Policy Position Paper

Incentives for CO2 Capture, Transport and Storage

The Issue

The widespread deployment of CO_2 Capture and Storage (CCS) technology is uneconomic at the current state of technological development and with current markets and regulatory drivers. Additional incentives will be necessary, especially in the near term, if CCS is to play a significant role in reducing global GHG emissions.

Background

The challenges facing widespread development of CO_2 capture, transport and storage technology fall into two general categories: commercial incentive and risk environment.

Commercial Incentive

Current market conditions provide only limited incentive to invest in large-scale CCS projects. This lack of commercial incentive results from the existing gap between the cost to capture, transport and inject CO_2 and the value obtained for storing CO_2 either from GHG credits or from enhanced oil recovery revenues. The capital and operating costs associated with CO_2 capture typically represent the largest single piece (>80%) of the capture, transportation and storage life cycle. Depending on the distance between source and reservoir and on future monitoring and verification requirements, the cost of transport and storage could also be significant. The large up-front capital investment required to lay the appropriate CO_2 transportation infrastructure also represents a potential hurdle given the risk environment described below. Therefore, widespread deployment of CO_2 capture and storage technology will include the capture, transport, and storage of CO_2 from multiple sectors of the economy, which will mean an enormous up-front capital investment in all parts of the CO2 chain.

The price of CO_2 credits in existing and emerging emission markets currently sits well below the cost to deliver significant CO_2 reductions from CCS. Low price caps, while intended to make cap-and trade programs more palatable for adoption, further reduce the commercial incentive for CCS.

The bottom line is that even at current oil and CO_2 credit prices, the value of enhanced oil recovery / enhanced coalbed methane recovery (EOR/ECBM) market CO_2 purchases and the sale of emission reduction credits are insufficient to cover the cost of widespread CCS implementation.

Risk Environment

Even if the cost of CCS technology were to be significantly reduced either through R&D or subsidy, developers of large-scale CCS projects remain exposed to a variety of risk factors that impact investment decisions. The treatment of CCS within the context of international treaties and agreements is the subject of intense debate.

Currently there is a lack of certainty as to how CCS will be treated under the London Convention and Protocol, OSPAR, the flexibility mechanisms of the Kyoto Protocol and the EU ETS. That being said there seems to be considerable motivation to make CCS "work" within the framework of these and other agreements and initiatives. Other more logistical issues such as long-term liability for abandoned CCS sites, treatment of injection wells within a regulatory framework, development of protocols for monitoring, verification and reporting add to the risk and uncertainty currently facing CCS project developers. Finally, oil price volatility will continue to be a factor in the development of EOR projects utilizing CO_2 flooding.

Widespread deployment of CCS technology is unlikely to take place in the short to medium term due to the price gap between carbon credits and the current capital/ operating costs for CCS and to the risks associated with project development. Given this, it is clear that other measures will be needed to promote CCS projects in the near term. Governments must decide where national and regional climate change policy best fits on the spectrum of potential policy options – from "no one pays" to 100% "polluter pays" to 100% "the public pays". This decision will dictate the type and degree of incentives offered to support CCS.

Implications for Industry

Disincentives or barriers will need to be removed and incentives put in place before the full potential of CCS to contribute to the global effort to reduce the amount of CO_2 released to the atmosphere can be realized. Until these issues are addressed, there will likely be only limited investment in commercial-scale CCS projects world-wide. Those projects that are undertaken will operate in an elevated climate of risk. It is possible that the failure of early projects to deliver in this risk environment may threaten the continued research, development and application of CCS technology necessary for CCS to be able to deliver long-term GHG reductions. If early projects succeed, economics of these early projects may also be unique. These early projects may not ultimately reflect the economics of later larger projects. Finally, uncertainty about current and future incentives for large-scale application will undoubtedly place limits on the basic R&D investments necessary to close the gap between the cost of carbon and the cost of CCS. Such uncertainty can be mitigated if the incentives are designed to be targeted and sufficient for the longer term to promote CCS deployment at large emitting sources.

CCP Recommended Principles

The following principles are based on the belief that existing market conditions for CCS deployment will continue in the short and medium-term and therefore the first large-scale CCS plants will need the benefit of additional incentives in order to be developed.

<u>Research and Development</u>

- Funding basic research and development of CO_2 capture and storage technologies is the shared responsibility of government and industry.

Early Action

- The first major CCS projects to be developed will carry significant technical and commercial risk and therefore it is appropriate for the government to play a role in providing incentives for the development these first major projects.
- Incentives may include but are not limited to tax breaks, royalty relief, direct funding, active partnership, funding for infrastructure.

Infrastructure

- Government should provide some form of assistance for up-front capital costs necessary to develop large-scale CO_2 capture, transportation and storage infrastructure.
- Infrastructure development should be encouraged to be open access and government involvement should not pick winners. For example, CO_2 transport infrastructure built with assistance of government incentives should allow access by all entities that invested capital to build it and also allow regulated tariffs for an agreed period charged to other entities that will need access. Further, regulations affecting such open access should be transparent to all users of the infrastructure.
- Site selection and planning processes for CO_2 infrastructure should balance the global value of reducing GHG emissions with the needs of local communities to protect safety, quality or life and property values.

CO_2 Capture

- Government policy should recognize that the capital and operating costs associated with CO_2 capture are the largest single piece (>80%) of the capture, transportation and storage life cycle.
- Policy incentives to encourage deployment of capture technology (e.g. tax credits, royalty credits, etc) are appropriate.
- Regulations related to CCS should not act as a disincentive for CO_2 capture.

EOR

- Policy incentives to optimize the storage potential of EOR operations (e.g. tax credits, indemnity for long-term leakage, etc) are appropriate. However, projects that utilize CO_2 for enhanced oil recovery but do not optimize for CO_2 storage should compete for private sector funding without the help of direct subsidies.
- At the same time, regulations related to CCS should not act as a disincentive for EOR development.
- Incentives for man-made CO_2 and natural CO_2 for EOR should be developed differently. This would recognize the additional environmental benefits for reducing greenhouse gas emissions from man-made sources.

Regulation

- Regulations should be simple, streamlined, science-based and should reflect the true risk associated with CCS.
- Policies should be designed to provide regulatory certainty necessary to make long-term investment decisions.

- The costs and benefits of CCS regulation should be equitably distributed across participating industries.
- Every effort should be made to ensure that regulation does not present an unnecessary barrier or undue burden for CCS development or deployment while at the same time appropriately protecting the public interest.

Established Regulatory Frameworks and Markets

- Where possible, market mechanisms should be used to provide appropriate CO_2 price signals.
- CCS should be recognized as a viable means of GHG emission reduction in existing regulatory programs and carbon markets (e.g. EU ETS).
- Existing measures addressing and promoting GHG abatement should be extended to include CCS.
- CCS should be accepted as a viable GHG emission reduction option within the CDM and JI flexibility mechanisms of the Kyoto Protocol.
- Once markets are established for CO_2 and the playing field has been levelled for competing reduction options, governments should limit market intervention and phase out the incentives