

European Commission's Public Consultation on "The Future of Carbon Capture and Storage in Europe"

EGEC Responses

Brussels, 2nd July 2013

EGEC, the European Geothermal Energy Council, was founded in 1998 as an international non-profit association in Brussels, with the aim of promoting the use of geothermal energy. EGEC has more than 129 members from 28 European countries: private companies, national associations, consultants, research centres, geological surveys and other public authorities.

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KEY MESSAGES

- **All Member States should develop a clear roadmap on how to restructure their energy sector, including electricity and heating and cooling, towards non-carbon emitting fuels;**
- **As part of this roadmap and in line with the European Parliament's resolution ([2011/2309\(INI\)](#)), public authorities should introduce underground regional planning in order to optimise underground resource allocation, avoiding conflicting uses, and hereby maximising the benefits of our underground resources for society;**
- **CCS should apply, as a bridging technology, if no alternatives exist, such as for energy-intensive industry (steel, cement, glass, iron, etc.) and should privilege off-shore storage sites, for instance in the North Sea;**
- **the CCS exploration licence must be granted for a defined area and for a specified period of time;**

- **The area and the duration of the license should be appropriate** for the size and type of the project as it happens in the oil and gas industry;
- **100% of the ETS auctioning revenues should be earmarked for climate mitigation, giving priority to emerging renewable energy technologies;**
- **The European Commission should promote a research collaboration to start immediately between the Geothermal and CCS communities** in common areas of interest in order to decrease costs and solve some environmental issues.

- **1) Should Member States that currently have a high share of coal and gas in their energy mix as well as in industrial processes, and that have not yet done so, be required to:**
 - a. **develop a clear roadmap on how to restructure their electricity generation sector towards non-carbon emitting fuels (nuclear or renewables) by 2050,**

The European Geothermal Energy Council (EGEC) believes that ALL Member States should be required to develop a clear roadmap in line with the objective of reducing GHG emissions by 80 to 95% by 2050 compared to 1990 levels;

This roadmap should take into account all options available and should not only be based on LCoE (Levelised Cost of Energy) of single generation technologies only. Instead, all externalities and system costs (including expansion of grid infrastructures and back up required) should be fully taken into consideration; In this regard it should be noted that Geothermal electricity can be produced as a base-load renewable resource, meaning it can run 24 hours per day as it is immune from weather effects and does not show seasonal variation. The base-load characteristic distinguishes geothermal from several other renewable technologies that produce variable power;

The decarbonisation of the EU economy requires a holistic approach. Hence, this roadmap should be extended to cover the entire energy sector, including heating and cooling Heating and cooling represents today some 47% of the final energy consumption in the EU, either for domestic or industrial purposes. Hence, it is by far the largest energy end-use sector. The vast majority (81%) of heating is today produced through the combustion of fossil fuels, while cooling is predominantly produced from electricity-driven processes and, therefore, also largely relies on coal and gas. This is why the current heating and cooling system is not only boosting costly imports of fossil fuels into Europe, but is also major contributor to the overall EU's greenhouse gas emissions.

| Fuel | Energy generation :TWh | |
|-------------|------------------------|------|
| | Electricity | Heat |
| solid fuels | 827.8 | 216 |
| petroleum | 86.3 | 52,3 |
| gases | 789 | 288 |

Conventional fuels are also representing a large share of the H&C sector (around 80%)

Source: Eurostat 2012

As part of this roadmap and in line with the European Parliament's resolution ([2011/2309\(INI\)](#)), public authorities should introduce underground regional planning in order to optimise underground resource allocation between geothermal energy, shale gas, carbon capture and storage (CCS) and possible other possible underground uses, and thereby maximising the benefits of our underground resources for society.

There is obviously conflicting potential as a result of the competition between CO2 disposal and geothermal energy projects because they may target the same deep aquifers, or the same areas within sedimentary basins. Geothermal energy may also be produced from rocks below the depth range for potential CO2 disposal sites, and investigations are needed to determine if geothermal exploitation beneath CO2 deposits might be feasible at all.

Carbon capture and storage is essentially a bridging technology whereas geothermal energy is a sustainable energy resource. Zones of dual use capability should be clearly identified and priority should be given to their use for geothermal energy over their use as a carbon storage site.

EGEC foresees an important development of geothermal energy in the future and especially after 2030 when Enhanced Geothermal Systems will be a widely-used technology. The increase of a renewable energy source, a long term solution, must not be hampered by a technology, CCS, which has the potential only to serve as a temporary, interim GHG mitigation measure.

b. develop a national strategy to prepare for the deployment of CCS technology.

In developing any strategy for the deployment of CCS technology, it is of the utmost importance to take into account the following elements:

- CCS should apply in particular if no alternatives exist, such as for energy-intensive industry (steel, cement, glass, etc.);
- As mentioned in the background Communication to this public consultation (COM (2013)180), there is a promising storage capacity in the North Sea. Hence, CCS should use privilege off-shore storage sites wherever feasible in order to avoid conflicting uses of the underground, to optimise underground resource allocation on-shore, and thereby maximising the benefits of our underground resources for society;
- As natural gas, carbon dioxide is a sensitive fluid which needs to be stored in safe conditions with an impermeable cap to avoid migration;

- the CCS exploration licence must be granted for a defined area and for a specified period of time;
 - The area and the duration of the license should be appropriate for the size and type of the project as done in the oil and gas industry;
- **2) How should the ETS be re-structured, so that it could also provide meaningful incentives for CCS deployment? Should this be complemented by using instruments based on auctioning revenues, similar to NER300?**

100% of the ETS auctioning revenues should be earmarked for climate mitigation, giving priority to emerging renewable energy technologies, including Enhanced Geothermal Systems, and if needed, adaptation.

This is the only way to ensure that this revenue stream will be used to price CO₂ and reduce emissions. The ETS should use all its intrinsic tools to reach that objective and the auctioning revenue is one of these tools. The current commitment by EU Member States to use 50% of that auctioning revenue for climate mitigation and adaptation is welcome, but doesn't go far enough. It integrates several loopholes, not least is its non-mandatory nature.

Furthermore, at least part of this revenue should be used and managed at EU level. This would ensure a better traceability of used funds and transparency of allocation process. The "NER300" scheme is a good example of how revenues can benefit the EU at large, instead of a single Member State. A repetition of such a programme, albeit with some modifications to ensure a closer reflection of current technologies, should certainly be considered.

- **3) Should the Commission propose other means of support or consider other policy measures to pave the road towards early deployment, by:**
- a. support through auctioning recycling or other funding approaches
 - b. an Emission Performance Standard
 - c. a CCS certificate system
 - d. another type of policy measure

The European Commission should promote a research collaboration to start immediately between the Geothermal and CCS communities (including the oil & gas sector for some issues) on common areas of interest in order to decrease the costs and resolve environmental issues:

- drilling stimulation and reservoir assessment, 3D & 4D modelling, deep geological mapping (1-5 Km);
- Creation of a Fund for covering the drilling risk;

- monitoring of micro-seismicity;
- a research programme should be launched on permanent fixation of CO₂ in the form of calcite in basaltic rocks.

■ **4) Should energy utilities henceforth be required to install CCS-ready equipment for all new investments (coal and potentially also gas) in order to facilitate the necessary CCS retrofit?**

CCS should be used only if no alternatives exist, but when installing new coal and gas power plants, Energy Utilities must be required to install a CCS system.

■ **5) Should fossil fuel providers contribute to CCS demonstration and deployment through specific measures that ensure additional financing?**

Fossil fuel providers can contribute to research collaboration, notably in those areas of interest areas common to Oil & Gas, CCS and Geothermal in order to decrease the costs, e.g. drilling costs and resolve environmental issues.

■ **6) What are the main obstacles to ensuring sufficient demonstration of CCS in the EU?**

As clearly shown in the background Communication (COM (2013)180), CCS has proven to be too costly even for demonstration scale projects. More sustainable, reliable and competitive alternative exists, namely renewable energies.

■ **7) How can public acceptance for CCS be increased?**

In order to increase public acceptance, CCS should be limited to sites where competition with more sustainable underground resources, e.g. geothermal energy, does not happen. CCS should especially privilege off-shore storage sites wherever feasible, notably in the North Sea, where a concrete potential exists (as explicitly mentioned in this Communication).
