

How should society deal with the question of long term liability for carbon capture and storage?

By Nigel Bankes

Report commented on:

[*Report of the Interagency Task Force on Carbon Capture and Storage*](#), August 2010

I don't often sing the praises of government reports. Often written in turgid prose, they seem more concerned to find the lowest common denominator that all can live with rather than to identify and evaluate the policy problem and policy options to address that problem. This is even more likely to be the case where you have an "inter-agency" report; a report cobbled together by multiple cooks and authors, where the LCD really is the way to go. But I like this report of the United States federal *Interagency Task Force on Carbon Capture and Storage*, which came out earlier this month. It should be compulsory reading, not just for CCS wonks, but also for anybody engaged in formulating public regulatory policy in response to any new technology.

The report: an overview

This report was commissioned by President Obama in February 2010. The President charged 14 Executive Departments and Federal Agencies to propose "a plan to overcome the barriers to the widespread, cost-effective deployment of CCS within ten years, with a goal of bringing five to ten commercial demonstration projects online by 2016" (see report at 15). The report was delivered to the President on August 12, 2010, a remarkably fast turn-around time, and there is a lot of meat here. The report focuses on the federal role in CCS storage operations and the role of federal lands as sequestration sites but it also discusses the role of the states and the implications of principles of federalism in terms of the relative responsibilities of the two orders of government. Much of the paper is given over to a discussion of technological and economic issues but the report also devotes lots of space to the legal and regulatory challenges to implementing large scale CCS projects, and it contains a particularly useful discussion of the long-term liability issue.

The report comprises a main report of a little over 100 pages plus 24 appendices. Many of the appendices deal with legal issues. Appendix F deals with the applicability of the *Safe Drinking Water Act (SDWA)*, the *Solid Waste Disposal Act*, the *Comprehensive Environmental Response, Compensation and Liability Act (CERCLA)*, the *Emergency Planning and Community Right-To-Know Act* and the *Clean Air Act* to CCS activities. At least some, but only some, of the ground of these US federal statutes would be covered by the *Canadian Environmental Protection Act*, S.C. 1999, c.23 in Canada; but we have no equivalent to the *SDWA* which will provide the main permitting framework for storage activities in the U.S.: see Environmental Protection Agency (EPA) proposed rule [*Federal Requirements Under the Underground Injection Control \(UIC\) Program for Carbon Dioxide \(CO₂\) Geological Sequestration \(GS\) Wells*](#). Appendix G

deals similarly with the applicability of the *National Environmental Policy Act (NEPA)*, the *Endangered Species Act* and the *National Historic Preservation Act (NHPA)*. For the first two the comparable federal statutes are the *Canadian Environmental Assessment Act*, S.C. 1992, c.37 (although seemingly more project-driven than its U.S. counterpart at least as described here) and the *Species at Risk Act*, S.C. 2002, c.29. There is no federal equivalent of the NHPA; in Canada these matters would fall within provincial jurisdiction.

Appendix H provides a useful statement of the potential causes of Long Term Storage Risk and/or Liability. This is useful because it helps make the discussion of liability more concrete. Too many discussions of liability in a CCS context refer to liability issues in general without distinguishing between different forms of liability and the different sources or causes of liability. Appendix I discusses the *Price-Anderson Act* which provides a federal framework in the U.S. to support private insurance solutions to the problems of liability in the nuclear power industry. It is good to see the breadth of the options being canvassed here. The emerging CCS industry often tries to quash any reference to or discussion of possible parallels between CO2 storage activities and the nuclear sector. I agree that the two industries are worlds apart in term of relative risk but we should be open to considering what we can learn from these other sectors when introducing new technologies.

Appendix J covers the indemnification approach to dealing with long term liability and I shall have more to say on this later. And Appendix K deals with the narrower issue of liability and indemnities in the context of the research and development programs of the Department of Energy. This includes a discussion of liability/indemnity issues in the context of the FutureGen projects.

Appendix L canvasses the property law issues associated with the storage element of the CCS chain considering both the question of aggregation of pore space (how does an operator acquire a large enough area when there are multiple owners – the classical holdout problem – see my discussion of this in the context of the situation in Canada for a [paper](#) prepared for a meeting sponsored by ISEEE and the Pembina Institute) and the question of valuation (suppose that you think that the government or a private operator must acquire the rights by some form of expropriation/ eminent domain power, how do you determine fair compensation in the absence of market transactions – the recent U.K. Supreme Court decision (*Star Energy*) that I [blogged](#) has some interesting observations on this question).

Appendix M is titled somewhat confusingly, “Siting Considerations for CO2 Pipelines” but the Appendix is in fact concerned with a consideration of options for the permitting and economic regulation of CO2 pipelines and access to capacity. On the permitting side Appendix M discusses three models. First, a model in which there is no federal intervention and matters are left very much to the states (essentially the oil pipeline model in the U.S.); second, a model of a federal backstop in which state legislation would apply unless and until it proved inadequate (the current approach to electricity transmission in the U.S.); and third, a model of federal authority with or without eminent domain powers (the natural gas/LNG sectors in the U.S.). The section on economic regulation begins with a useful reminder of some of the key difference between the natural gas industry and the CO2 capture and disposal industries when it comes to pipeline capacity:

The model for CCS will likely be driven by the source of CO2 and the need to have 100 percent off-take capacity by the pipeline operator and storage facilities. This model is very different from the supply-driven natural gas industry, where

wells can be shut and brought back on line as demand fluctuates. The ability to maintain availability of the pipeline and storage system will require redundancy and spare capacity in both the transportation and storage systems to accommodate swings in the CO₂ supply. If a pipeline operator fails to satisfy CO₂ off-take agreements, the emissions source could be forced to vent CO₂ emissions, scale back operations, or shut down. It is expected that shutting down a power plants will not be feasible when demand for electricity requires the plant to be online even when venting could be very costly under carbon constraints. [at M-5]

These Appendices are excellent. They are succinct, to the point and well written.

I will now turn to a more detailed examination of the long term liability issue.

Analysis of the long term liability questions

The Task Force deals with this question in two distinct parts of the Report. It first deals with the topic in Part IV where the Task Force is trying to assess the obstacles to the adoption of commercial scale CCS projects. Is the long term liability issue a real concern or is it just another example of industry gaming the system and trying to get the government and the public to pay for something that the industry itself should be paying for? Having concluded that the concern is real the Task Force then turns in Part VI to discuss possible solutions. The discussion in Part VI is further supported by some of the appendices referred to above.

So, what are the liability concerns and how serious are they? The Report identifies two categories of liabilities that we need to address and both in the context of long-term (i.e post closure) liability: (1) obligations to perform (i.e. comply with regulatory standards), and (2) obligations to compensate those who suffer legally compensable losses and damages. In light of these categories the Report address three concerns The first is that while the technical community believes that the science is relatively well understood the time-frame for the long term risks is long and the long time frame magnifies any remaining uncertainty. As a result, business is uncomfortable assuming these long term risks. These risks must be disclosed in financial statements and subject to review by auditors. Sarbanes-Oxley requires that there be no untrue statement of a material fact or material omissions. Second there is the problem of the non-availability of insurance for such long time frames, especially given the novelty of the technology. The insurance industry advised the Task Force that policies to cover the post-closure risks associated with CCS were simply not available (at 70 – 71):

.... they explain that currently they are not able to estimate the costs of such policies, their typical business does not encompass claims that may not arise for centuries, and they are not institutionally suited to underwrite risks arising in such a long time frame. Furthermore, without insurance or a comparable risk management mechanism, private lending facilities may not be willing to extend credit to finance the construction of facilities conducting CO₂ sequestration.

A third concern relates to the possible joint and several liability for any of the liabilities under discussion under the terms of U.S. *CERCLA* legislation. This creates, for some, the spectre of potential liability for all sorts of different actors along the CCS chain, both geographically and chronologically.

The report does discuss the views of others as well – some who suggest that these concerns are overstated when one compares CCS activities with other activities including enhanced oil recovery operations (EOR) and the handling of hazardous wastes.

The Task Force assessed these views against a number of policy considerations including “encouraging CCS deployment, minimizing moral hazard, minimizing negative impacts on existing insurance markets and sources of financing, providing for appropriate long-term stewardship of sequestration sites, being sensitive to federalism concerns at the State level, ... ensuring that those who are harmed can be compensated, and equitably distributing the costs of liability (e.g., determining whether liability costs should fall on those entities that generate CO₂; on sequestration facility owners/operators; on utility ratepayers, in the case of CO₂ generated as a byproduct of electricity generation; or on the taxpayers generally)” (at 73-74), and the question of whether or not special rules should be developed for the entire industry or just for early actors. In the end, the Task Force seemed convinced that the problem was real or that it was real enough that it was useful and appropriate to consider different means to address the concerns.

The Task Force examines seven options to address the issue: (1) do nothing at the federal level (i.e. leave it to the states to develop innovative solutions to liability), (2) adopt federal legislation that imposes substantive (e.g. caps) or procedural (e.g. claims only in federal court or before special tribunals) limits, (3) develop federal legislation that facilitates private insurance coverage, (4) establish a liability fund, (5) federal government ownership or direct government liability, (6) governmental indemnification, and (7) transfer of long term risk to the federal government. The Report does a nice job of assessing the advantages and disadvantages of the various options. Many of the options score poorly on the moral hazard criteria since the more that liability is removed from the operator the less invested the operator will be in ensuring that everything is done to minimize risk.

I cannot examine all of the options here but I will discuss the “indemnity option” since this is one example where the report is perhaps less balanced and particularly critical of a specific option. This is especially true of the discussion in Appendix J, the opening words of which set the tone for the balance of the Appendix (at J-1): “The option of governmental indemnification is characterized by several legal and policy infirmities”. The Appendix identifies three such infirmities: (1) any indemnity requires specific Congressional authorization, (2) indemnities should only be available in cases where “absolutely vital national security interests” are engaged, and (3) an indemnity should never be granted when private insurance is available. Clearly there are some in the U.S. federal government (likely in the Department of Justice) who feel that CCS does not even come close to justifying the indemnity approach.

But the indemnity approach does have certain advantages over some of the other options discussed in the report. Some of the advantages include the clarity and certainty that can be built into the indemnity approach. “Solutions” that leave the operator still wondering if it has some outstanding liability over the long-term hardly address the concerns that the report identifies. Furthermore, the indemnity approach does not involve the need to change the background rules on liability; and it is an approach that lends itself to being phased out as parties gain experience in managing risk in this area and the insurance industry becomes more willing to cover these risks. Thus it is an approach that could be used to provide an incentive to early actors.

But whatever one thinks about the relative merits of the need to develop special liability rules for the CCS industry, or the merits of different methods of effecting a transfer of liability, the nice thing about this report is that it presents options and explores the pros and cons of the different

options; and the report is packed full of examples of actual practice of how government and industry have dealt with cognate issues in the oil and gas, EOR, nuclear, and pipeline sectors. In sum, here is a report that really should facilitate a good public debate both in the U.S. and elsewhere about the issues, and for that the authors deserve our thanks.

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