

CCS Web Seminar 9 October 2008

Note: This transcript reproduces the questions and answers that were discussed as part of the IEA CCS Regulators' Network Web Conference on 9 October. The views reproduced below are those of the speakers alone, and are in no way attributable to the International Energy Agency or any of its individual member countries. This transcript merely reproduces those questions to which the presenters provided answers.

Questions and Answers

Peter Radgen -

Q: How will CO2 storage be dealt with in the dutch ETS system?

Nicole van Klaveren

A: We will most likely use an opt-in.

Ed Rightor

Q: Tristan: In CO2-EOR 25-30% of the CO2 is lost to the rock, e.g. it occupies the pore space and isn't recovered or recycled. Is this part considered sequestration and available for credits? Is the CO2 portion stored in Weyburn viable for credits?

Tristan Goodman

A: The ERCB would not be the regulator in Alberta to determine if this would be permitted, but would likely verify the the % "lost" to the rock. But logically if through chemical or physical processes there is a reduction then I think the answer is yes.

Peter Radgen

Q: as i have understood, CO2 storage is already possible in the Netherlands (NL) under existing laws. Does the CO2 stored actually count as not emitted under the existing ETS regime in NL?

Nicole van klaveren

A: Peter, at the moment CO2 storage is formally possible, however the Shell project will most likely be the first to actually store CO2 during the second trading period. CO2 stored will count as not emitted. This will be arranged through an opt-in.

Iain Wright

Q: EOR projects can be engineered to store all the CO₂ injected. How would Alberta regulate such a project if the developer wanted credit for storage?

Tristan Goodman

A: Iain, Similar answer as to the earlier question. I agree that you can engineer projects to store all (well almost all) CO₂ (as BP has shown). In these cases the industry would have a strong case to show the CO₂ was removed and thus technically we would agree - policy?

Melisa Pollak

Q: Did Alberta need to amend the various directives you listed to make them work for CCS? If so, what amendments were made?

Tristan Goodman

A: Yes. From a leasing of space perspective this is on going and we need to find a way to "sell" or license space for injection. From a technical perspective the changes have mostly already been made. Well construction, for example, was changed a few years ago.

Melisa Pollak

Q: Who will take long-term liability for the injected CO₂ post closure?

Nicole van klaveren

A: For the situation in the NL this will be most likely the State. How liability and when it will be transferred to the State is subject of discussion. However, the Directive for CO₂ storage will deal with this issue as well and is still being negotiated.

Sandeep Sharma

A: In Australia, a strong case has been made for the State to take the long term liability. The feedback has been provided to government and now we have to see how it is actually written into the legislation.

Ed Rightor

Q: Nicole: What's the target injection rate and total volume for the project started by Shell? Is the program open to participation by other parties?

Nicole van klaveren

A: Ed, the total amount of CO₂ stored will be 10 Mton over a period of about 30 years. the first phase is an empty gas field with capacity 1 Mton (about 3 years injection). the second phase is about 9 mton for a period of about 25 years. experiences from the first phase can and will be used for the second phase.

Christophe Mouvet

Q: What is the status of the Australian GHG geological sequestration bill: under preparation, discussion...?

Elda Poletti

A: The Bill is now currently before the Victorian Parliament and it is expected to be passed in the coming months. We expect that it will come into operation by 2010.

Robert Trautz

Q: How do you quantify risk? What is considered "reasonable?"

Sandeep Sharma

A: The process of looking at probabilities multiplied by their consequences for events is well-defined. The approach we have been taking in Australia is to consider if our container can store more than 99% of the injected CO₂ for at least 100 years and preferably 1000 yrs. This is along the lines of the IPCC report.

George Robin

Q: how are legal and regulatory issues linked to science and technology - and in your opinion, point out the weakest link in that chain?

Sandeep Sharma

A: The long-term monitoring (post decommissioning and before handing back to the state) is currently not well defined in terms of either what the proponent will need to do or the length of time this will continue. If this period is made too long (say 50 years), it would be difficult for companies to accept. An adaptive regime which lasts around 10 years would be likely to be considered more reasonable.

Peter Radgen

Q: What are the regulations regarding financial liability of the storage operator for leakages during operation and after closure of storage. After how many years after closure the responsibility for the storage will fall back to the state?

Nicole van klaveren

A: Peter, during operation, the project initiator will be liable for any leakages and/or negative effects on the environment. After closure the liability will be transferred to the State. The Dutch position in negotiations in Brussels is to let the member states determine per project when liability and responsibility is transferred to the State. This will at the soonest be after the situation at the storage location/in the field is stable

Iain Wright

Q: How would ERCB determine the appropriate time for a project between cessation of injection and license relinquishment (including stewardship transfer from developer to landowner)?

Tristan Goodman

A: Very good question. First, this is a gap not yet resolved. If the Gov of Alberta decided in policy they wanted to take on liability we would suggest appropriate paramaters. Probably based on a few years of monitoring and examination of history and infrastructure.

Iain Wright

Q: Does Victoria have a definition of "GHG Substances" (London Convention says "overwhelmingly CO2"), leaving the precise specification up to the regulator on a site-specific basis.

Elda Poletti

A: Yes we do. Briefly it includes CO2 in a gaseous or liquid state, a prescribed greenhouse gas or a mixture overwhelmingly of CO2.

Melisa Pollak

Q: Has Alberta devised a regulatory pathway for sites that start as EOR and want to move to pure sequestration?

Tristan Goodman

A: Yes and no. At present industry comes in for EOR and then applies again at time of perm disposal (10 or 20 years later perhaps). We are working with folks to try to figure out a better way of doing this, but of course 20 years can change a lot of things.

Ed Rightor

Q: How can the minister prove there are NO risks to public health? Is it that risks are adequately minimized, measured, verified to some acceptable level?

Elda Poletti

A: No; risks must be understood within a practical context as you have described.

Ann Weeks

Q: What is the status of the Greenhouse Gas Geological Sequestration Bill -- enacted, or proposed?

Elda Poletti

A: Currently before the Victorian parliament. See earlier answer.

Iain Wright

Q: Since wells are the most-likely leakage path, why would you want to mandate a developer to operate any wells post-closure?

Tristan Goodman

A: Iain, I agree with you that wells are the most likely leakage path ways. We need some monitoring in early projects to prove CO2 is staying where you say it will. So we have been flexible. We are open to other monitoring methods (with evidence it will work)

Ann Christin Lia

Q: Has legislation for financial instruments for costs incurred after transfer of responsibility to the state been established either in Canada or Victoria? And if so, is it financed by the operator of the storage site?

Elda Poletti

A: In the Victorian Bill, the holder of an injection and monitoring licence must pay an annual instalment of the estimated long term monitoring and verification costs set out in the approved injection and monitoring plan. Before an injection and monitoring licence is surrendered, the licensee must pay the remaining costs.

Ishfaq Ahmed

Q: Elda, I think you mentioned that the state takes ownership of the CO2 once it enters the subsurface pore space - therefore, could you please clarify does liability also pass to the govt at that point? Thanks

Elda Poletti

A: The Bill makes it clear that the State owns the subsurface pore space. Clause 16 of the Bill provides that if an injection and monitoring licence is cancelled or surrendered, the Crown (the State) becomes the owner of any greenhouse substance that has been injected into an underground geological formation under the licence.

Ed Rightor

Q: In the GHG Sequestration Bill, at what point is it proposed that the Crown pick up liability? First injection? project closure? or other

Elda Poletti

A: The Bill does not specifically transfer liability per se to the Crown. It is possible that liability may arise in relation to activities that the Crown may undertake under the Bill. Common law liability for proponents can still apply.

Robert Trautz

Q: The US Env Protection Agency recently issued draft regulations on injection. Closure period is 50 years or until CO2 plume stabilizes, whichever ever occurs first. What are closure time periods or approaches being considered by other countries?

Elda Poletti

A: In the Victorian Greenhouse Gas Geosequestration Bill, there isn't a specified closure period. Rather it is determined according to various requirements: eg the greenhouse gas is behaving and will continue to behave in a predictable manner, risks associated with the permanent storage of the gas are as low as reasonably practicable etc.

Melisa Pollak

Q: Do you think it likely that proposed geological sequestration projects will be required to submit Environmental Effects Statements? Who decides?

Elda Poletti

A: Yes. The relevant Minister.

Chris Clarke

Q: Do any of the existing projects include financial security/insurance provisions as a pre-condition for operation? Are such provisions foreseen in draft legislation?

Elda Poletti

A: Current Victorian legislation relating to the Otway project and the new Greenhouse Gas Geosequestration Bill both provide for a licensee to have insurance before they can commence their operation.

Carrie Bradshaw

Q: Elda, when you say no alteration to common law liability, does this mean liability at common law for operator could persist after transfer of liability to the state?

Elda Poletti

A: The Bill does not specifically transfer liability to the State. Common law liability is a separate matter from liability that may arise under the Bill.

Marilyn Wurth

Q: What is the source of funding for long-term monitoring after the state takes over in the Australian project?

Elda Poletti

A: In the Victorian Bill, the holder of an injection and monitoring licence must pay an annual instalment of the estimated long term monitoring and verification costs set out in the approved injection and monitoring plan. Before an injection and monitoring licence is surrendered, the licensee must pay the remaining costs.

Melisa Pollak

Q: In Victoria, which regulator will be in charge of verifying CO2 storage, and setting accounting rules for credits?

Elda Poletti

A: The Department of primary industries will be responsible for verifying CO2 storage. Setting accounting rules will be the responsibility of the federal government.

Hiromi Nakamura

Q: who has the ownership of pore space in Victoria?

Elda Poletti

A: The pore space is owned by the State of Victoria.

Ishfaq Ahmed

Q: Elda, I think you mentioned that the state takes ownership of the CO2 once it enters the subsurface pore space - therefore, could you please clarify does liability also pass to the govt at that point? Thanks

Elda Poletti

A: No, liability does not pass at that point.