

European CCS Demonstration Project Network: Opinion on the EU Commission CCS Communication

The European CCS Demonstration Project Network welcomes the policy proposals set out in the European Commission's CCS Communication. The Communication makes it clear that CCS is a key technology required for Europe to transition to a fully low-carbon economy, reconciling the rising demand for fossil fuels with the need to reduce greenhouse gas emissions. This is a position that the European CCS Project Network unreservedly agrees with, and believes that it is vital we collectively ensure that policies and incentives are introduced that lead to the realisation of this vision.

Despite substantial efforts, the demonstration and deployment of CCS in Europe has stalled for a variety of reasons, largely as discussed in this Communication. The Network feels that there are two main reasons why it is currently not possible for economic operators to develop a business case that allows them to invest in CCS, even at a demonstration scale.

There is too much policy uncertainty. CCS has large capital costs and development times – often more than 10 years for early movers – with investors requiring long-term certainty that they can invest in CCS. Regional and national climate and energy policies must provide long-term clarity on the way forward. The Network therefore supports the need for roadmaps, but would stress that these are for a low carbon future (not just electricity generation), and must result in clear policy outcomes. Short, medium and long term incentive mechanisms should be introduced that are consistent with policy positions.

Current deployment and incentive mechanisms are insufficient. Short-term measures need to be introduced that enable first mover projects to enter operation, supported by appropriate market mechanisms that drive large scale deployment. The ETS is a mechanism unsuited to supporting the deployment of new technologies such as CCS, and with the deterioration of ETS prices there are few signals to the market that encourage investment. First movers face significant risks and costs. Unlike many forms of renewables, which are 'commercially available', there has been a lack of similar or appropriate incentives and support from Member States for this low-carbon technology.

A number of mechanisms are being proposed within the Communication, but for those projects which have managed to secure part of their financing and are attempting to take a final investment decision, it is imperative that they are provided with urgent support. The options given within the Communication only support the development of CCS on the mid- and long-term, but will not help the demonstration phase that is crucial for overall development of CCS. Any steps taken should take into account the risk and large upfront costs experienced by early project developers – also recognising the need for large, suitably sized infrastructure that anticipates the demands within Commission and national roadmaps. Therefore, the CCS Network would like to give its opinion and address the issues raised in the Communication.

General comments

The Communication starts with emphasising the necessity of CCS, detailing the remaining dependency on fossil fuels, possibilities for CCS for the energy and other industries, and the cost effectiveness CCS. The Communication also provides a comprehensive overview of the reasons why the deployment of CCS projects in the EU face major delays and discusses possible solutions.

The CCS Network agrees with the Communication conclusions that “an urgent policy response is required” and that “the first step on this path is to ensure a successful commercial-scale demonstration of CCS in Europe”. However, the proposed possible solutions do not include new proposals and will not support CCS on the short-term.

Fossil fuels in the energy mix and in industrial processes (Section 2)

The CCS Network does not have detailed comments on this factual section, but would like to emphasise three points:

1. CCS is applicable to all combustion technologies used for power generation (gas, coal and biomass) and to a wide range of industrial processes. The IEA studies indicate almost half the CO₂ emission reductions available from CCS are from sources outside the power sector.¹ It is a mistake to consider CCS only in the context of the electricity market, and a greater mistake to restrict its application to coal (2.2.5 of the Communication).
2. Cost competitiveness is generally presented simplistically in terms of €/t of CO₂ avoided. This can be misleading if different reference technologies are used. The cost €/unit of production would be a better metric (e.g. €/MWh when regarding low carbon power), although even this does not include the value of reliability and impact on overall system costs of different technologies.
3. All studies (including the EU Roadmap 2050 and several IEA studies) have shown that including CCS in the technology mix (alongside renewables, energy efficiency and other measures) reduces the overall costs of decarbonisation.² Therefore CCS could be cost competitive in a clear low-carbon regulatory scenario. The lack of a business case for economic operators therefore represents a market failure.

The state of play of CCS demonstration in Europe and gap analysis (Section 3)

The CCS Network endorses the analysis given in chapter 3, but makes the following remarks:

- **3.3 Legal framework.** Although the delays with the transposition of the CCS Directive caused problems for several CCS demonstration projects, the main reason why this legislative framework causes problems is due to the content of the Directive itself.³

¹ COM (2011) 112: A Roadmap for moving to a competitive low carbon economy in 2050, indicates that CO₂ emissions from the industrial sector need to be reduced by 83% to 87% by 2050 compared to 1990.

Most ‘industrial’ sector (iron, steel, cement, paper, gas production, chemical production etc.) have few other emissions reductions options other than CCS.

² For example, the Commission’s Energy Roadmap 2050; the IEA’s Carbon Capture and Storage Roadmap; and recent reports such as the *CCS Cost Reduction Taskforce Final Report* of May 2013, which states “UK gas and coal power stations equipped with CCS have clear potential to be cost competitive with other forms of low-carbon power generation”.

³ Directive 2009/31/EC

The Directive provides a solid framework for CCS, but also creates unduly heavy uncertainties, liabilities and risks for early project operators. For example, the provisions for the handover of responsibilities enables Member States to indefinitely postpone the handover, the costs related to the Financial Mechanism required can be penalising, and other Directive provisions can impose unnecessarily large financial burdens on projects. The alternative option for industry is to emit the CO₂ directly to the atmosphere - which is well regulated with cost clarity and without long term risks or uncertainties. Steps are required to limit unreasonable burdens on early mover projects.

- **3.4 CO₂ storage and Infrastructure.** More encouragement on both a European and national level is required to stimulate the retention and development of transport infrastructure and storage sites.
 - For existing infrastructure (such as an oil or gas storage reservoir that is currently in production) there are no incentives or regulations for retaining a site when it is abandoned. The costs for reopening the reservoir for CO₂ storage purposes are substantially increased (costs for re-drilling, a new platform, etc.).
 - The upfront costs, risks and complexity of developing suitably sized infrastructure that anticipates future demand must be recognised and supported. Early mover projects are often taking on the cost, time and effort required to develop suitably scaled infrastructure (particularly transport and storage) – which will be vital in the larger and longer term deployment of CCS - but have few incentives for doing so other than increased risk and upfront investment costs.
- Another very important reason why the deployment of CCS in the EU face major delays, but is not mentioned in the Communication, is the inconsistency between EU and National policies. It is impossible to predict the climate and energy policies in 5, 10, 20, 30 years from now. Policies are constantly introduced, amended, removed and influenced by public opinion and political factors. Although many of these policy changes are logical and necessary, for example the structural amendments of the ETS, the energy industry in particular needs long term security. The Jämschwalde and Belchatow projects were both well developed and very credible projects, cancelled largely due to a lack of policy support and certainty. These were situated within two countries ideally placed to benefit from the environmental benefits; economic benefits; and energy security benefits that CCS provides. EU and National climate and energy policies must give sufficient clarity on the long term way forward and implementation should be consistent with this pathway.

Moving forward (Section 4)

In summary, the Communication discusses five options that could encourage CCS demonstration and deployment, in order to support its long term business case as an integral part of the EU's strategy for low carbon transition:

1. **NER300.** Additional incentives for CCS were foreseen through the NER300. Expanding this type of financing could be considered also for the period towards 2030. Although the CCS Network fully supports this type of financing in theory, the existing NER300 first round did not allocate any fund to CCS demonstration projects.

Although the second round has just started, the CCS Network is very pessimistic about the prospects for CCS. Not a single CCS demonstration project was supported in the first round, and funds under the second round are even lower. Therefore the Network sees no reason why CCS demonstration projects will be funded in the second round. Despite credible, cost effective project proposals, the majority of MS were unable to fulfil the support criteria in the current economic environment. If this type of funding scheme is to continue, the allocation rules need to be changed and be more flexible.

2. **Structural ETS reform.** The Network strongly supports the ETS as the long term driver for investment, but for a number of reasons (the economic crises, over-allocation EAU, the Renewable Energy Directive and renewable subsidies) the ETS price has deteriorated. It is clear that a structural reform is necessary. However an agreement between the EC, EP and Council will probably take several years, and even if structural measures will be implemented the effect on the ETS price will take even a longer time. In addition, in the absence of other direct support measures for CCS, companies considering CCS investment will also require long term confidence in the electricity market and electricity prices. This is also currently lacking. Therefore, the structural ETS reform is only a measure for the long-term. The CCS Network does not have a preference for one of the six options for the structural reform. It all depends on the effects on the ETS price which should be as high as possible for CCS. However, we note that the back loading proposal is unlikely to help CCS demonstrations because (1) it will not have a significant net effect on the ETS price and (2) the ETS price will be relatively higher on the very short term (next few years) - but will be relatively lower in the period that demonstration projects are most likely to store the CO₂ and receive the ETS earnings (2016 – 2025).
3. **Emissions performance standards.** The effectiveness of a basic EPS depends on whether these mandatory standards will apply only on new investments or on all emitters in a sector; the level of the standard; if the standard increases over time; and when the standard will be implemented. There are more bespoke methods of applying an EPS, such as in time (i.e. an emissions limit over a period of time) or a sectorial approach (i.e. by company, not by plant) which may all merit further attention, but these appear to be complex. There are other short term drawbacks, including reducing investment in CCS, and promoting the extended use of existing coal plant, rather than promoting CCS and reducing emissions. It is not possible to implement strict standards in the short term on all emitters, and will therefore not lead to immediate investments being made in CCS.
4. **National systems.** Additional national systems that create extra incentives for the deployment of CCS would be very welcome. Indeed for renewable energy it is national schemes that have been most successful in driving deployment, often at the detriment of other low-carbon technologies such as CCS. However, these have been generally inefficient and can cause secondary distortions (such as contributing to the collapse of the ETS price). Therefore national schemes should not be relied upon, and should sit within an EU market framework. A harmonised and coherent set of EU time-limited policies that enable investments in the demonstration and deployment of CCS should be the focus, before eventually transitioning to an ETS only solution.
5. **Mandatory CCS certificate system.** The Commission should be commended for suggesting a certification scheme, but such schemes are very complicated. The CCS

Network doubts whether this option could be implemented in the short term, and such certificates will not cover the risks associated with early movers.

The CCS Network supports the options discussed in the Communication and welcomes some of the new policy options that have been put forward. However, we do not think these reflect the urgent support needed for demonstration projects in Europe. Therefore the CCS Network proposes further options that may have a positive impact on deployment in the short term – measures which acknowledge the issues being faced by developers, and would be eventually phased out once CCS can be deployed widely:

- **Re-allocation of the EEPF funds.** Two of the awarded projects under the EEPF funds have been officially terminated. These funds are dedicated for CCS demonstration projects and should be re-allocated to the other demonstration projects. The money has already been allocated, providing an available source of funds, even if (in the worse case scenario) additional political measures are required. The process of allocation is also inherently secure, faster than the other proposed solutions, and would directly aid the first-mover CCS projects. It also has an operating audit mechanism, ensuring value, and would benefit CCS in the short term.
- **Review of disabling elements of the CCS Directive.** As described above, the Directive provides a solid framework for CCS, but also creates unduly severe uncertainties, liabilities and risks for first-mover project operators. If the issues caused by the CCS Directive, such as the handover of responsibilities, can be solved on the short term this could substantially reduce the risks for investors.
- **Feed-in tariffs for CCS power plants.** Feed-in tariffs are effective in providing predictable revenues. Such contracts could be set for 20 years, funded either by taxpayers via the public treasury (through EUA revenues) or by energy consumers via a levy on tariffs. (N.B. in the demonstration phase feed-in tariffs need to be project-specific and apply to a few projects, evolving into a general feed-in tariff as the market matures, before being phased out entirely).
- **Feebate.** A feebate can roughly be described as a tax or user charge imposed by government that charges users of socially undesirable items and applies the revenue collected to payments for users of socially desirable items. Applied to CCS, authorities could accordingly charge utilities or industry with significant CO₂ emissions and redistribute the revenue to generators with CCS to compensate them for their higher capital and operating costs. It may be difficult to apply in certain Member States.
- **Low cost finance.** Access to risk capital is both hard and costly in the current economic climate. The provision of loan guarantees with acceptable terms would aid the business case for some projects.

CCS Readiness

The Network strongly encourages the call for energy utilities to be required to install CCS-ready equipment for all new investments (coal and gas). Recent IEA work indicates that gas plants must also be fully fitted with CCS to reach our emission targets. However, such permits must be combined with a realistic definition of what true 'CCS Readiness' entails. Applying CCS at a later date will prevent carbon lock-in, but without suitable engineering activity during the design and construction phases a 'CCS Ready' plant may never be

economically retrofitted. It is suggested that CCS Ready proposals have clearly defined stage-gates, giving clear indications of their anticipated retrofit planning dates and rationale (with possible penalties for CCS Ready proposals that do not comply with their stage-gates).

Public acceptance

The last question raised in the Communication is how the public acceptance for CCS can be increased. A critical barrier for public acceptance of CCS technology is that until now it has not been deployed at large-scale on power generation. The persistent (but false) perception of CCS as unproven technology (e.g. expensive, unsafe, unnecessary, lock-in of fossil fuels) is blocking a wide stakeholder support for CCS. Therefore the successful implementation of EU CCS demonstration projects will be vital in establishing a positive perception of CCS as an important part of an effective and efficient CO₂ emission reduction portfolio. A further delay of EU CCS demonstration projects may lead to stronger public opposition.

Overall, the Network agrees with the Commission that political support by Member States is required, and this also applies for public acceptance. There are numerous benefits to deploying CCS, but CCS must be better positioned as a key low-carbon technology that is vital in allowing Europe to reach its environmental objectives. Without CCS the cost of reaching our climate change targets rise considerably. There are also numerous local value propositions: CCS is applicable to both the power sector and industrial sectors – which have no other option for reducing substantially their emissions. The successful stimulation of the CCS industry will allow Europe to increase its energy security, stimulate job creation, regain its lost lead in CCS expertise, and generate a sustainable European economic base.