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European Commission
Directorate General Energy
Unit C1 – Renewables and CCS
Rue De Mot 24, B-1049 Bruxelles
Belgium

Ref.: Not available.

Central Europe Energy Partners
Rue Froissart 123-133, Etterbeek (B-1040 Brussels).

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Central Europe Energy Partners (CEEP) is an organisation of companies and scientific institutions, mainly from Central Europe, involved in the energy sector within the European economy. It was established three years ago, (June 2010), and has got, right now, 19 members from 6 countries representing 330,000 employees, and an overall turnover in excess of Euros 34 billion. CEEP is very active at the EU level, (see the activities of CEEP on the website: www.ceep.be).

CEEP's position on clean coal technologies and CCS, set out below, represents the opinions of its members from the energy sector.

Clean Coal Technologies & Carbon Capture and Storage

1 General remarks:

The Communication identifies all of the most important reasons for lack of any significant progress in the field of capture and storage technology in the EU which are as follows:

- **Lack of cost competitiveness** – the Commission attributes the lack of a business case for CCS deployment to the low cost of the ETS allowances, which indirectly proves that CCS is not commercially viable in the present economic situation.
- **Very limited public acceptance for the CCS** concept, in particular, the idea of storing the previously captured CO₂ underground, which, according to the authors of the Communication, results from the unsatisfactory level of awareness of CCS's potential to reduce emissions from industry,
- **Lack of legal support for CCS technology** – some Member States have introduced legal bans for CO₂ storage¹, and still there are no legal solutions concerning the

¹ According to the data of Global Carbon and Capture Institute and the CGS (Pan-European coordination action on CO₂ Geological Storage) nine countries have now prohibited CO₂ storage permanently in their territory, except for research purposes (Estonia, Ireland and Finland), or temporarily (Austria, Czech Republic, Latvia, Poland, Sweden and onshore Denmark). Italy, Belgium and Greece have not permitted storage in selected areas of their respective jurisdictions. Germany has limited the amount of CO₂ that can be stored and the law has included a clause which will

responsibility of States for storage of CO₂ for thousands of years ahead or insurance for such responsibility.

- **Lack of the adequate transmission infrastructure** – at present there is no infrastructure in the EU which would allow for transporting the captured CO₂ from the industrial installations to the storing sites.

The Communication envisages introduction of several instruments which would support and speed up the development of CCS technology in the EU in nearest future, such as: a system of CCS certification or Emission Performance standards. **Neither of the proposed solutions is acceptable or should be taken into the consideration at the EU level.** Also, the idea to impose the additional financial burden on the providers of fossil fuels that, according to the Communication, should allow the creation of a new CCS development fund might be seen as a move towards actual elimination of coal and gas power plants from the EU's technological portfolio.

On the other hand, the certification system should be rejected on the ground of introducing de facto additional tax for those entities already covered by the ETS system, and double taxation is something that should be avoided. Furthermore, the introduction of the CCS certificates would most likely further undermine the operation of the ETS scheme.

There is not enough evidence that in the EU there is sufficient storage capacity to implement CCS on the industrial scale. Other thing worth mentioning is the level of security of potential storage sites, which is the main reason for a lack of public acceptance for this technology, or even a lack of legislative agreement for CCS in some of the Member States (despite partial implementation of CCS Directive)².

1.1 Energy security issues

Introduction of emission performance standards for CO₂ would, in practice, rule out development of any new coal-fired power plants, unless accompanied by significant government subsidies in the development of CCS technology. Emission performance standards would de facto preclude coal-based technology from the energy-mix, which would run counter to the EU's principle of technological neutrality, and against the right of each EU Member State to decide on its preferred choice of energy-mix. More importantly, the EPS would seriously hinder the security and reliability of supply. An arbitrary introduction of an EPS without recognition of various operating regimes of power supply – peak, medium and base-load, would hinder the flexibility of electricity supply. Introducing emission standards for CO₂ would directly restrict coal-fired power generation, while neglecting the long-term penalties for the EU power generation fuel mix and energy security. Responding to climate change and reducing CO₂ emissions cannot go against far-sighted thinking and investment that recognises the necessity of secure supplies of affordable energy sources.

The estimates by the International Energy Agency (IEA) prove that coal will continue to be the main energy source for power generation in the next decades. It is thus necessary that regulatory frameworks to address climate change, also guarantee energy security through a role for coal in the overall mix. As long as CCS is not commercially viable, which is unlikely to happen during this decade, the EPS, or any other type of CCS obligation would hinder gas power plants as well.

allow German states to ban geological storage.

Source: http://www.co2geonet.com/UserFiles/file/Open%20Forum%202013/Presentations/9-April/1_8_Shogenova.pdf

² According to the data of the CGS (Pan-European coordination action on CO₂ Geological Storage) by 2013 most countries had finished transposition but only ten of them had it approved by the EC (Spain, Denmark, The Netherlands, Italy, France, Lithuania, Malta, Portugal, Romania and Slovakia). Transposition in Belgium (Wallon region), Croatia, Poland and Norway is pending.

Source: http://www.swedstoreco2.se/assets/files/Shogenova_SwedSTORE_05March2013.pdf

1.2 Efficiency losses and fuel penalty

Last, but not least, the IEA World Energy Outlook 2012 describes CCS as increasing efficiency losses, and therefore, does not consider it in its 'Efficient World Scenario'. Available studies suggest that retrofitting the existing power plants with CCS involves efficiency losses in a range of 12-14%,³ which runs counter to the EU's requirements of increasing the efficiency power generation. Therefore, CCS is not a credible option, if the EU wants rapidly to promote energy-efficient economy in line with its climate objectives. CCS not only lowers energy output, but also adds considerable costs, since a power plant fitted with CCS would require more fuel to generate the same amount of energy than a plant operating without it. A power plant equipped with a CCS system (with access to geological or ocean storage) would need roughly 10–40% more energy than a plant of equivalent output without CCS⁴.

Furthermore, the IEA modelling shows that even a fuel switch from coal to gas will not help decrease emissions to the levels necessary to reach the 2° degrees target. In order to achieve this target, without compromising energy security, the efforts should continue to retrofit the existing power plants to BAT levels to improve their efficiency. An arbitrary introduction of CCS obligation at this stage, and a subsequent fuel switch would be a major obstacle to further investment in this direction. Mandating CCS, which assumes that the technology is likely to become commercially-viable in the short-term, would have a negative economic impact and unproven long-term environmental effectiveness.

High operational costs of capture, lack of transport infrastructure, and storage liability issues.

There is not enough evidence that in the EU there is sufficient storage capacity to implement CCS on the industrial scale. Also, at present there is no infrastructure in the EU which would allow for transporting the captured CO₂ from the industrial installations to the storage sites. In addition, the uncertainty around the costs of liabilities associated with CCS, particularly liability for long-term storage, would be a major barrier to the development of CCS. Another factor worth mentioning is the level of security of potential storage sites, which is the main reason for lack of public acceptance for this technology, or even a lack of legislative agreement for CCS in some of the Member States (despite partial implementation of CCS Directive).

Therefore, before any additional legislative steps are being taken to stimulate CCS development in the EU, this technology must still be developed.

Efficiency improvements are most cost-effective and the shortest lead time option for reducing emissions from coal-fired electricity. This is particularly the case in Central Europe countries, where current power generation efficiencies are much lower and coal consumption is a very important source of energy.

Therefore, in our opinion, the European Commission should find other ways of supporting the development of CCS technology that would not be based on efforts to artificially deteriorate, by means of legislative interventions, the economics of well-established conventional solutions. Only then, might CCS technology be perceived as a serious option for emission reductions.

³ Source: IEA Energy Technology Systems Analysis Programme, Technology Brief, Oct. 2010 p. 3 http://www.iea-etsap.org/web/E-TechDS/PDF/E14_%20CCS%20draft%20oct2010_%20GS-gc_OK.pdf

⁴ Source: IPCC Special Report on Carbon Dioxide Capture and Storage, p. 4
http://www.ipcc.ch/publications_and_data/reports_carbon_dioxide.htm

2 CEEP Proposal

According to CEEP, more attention and money should be accepted for CCU, CDU and EOR technologies, and they should be in the same basket as CCS, because in the future they could be more successful than CCS.

3 Detailed remarks:

Given the complexities explained above, and in the light of the work started on the 2030 energy and climate framework and the need for an informed debate, including the issue of the determining factors for successful CCS deployment, the Commission invites contributions on the role of CCS in Europe, particularly:

3.1 Question No. 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,*
- b. *develop a national strategy to prepare for the deployment of CCS technology.*

GHG emissions should be considered on the grounds of the specific energy possibilities of particular countries, bearing in mind their economic past, geographical location, and access to their indigenous sources of energy, because affordable and stable energy prices are a boon for economic growth for the EU treated as whole.

We think that the introduction of national strategies to prepare for the deployment of CCS technology or other similar solutions are not acceptable, especially for Member States, which currently have a high share of coal and gas in their energy-mixes. Using such solutions will mean the transfer of research and development costs and pilot projects, from the level of the EU onto the levels of Member States. The scale of the financial costs concerning CCS is so large that the economies of some Member States, will not cope with this challenge, individually.

3.2 Question No. 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?

CCS technology must still be developed in order to overcome its main technological drawbacks, as previously-mentioned in our general remarks, which makes CCS extremely expensive and prone to act against the principle of efficiency improvements. Therefore, in our opinion, the European Commission should find other ways of supporting the development of CCS technology, that would not be based on efforts to artificially deteriorate, by means of legislative interventions, the economics of well-established conventional solutions. Only then, might CCS technology be perceived as a serious option for emission reductions. CCS should be considered on a par with other technologies, such as: CCU, CDU, EOR.

3.3 Question No. 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*

Neither of the proposed solutions (b and c) are acceptable or should be taken into consideration at the EU level.

Emission performance standards are potentially harmful, due to the fact that such an option would result in the elimination of the coal-based technology from the European energy-mix, which runs counter to the principle of “leaving all technological options open” as stated in the EU papers, not to mention that such an action would seriously hinder the security and reliability of supply in the EU where gas and coal are still very important, as they are elsewhere in the world. Also, the idea of imposing the additional financial burden on the providers of fossil fuels that, according to the Communication, should enable the creation of a new CCS development fund might be seen as a move towards actual elimination of coal and gas power plants from the EU’s technological portfolio.

On the other hand, the certification system should be rejected on the ground of introducing de facto additional tax for those entities which are already covered by the ETS system, and double taxation is something that should be avoided.

3.4 Question No. 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?

The proposed requirement to install CCS-ready equipment for all new investments (coal and potentially, also gas), will have a direct impact, increasing the costs of energy production. It should be noted that the system of CO₂ capture, itself, will not solve the problem. We will also need, transport systems and the ability to store CO₂. Increasing energy costs will lead to higher energy prices in the EU, deepening even more the difference in the prices of energy between the EU and other regions or countries as the USA, China, India, and Brazil. The above-mentioned will have a direct impact on a decline in the competitiveness of the EU economy on the global market.

3.5 Question No. 5

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

As we have written above (see question No. 3), the EU should avoid double taxation. Also, the idea of imposing the additional financial burden on the providers of fossil fuels that should enable the creation of a new CCS development fund, might be seen as a move towards actual elimination of coal and gas power plants from the EU’s technological portfolio.

3.6 Question No. 6

What are the main obstacles to ensuring sufficient demonstration of CCS in the EU?

In our opinion, a more forward-looking way to utilise CO₂, is through the use of technologies leading to utilisation of GHGs directly, such as CO₂ enhancing crude oil extraction (EOR - Technology) or Carbon dioxide utilisation (CDU) technology, as well as carbon capture and utilisation (CCU). Not all of these technologies are currently applied on a commercial scale, but the EU’s efforts should be aimed in this direction. Significant CO₂ reductions can also be achieved by investing in a modern high-efficiency power generation, which is characterised by high efficiency and lower CO₂ emissions. Therefore, requirement of the application of Best Available Technologies (BAT) should be the leader in the fight to reduce CO₂ emissions. Redirecting funds from CCS to support the latest, pro-efficiency technologies would result in significantly better results, in terms of CO₂ emissions, rather than promoting CCS.

3.7 Question No. 7

How can public acceptance for CCS be increased?

In our opinion, due to safety reasons, it will be very difficult to get public acceptance for pipeline transportation over long distances, and especially storage of CO₂. It has been noted that, in addition to CCS safety issues, the main problem is still the cost of the usage of this technology. Compared to countries producing "zero-emission" electricity (nuclear or renewable energy), Member States that currently have a high share of coal and gas in their energy-mix, will have to significantly raise electricity prices, which will translate into a decline in competitiveness of their economies, and consequently, the EU as a whole. In this situation, gaining public acceptance of CCS will be very difficult, especially among countries with a high share of fossil fuels.

In our opinion, a more forward-looking way to utilise CO₂ and get increased public acceptance, is applying technologies such as (EOR - Technology), Carbon Dioxide utilisation (CDU), carbon capture and utilisation (CCU), as well as the requirement of the application of Best Available Technologies (BAT).



Janusz Luks
Chief Executive Office
Central Europe Energy Partners, AISBL