).

Specific attention needs to be devoted to education and information: teaching at all levels (with emphasis on formation and training of technology specialists), public outreach (to increase the level of knowledge about the potential and benefits of geothermal energy in the general public as well as of decision makers).

### **What kind of new actions and measures could accelerate the energy technology innovation process?**

To reach a goal of 25 GW<sub>el</sub> and 50 GW<sub>th</sub> installed capacity in the year 2030 (a further substantial increase over the 2020 targets) we have to scale up investment in geothermal energy technology. As geothermal energy is still away from being competitive in all of the member states (it can be so in certain areas already), there is a certain need for investment by the European Union. A support by the EU means continuity in research activities.

## R&D Targets :

Low to Medium Temperature Zones : Priorities are on heat pumps and non technical issues, like guidelines, regulations, infrastructure (training of installers and planners), promotion...For geothermal district heating, the priorities are to improve site assessment, to modernise existing and to build new plants, to employ innovative components (pumps, heat exchangers), and to optimise the networks.

Medium to High Temperature Zones (EGS Enhanced Geothermal Systems) : Being able to exploit the medium to high temperature zones is of particular importance for Europe. The objective is to reduce the costs for the installation of geothermal plants by at least a factor of three. Fields of costs' reductions are: exploration, drilling and completion, reservoir stimulation, heat to power conversion. Heat and Power Cogeneration is also an issue. It will be essential to determine realistic recovery factors, by theoretical studies and field tests.

Supercritical Zones in Geothermal Fields : Such reservoirs could deliver very high enthalpy fluids with high flow rates due to the low viscosity of supercritical water – this is a field for increased basic research, as well as questions like the impact of geothermal energy on the regional geological stressfield, etc.

Experiments are currently underway to demonstrate the production of geothermal electricity from heat stored deep underground in a variety of rock formations. Geothermal research is generating results that can be applied in other domains, for instance, in material durability, where experimental results from geothermal projects can help in assessing the corrosion resistance of the components exposed for long periods to the hot water from the bottom of the borehole.

There is a special need for more demonstration plants :

\_\_\_ Pilot plants: These plants will demonstrate the “normal” use of geothermal energy as reliable heat and/or power producer, and should be implemented in the public heat and/or electricity net. They serve as test platform (e.g. for an energy supplier) and will deliver first of all operating data and experience. Furthermore, optimisation can be done here under normal operating conditions.

\_\_\_ R&D test facility (or plant): There is a further need of these platforms for knowledge transfer to young scientists and for testing several new technology, e.g. new stimulation, operation and monitoring techniques, etc.

## **Are you aware of any on-going or planned initiatives that the SET-Plan could build upon?**

In different fields of geothermal energy, networks and R&D project consortia have formed over the last decade. A large consortium for work on EGS, the currently most advanced geothermal technology, has been formed in the ENGINE project. For geothermal heat pumps, the project GROUNDREACH combines important players. Associations like EGEC and the IGA European Branch can jointly bring together these groups and the actors outside the consortia; events like the European Geothermal Congress 2007, EGEC business seminars, smaller workshops,

internet websites, etc. already provide the necessary infrastructure on a modest scale (and can be a starting point for increased coordination activity).

Under the leadership of EGEC (representing the geothermal industry), the geothermal sector had started the discussion on a Geothermal Energy Technology Platform. Together with the relevant research institutions and project consortia (see above), and taking on board the many SMEs active in development and planning of geothermal energy systems, a platform could be created to formulate targets and monitor success of geothermal R&D in future.

The R&D and technology development needs also to result in guidelines and standards, in order to facilitate the deployment of new or improved geothermal technologies, and to allow for a steady and harmonised growth of geothermal energy supply throughout all of the EU. Here the geothermal associations in industry and science, on a national and European level, have already started relevant actions more than a decade ago; building upon existing structures (EGEC, national associations like GtV, SVG, etc.), and in cooperation with the relevant standardisation institutions (CEN and national organisations), the process of creating EU-wide technical standards for the efficient and ecologically sound use of geothermal energy has to be scaled up and supported.