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E.ON Position on

**Consultative Communication on
the Future of Carbon Capture and Storage in Europe
COM (2013) 180**

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1 General Remarks

E.ON appreciates the task being done by the Commission to outline future prospects for carbon capture and storage in Europe. By pursuing the politically set greenhouse gas reduction target for 2050 as set out in the Carbon Road Map CCS may contribute an important part. While this technology has to be integrated in the energy market in the long run it faces currently diverse obstacles to be implemented on a bigger scale in a demonstration phase.

The next step to implement CCS in the EU some demonstration plants have to deliver a full process proof that CCS is working on larger scale installations. On the obstacles observed you find the challenge to close the financial gap in an energy market environment consisting of low power prices in the future and missing incentives from the CO₂-market. Another obstacle is the missing legal and political sustainable base for an investment that may last for decades. As long as the financial gap is not narrowed, legal uncertainty is not diminished and acceptance by society is not given the CCS technology will not play any role in reaching the EU climate target, thus jeopardizing the overall long-term CO₂ target in 2050.

2 Specific Remarks

Question 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.*

E.ON Response:

Art. 192, 2c of the Lisbon Treaty demands unanimous acting by the Council on "measures significantly affecting a Member State's choice between different energy sources and the general structure of its energy supply". Therefore countries with a high share of coal and gas in their energy mix may not wish to jeopardize their economic competitive position within the EU and with trading partners by agreeing on a clear roadmap for restructuring their electricity generation.

During the implementation of the CCS directive some Member States decided to implement significant showstoppers for CCS in their transposition. Some of them might be judged to be not compliant with the EU directive. To ensure the achievement of the EU 2050 targets all Member States should develop clear roadmaps for the decarbonisation of their electricity sector, taking into account environmental, economic and societal aspects of the target energy mix including the



security of supply. A national strategy for the deployment of the CCS technology can therefore be only be a part of an overall electricity generation strategy but should be included in the discussion as well as other technologies like renewable. Such a roadmap should ensure a level playing field for all technologies so that the most efficient market mechanisms can determine the future mix.

In general, within the discussion of the Green Paper 2030, the EU should adopt an overall greenhouse gas emissions reduction target in line with the Carbon Roadmap 2050. Member States should fully implement the CCS Directive in a way that does not exclude CCS as possible technology to deliver on the low carbon future. The Emissions Trading System has been very effective in reducing emissions at lowest cost, but its steering function for investments in the electricity sector had been among other reasons also destroyed by additional regulation at Member State level, especially by feed in tariffs for the matured renewable technologies. Reducing these market deteriorations quickly is important to reestablish investor's confidence; otherwise further regulatory measures such as capacity payments or feed in tariffs for other low carbon technologies might be necessary.

In the short and medium term, given the low level of maturity for large scale CCS plants and the absence of a fully proven legal framework as described above, temporary and targeted measures, such as feed-in or other premium tariffs or contracts for differences (CfDs) for enabling the final technology development step for a limited number of CCS plants are required to ensure that this cost effective decarbonisation technology can come into play to achieve the EU targets. These temporary measures should be implemented as soon as possible.

Question 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?

E.ON Response:

The ETS should be adapted to current and foreseeable circumstances, in particular by cancelling a significant number of allowances permanently in Phase 3 to address the large oversupply of allowances and the related low price of allowances, and by an early revision of the annual linear reduction factor.

Possible earmarking of revenues from the auctioning of allowances should be in line with State Aid rules, the principles of a technology-neutral approach and competition on a level playing field. Financial instruments should take account of the level of maturity of the technology supported in line with verifiable criteria. They should be well targeted and clearly limited in time.



Extension of the NER300 program may be considered, but expected CO₂ prices up to 2020 may not raise the necessary amount of funds to close the financial gap for CCS demonstration plants. However any new approach should be more flexible to adapt to changing boundary conditions during the time of the award process and should provide funds adequate in size to be able to fund the necessary share of the investments for CCS. So if the EU still regards the CCS technology as key instrument to reach the EU 2050 target as lined out in the Communication on the future of CCS additional funding especially on the level of Member States has to be confirmed.

Programs supporting R&D, e.g. Horizon 2020, should include the adaptation and optimization of generating technologies for variable load with CCS for flexible gas-fired powered plants as backup for variable renewables, but can not deliver the required large scale demo projects.

Question 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*

E.ON Response:

CCS Technology is still in its development phase and therefore needs financial support to be tested and demonstrated before it can compete with well established technologies. Emission reduction by CCS is already achieving decarbonisation at lower cost compared to offshore wind and PV, however the later will deliver much higher and less risky revenues due to preferential feed-in tariffs in most Member States. It is therefore important to ensure, that European instruments such as the ETS is not counteracted by national policies e.g. for renewables.

- a) Support through auctioning recycling or other approaches to support investments are well established instruments. However the level needs to be sufficient and the process flexible enough to accommodate the challenges of large scale capital intensive projects, for which development alone can cost more than 50 Million Euro.
- b) As the Commission stated itself in their CCS consultation paper "*if [EPS is] rigorously implemented, the scheme would de facto replace the carbon price signal from the ETS as an incentive to decarbonize, without allowing the sectors concerned the flexibility as foreseen under the ETS*". The possible displacement of the market-oriented ETS by a command and control system like EPS will result in a less cost efficient solution. In addition it also does not guarantee the achievement of a dedicated emission reduction target. Specifically, such measures as EPS may lead to life-extensions for inefficient power stations instead of their replacement with efficient gas-fired power stations, which can significantly reduce emissions

even when they are not yet equipped with CCS. Such measures may also endanger the role of gas-fired power plants as backup for renewable energy and therefore may diminish security of supply in the electricity sector. It will act as a show-stopper for all investments in fossil generation, even if required for backing fluctuating renewables. Furthermore implementing an EPS does not necessarily create a positive driver for the development of CCS, as long as the market is not awarding the application of CCS. However if the use of the technology would be awarded by the market, CCS development would take place anyway, therefore no need for an EPS in this case.

The often reminded success of an EPS (500 g CO₂/kWh) in California is misleading. In 2011 electricity generation in California was 200.631 GWh, being the contribution of coal 3.120 GWh (1.6%). The latest thermal power plant using coal came into operation in 1990. California has natural and shale gas reserves and a large hydropower capacity installed, therefore the EPS has not delivered CCS at all.

- c) A CCS-certificate system consisting of an obligatory delivery of CCS-EUA for compliance will divide the EUA-market, increase compliance risks for ETS installation by a most likely illiquid CCS-EUA market without having any additional supporting effect on promoting CCS-projects.

The number of detailed issues arising from the introduction of a CCS certificate system is manifold:

- Should this include carbon emitters from industry and the electricity sector?
- How to deal with electricity generation for self consumption?
- How to avoid unequal treatment of market actors depending on threshold levels and impact of transaction costs?
- How to determine how much CCS certificates can be generated in what time frame (to be noted: it takes about 10 years for a CCS project to become operational)?
- How to avoid significant over supply as each project will be large in size but highly unpredictable in terms of readiness?
- Certificates should not be given to oil and gas industry but auctioned on the market to avoid wind fall profits for the oil and gas industry, ensuring also that saline aquifers are equally treated to oil and gas fields.
- In addition imposing such additional requirement to existing installations could produce a number of stranded assets.

In conclusion, the creation of a CCS certificate scheme seems not to be workable and is seen as inappropriate to deliver CCS projects.

- d) Co-funding of investment as mentioned under a) is a required but not sufficient instrument for CCS development. Measures b) and c) risk working against the lowest cost routes to a low carbon economy and would lead to a highly uncertain outcome. Given the negative return on invest of all proposed CCS demo-projects in the current market conditions and the reluctance of private investors to invest in projects with high politically-influenced risks which could weaken the economics further, the Commission in the end has to decide whether to bridge that gap by direct financial support. The NER300-idea to finance CCS from



the carbon market can only work, if the approach is flexible enough to adapt to the needs of the individual projects and/or all generation technologies are treated equally on the market. CCS needs a clear carbon price signal consistent with the Carbon Road Map 2050 to be competitive with unabated technologies and a quick phasing out of renewable subsidies at Member State level. The Commission has to support early CCS projects directly if there is still a common belief that CCS is a prerequisite to achieve the 2050 targets. In this case CCS has to be demonstrated before 2030 to be available in time for deployment.

The Commission should also give consideration to encouraging/incentivizing the development of qualified CO₂ storage sites and transport networks in close co-operating with the Member States in order to create greater certainty to potential capture plant developers.

Question 4:

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?

E.ON Response:

The CCS Directive already sets out the CCS readiness requirements and these are therefore implemented in the Member States. Care should be taken not to overstress the readiness requirements as a very detailed planning of a potential transport and storage infrastructure would be a blocker for any new project. Therefore we believe that the current provisions for CCS-readiness in the CCS Directive will be sufficient to be prepared for coming CCS installations.

It should also be noted, that equipment always is designed for an optimal operation point. Operation points in CCS mode and without CCS are however largely different. Therefore CCS ready designed equipment might be operated for a significant time away from its best efficiency, leading to avoidable costs and emissions in the meantime until CCS might be retrofitted.

Question 5:

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

E.ON Response:

Given the complex political discussion of reforming the ETS already reached, there seems to be less need for an obligation for fossil fuel providers to contribute. However specific measure to raise funding from the fuel producers might be an option to provide additional funds for CCS demonstrations. The Australian Government is following this approach already with some success.

Question 6:

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

E.ON Response:

Despite the funding made available through various EU instruments such as the EEPR and NER-300, the high costs of undertaking full chain demonstration projects for capture and storage of CO₂ and the high uncertainty for investors if the additional investments and operating costs can be recovered from the market in the future, holding back investments.

Compared to the original target of the Commission to create a liberalized electricity market in Europe, we unfortunately see an increasingly re-regulated and still national-wide market, in which the choice which technology should be developed is not triggered by market mechanisms but by subsidies, investment guarantees, standards and regulation. The EU should try to reemphasize on an European electricity market which is undistorted by different conditions, regulatory regimes and incentive schemes at EU and Member State level.

In addition the full transposition of the EU Directive on the geological storage of carbon dioxide in all Member States is a pre-requisite for investors. Transposition should ensure to be enabling for CCS and not being a blocker by imposing additional conditions or strengthened liabilities. The existing public resistance to all infrastructure investments such as CCS can only be overcome, if a clear political commitment is given and information on rewards and risks are openly debated.

Question 7:

How can public acceptance for CCS be increased?

E.ON Response:

To gain public support, it is of key importance to explain and demonstrate the merits and advantages of CCS for reaching the decarbonisation targets in Europe without jeopardizing Europe's economic welfare and growth. A key for a lively and fact based discussion is in any case the practical experience from pilot and demonstration projects, necessary to document the postulated merits.

Care is required as the energy system is of complex nature and the linkage between cause and effect can not be easily made. Active communication is required to inform about the interlinkage between renewable and fossil power generation, energy storage and demand side management as well as distribution and energy efficiency. Support for renewable energies is widely accepted and pushed, however in this case, typically the cost implications are not fully considered due to the hidden effects and costs (e.g. for grid expansions or firming capacities).



As long as politically induced effects on the energy system are small, the systems will be able to adapt itself to the changing conditions. If the impact is rising, the system will however require further market regulation to be stabilized and public support is getting lost. It is therefore important to communicate a holistic view rather than highlighting individual technologies or focusing on a limited set of parameters for each technology.

In conclusion it should be noted that the problem of public acceptance for CCS is part of a bigger picture on the attitude to industry in general. Here the EU and Commission have to install appropriate policies for public acceptance for industrial projects - in order to realize the target set out in last year's Communication on "A Stronger European Industry for Growth and Economic Recovery" to increase the *"role of industry in Europe from its current level of around 16% of GDP to as much as 20% by 2020"*.