BOOK REVIEW

Carbon Capture and Storage: Efficient Legal Policies For Risk Governance and Compensation by Michael G. Faure and Roy A. Partain Published by MIT Press, 2017, 360 pp., 19.75, hardback.

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The impacts of climate change have been accepted as one of the most pressing global challenges faced by society. In the face of this challenge, various methods of reducing the emissions generated by human activities have been proposed. Alongside reducing emissions, there has also been the consideration of methods of preventing emissions from entering the atmosphere and causing (or exacerbating) harmful effects on the planet as an interim solution, whilst reduced and zero emissions technologies are developed. The adoption of such methods for preventing emissions is, however, not without other potential risks. As such, it is pertinent to discuss the appropriateness of the existing frameworks for attributing liability and awarding compensation to these new methods. One such method is carbon capture and storage (CCS), the process of injecting carbon dioxide into deep geological formations rather than allowing it to enter the atmosphere. In Carbon Capture and Storage: Efficient Legal Policies for Risk Governance and Compensation, Faure and Partain consider across nine chapters the liability regimes which may be applied to CCS at present and construct recommendations for a bespoke approach to liability and compensation for the harms arising from this technology.

The book provides an overview of the technology and its risks, followed by an assessment of the existing approaches to liability and compensation, before applying these in the provision of comprehensive policy recommendations for the future, should this technology be used to fight the problem of climate change. Despite the potential for the early chapters to offer little other than the collation of established knowledge, this is not the case in this work, which instead provides an acutely contextualized assessment of the legal rules in relation to liability and compensation for harm caused by this technology. Whilst speaking to a very particular audience, Faure and Partain do so in a manner so thorough as to position the book as essential reading for anyone considering the law surrounding CCS.

The first two chapters of the book introduce the scope of the work in terms of the technology explored and the relevant legal frameworks. Chapter 1 affords the reader with an introduction to the potential significance of CCS within efforts to combat climate change, and the academic underpinnings of this position. The chapter sets clear boundaries for the content (or goals) of the chapters that follow and in doing so, places the book within the wider context of research in this area and commendably highlights other areas of legal interest in relation to CCS that are not covered in the book.

Chapter 2 establishes the necessary context for the discussions of liability and compensation in relation to CCS by outlining the history and current methods of the technique, its potential capacity to contribute to combating climate change and the risks which lie counter to its promise. Of particular use to those considering the implications of technologies that present similar short- and long-term risks alongside considerable potential rewards, is the segregation of risks along various temporal lines. Whilst the risks in this instance are delineated in this way by the very nature of the potential immediate and distant impacts of CCS, this temporal division is reflected in the discussion of CCS's legal implications throughout the book in a consistent and effective manner.

Chapter 3 moves on to consider the existing civil liability rules in both Europe and the United States and their appropriateness for CCS. It begins by outlining the academic criticism of the patchwork of relevant provisions, and the calls for clarification of the existing rules and the reasoning behind them when applied to environmental claims. In doing so, the chapter emphasizes both the agreed need for the book, but also the common aspects of reasoning behind these calls for clarity with regard to the legal framework of CCS. This establishes the significance and merit of the assessment of the existing framework covered in the chapter, and the proposed policy reforms built upon it and explored in later ones. What follows in this chapter is a detailed contextualized analysis of the application of liability rules to CCS based on both theory and the practical circumstances of the technology. This is of particular importance

to researchers and practitioners interested in this technology, but also reflects a methodology which any researcher interested in related technologies would be remiss not to consider.

Chapter 4 builds upon the analysis of legal rules undertaken in Chapter 3, to consider the policies that underpin and inevitably influence the application of the legal framework. The chapter (and the book) is bold in its consideration of both facets of law and policy. Whilst the two are fundamentally inextricable, to address both effectively and reach conclusions which reflect both is a complex and multilayered task. The authors, however, do so competently and in a clearly structured manner, which only serves to add credence to the overall conclusions of the work. Of particular note in this regard is the position (or indeed lack thereof) adopted by the authors with regard to the validity of the use of CCS generally. This is evidenced by the inclusion of force majeure as a consideration in the policy on liability in relation to CCS in the chapter. Justified and well-supported arguments are presented concerning the policy issues for which any liability rules applied to CCS must account, such as the fundamental question of who owns injected gas. The authors further address the potential pitfalls of excessively stringent regulation. The result is a balanced chapter which provides an excellent example of how to write about the regulation of a potentially controversial technology in an ostensibly neutral manner.

Chapter 5 is crucial both to the central research question of the book itself but also its wider contribution to research in this area. The chapter concerns the long-term risks of CCS which, like those of a number of technologies emerging to address or reduce the impacts of climate change, cannot yet be fully ascertained. The authors deal here with the challenge of attributing liability and thus affording compensation in instances where facilities are not, or cannot be, operated by those actors who established them. Although one of the shorter chapters in the book, this is one of its most significant contributions. The assessment of existing policies from both Europe and North America, as well as the presentation of the challenges posed by technologies such as CCS with associated long-term risks, supports the recommendations proposed. This chapter, together with Chapter 4, tackles the regulatory difficulties for attributing causality and thus liability and compensation for harms not presenting themselves at the point at which they are caused by CCS, or developing over considerable lengths of time. The authors develop an argument in relation to CCS policy for a hybrid public and private regulatory framework. This approach is also worthy of consideration by any scholar dealing with a technology with similar features.

In Chapter 6, the authors weigh the potential spheres for regulation of CCS, considering both private and public contexts, and outlining the benefits of the liability rules in supporting them. The authors themselves concede that some of the conclusions drawn, particularly in relation to the interaction between liability rules and regulation, are unsurprising. However, the exploration of these topics in the specific context of CCS is well judged and does not simply provide generic conclusions already accepted in the wider literature in the area, but evidences or contradicts them in relation to the technology considered. This is apparent in particular in the consideration of self-regulation, where the relative novelty of CCS as a technology is incorporated in discussion of the validity of adopting such an approach to its regulation. Chapter 6 makes a clear contribution to the policy recommendations presented in the conclusion of the book, by exploring established regulatory concepts in relation to CCS in a manner which, without being formulaic, constructs a thoroughly convincing basis for them.

Chapters 7 and 8 have a similar purpose to Chapter 6 in providing contextual considerations of potential compensation policies for CCS. They explore two broad methods for compensation for harms which might be caused by the technology: market-based and public compensation. Alongside Chapter 6, these chapters provide a comprehensive and balanced evaluation of the options in a manner which incorporates established regulatory theory but applies it effectively to the context at hand. As with the preceding chapters, these are therefore worthy of note by those considering the policy implications of technologies with a complex matrix of risks and rewards of variable timings and severities. The authors should be complimented on their ability to avoid a rudimentary application of established principles to a fresh technological context and, instead, constructing an evaluation of the potential approaches to a regulatory framework of the technology by incorporating broader theoretical principles and regulatory concepts effectively. This approach is seen most clearly in the direct discussion of issues common to many regulatory contexts in a manner bespoke to CCS. Subheadings focused on differentiating the risks of CCS, their predictability and insuring against them, for example, incorporate wider literature in these areas whilst applying it to the context at hand.

The culmination of the diligent and thorough analyses which precede it is found in Chapter 9. The comprehensive work in the earlier chapters affords the authors the ability to propose specific policy recommendations for CCS, which are difficult to fault. The recommendations respond to both long- and short-term risks associated with CCS technologies. They are built upon the consideration of a number of principles for establishing liability for associated harms and their attribution, and the apportionment of compensation when this is successful. A clear example of this is seen in the justification of the proposal of a strict liability approach to civil liability in relation to CCS. The conclusion drawn is not only justified with regard to CCS, but equally applies for other related issues (such as determining liability, liability exposure and operator extinction). The recommendations reflect the consistent and competent application of the law and economics methodology adopted in the piece across these issues. The justifications on which the recommendations are based, and the clarity with which they are elucidated, make them (and the book as a whole) worthy of recommendation to anyone studying or involved in the regulation of CCS, but also to a wider audience of those concerned with the regulation of emerging technologies, the risks of which are not yet fully ascertained. The book therefore represents a contribution to the field that could not justifiably be ignored by those interested in the future of CCS and its regulation, and a worthy addition to broader regulatory literature, particularly in relation to projects and technologies with complex and potentially lengthy risks attached.