

Message

From: Jason Bordoff [REDACTED]
Sent: 08/07/2019 21:16:27
To: Mark Finley [REDACTED]
CC: Julio Friedmann [REDACTED]; Minge, John C [/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=2a467eff6beb4ce59f292fe3a25fd8cf-Minge, John]; Hill, Gardiner [/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=67ffd5c490cf4ed9bcdcc919fc513e58-Hill, Gardi]; Yeilding, Cindy [/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=177049344af2433483f35665757451c4-Yeilding, C]
Subject: Re: Latest draft, Chapter 1

I was suggesting that language for the executive summary. Thanks.

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Jason Bordoff
Founding Director, Center on Global Energy Policy
Professor of Professional Practice in International and Public Affairs
Columbia University
[REDACTED]
[REDACTED])

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On Jul 8, 2019, at 10:13 PM, Mark Finley <[REDACTED]> wrote:

Hi All from me too!

Here's a draft that builds on Julio's latest with additional comments/edits from me.

I've changed the title to Julio's proposal.

I've included a sentence based on Gardiner's feedback about how the rapid growth of wind & solar is an example of the beginnings of a transition & an example of the potential for CCUS.

Re: the discussion of long-lived assets. I wouldn't characterize that as a challenge—for CCUS, it's the opportunity! If it were cheap & easy to shut down existing fossil fuel infrastructure in favor of non-fossil energy sources, there'd be no need for CCUS. (The text of the para in question actually says this, but the intro sentence doesn't quite get that tone...)

Jason—I couldn't find the right place to work in your latest about language re: carbon price. We could add it to the overview paragraph, but it'd just be dropped in with no subsequent discussion to support it.

BTW I'm OK with dropping the last couple of pages if those topics are dealt with elsewhere in the study.

Look fwd to discussing tomorrow w/ Gardiner & Julio,

—M.

On Jul 8, 2019, at 11:58 AM, Julio Friedmann

<[REDACTED]> wrote:

Hi All,

Here's the latest draft. It includes my latest comments and edits, as well as incorporating Gardiner's and Jason's comments and sensibilities. I've added a "clean" copy to help make sense of the flow of the document, but suggest we continue to work off the 'track changes" version for now.

I see two big questions here:

- 1) Chapter title. I've proposed renaming the chapter "Global and National Context for CCUS Deployment", which seems closer to the content. If we don't change the title, we'll have to change the content considerably to true it up with the title.
- 2) Pages 19-21. Jason recommends we drop it. I'm inclined to agree, although we may wish to keep some of the material (e.g., the source-sink matching map). There's nothing wrong per se with the pages as they are, but they strike me as beyond our brief for the chapter.

As always, your thoughts welcome, and looking forward to more discussions and actions tomorrow.

J

From: Minge, John C <[REDACTED]>
Sent: Sunday, July 7, 2019 11:39:17 PM
To: Julio Friedmann
Cc: Hill, Gardiner; Jason Bordoff; Yeilding, Cindy; Mark Finley
Subject: Re: Latest draft, Chapter 1

Great comments everyone - I look forward to reading this draft and seeing you in DC.

John

Sent from my iPhone

On Jul 7, 2019, at 5:50 PM, Julio Friedmann

<[REDACTED]>> wrote:

Hi all,

Just leaping back into this. Thank you, Gardiner, for the comments and the review of the chapter. All very much welcome.

I agree with Jason's comment - CCUS helps make decarbonization cheaper (I would also argue faster, but that case is thinner). This is especially touchy in the wake of the recent Nature paper on the 1.5 C budget and the case for premature retirement, as well as the announcement of the premature retirement of a gas plant in CA. we're starting to see a drumbeat of "shut it down" from the left and from folks like Bloomberg. I disagree with those folks, but that sensibility is in the ether and will color the discussions somewhat.

I'll tuck into this tonight and tomorrow in detail. Look for an annotated response to Gardiner's draft shortly.

J

From: Hill, Gardiner <[REDACTED]>
Sent: Saturday, July 6, 2019 10:01:34 AM
To: Jason Bordoff; Julio Friedmann; Yeilding, Cindy; 'Mark Finley'
Cc: Minge, John C
Subject: Re: Latest draft, Chapter 1

Jason,

Thanks for the very prompt and thoughtful reply.

I understand your point about the perception that the remarks regarding low cost oil and gas may look self serving. This was genuinely not my intent. It is good to be reminded how others might perceive this - thank you.

When I wrote this I was thinking about it differently. Given that almost all scenarios have oil and gas playing some role even in a 1.5 degree outcome I was thinking how the USA might compete for this against other nations, particularly Saudi Arabia and Russia. They are doing their own analysis on this. Of course the USA may not wish to compete for this, but might like to retain the option either way.

Low cost oil and gas with CCUS also enables pet chems, steel, etc. and other industries to compete internationally.

Understanding what CCUS enables more generally and the value proposition around this is key. Hence the kind of analysis you mention is really helpful and needed.

In my mind it is not an either or, but all technology solutions will be required to meet the decarbonisation goals on the Paris agreement. We need a tool box filled with all of the right tools.

I appreciate your steer on these points and will be guided by you.

Many thanks.

Kind regards

Gardiner

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From: Jason Bordoff <[REDACTED]>
Sent: Saturday, July 6, 2019 2:32:55 PM
To: Hill, Gardiner; Julio Friedmann; Yeilding, Cindy; 'Mark Finley'
Cc: Minge, John C
Subject: Re: Latest draft, Chapter 1

Thanks. These are helpful. I agree with the first comment in particular. The scope of the chapter has expanded a bit beyond its original mandate in the workplan and would benefit from being pared back.

My only caution is on the comment: "Low cost oil and gas create a substantial advantage domestically and internationally for the USA. CCUS extends this considerably as the world transitions to a low carbon energy economy. This is in the current text but kind of lost – let's make it stronger"

I'm very conscious of the fact that many will read this report as the oil and gas industry saying let's do CCUS so we can keep on producing oil and gas as usual. Need to be careful to avoid that perception. We heard that from all the independent academics and think tank types involved with putting this chapter together. Also, there's reality but also some rhetoric to the claim about how it benefits the US in the first place, so want to be careful about overstating. And careful analysis of this would also need to consider the counterfactual. We're only 12% of global oil supply, and our chief geopolitical rival just joined OPEC. So perhaps the US would have an even stronger leadership role in a hypothetical future that required decarbonization without any oil and gas at all because it would be even further ahead in other technologies? A question that would require analysis if we're going to make the claim above, I think.

I think the stronger case is to say CCUS lowers the cost of decarbonization, and also that because CCUS is inevitably going to be part of any real decarbonization, we want the US to lead in building those new technologies. I think the credibility of the report will be enhanced if we err on the side of staying away from claims that sound self-serving for the industry.

Thanks. Jason

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Visit us at energypolicy.columbia.edu<<http://energypolicy.columbia.edu/>>

From: "Hill, Gardiner" <[REDACTED]>>
Date: Saturday, July 6, 2019 at 5:26 AM
To: Julio Friedmann <[REDACTED]>, "Yeilding, Cindy" <[REDACTED]>, Mark Finley <[REDACTED]>
Cc: Jason Bordoff <[REDACTED]>, John Minge <[REDACTED]>
Subject: RE: Latest draft, Chapter 1

Julio and Mark,

Many thanks for sharing your latest work on Chapter 1. This has moved on a long way and it is much clearer and shorter and much easier to read – well done.

I have a few overarching comments below as well as a few edits to the text in the attached file (using track changes). These are for your consideration and happy to discuss and work on these with you on Tuesday next week;

* Is the title of chapter 1 correct - "Energy and Emissions Landscape"? If so, then there is more work to cut back what it currently in this chapter. Alternatively perhaps the title for Chapter 1 might be something like "Energy landscape and the opportunity for CCUS"?

* The chapter could be clearer that the energy transition is well advanced and building momentum. Also we could point to the fact that the USA has had a long track record in Wind and Solar energy development and deployment. This has served the USA well both domestically and selling equipment and expertise internationally. Now is the time for CCUS to undergo a similar transformation that will benefit the US domestically and internationally

* The chapter could be clearer and bolder on the role of the USA in the emerging energy transition - both domestically and internationally. Low cost oil and gas create a substantial advantage domestically and internationally for the USA. CCUS extends this considerably as the world transitions to a low carbon energy economy. This is in the current text but kind of lost – let's make it stronger?

* The various sections towards the back of chapter 1 feel are a bit muddled between the domestic perspective and the international perspective on energy and role/opportunity/value of CCUS. I think this easy to clarify.

* Should "What is CCUS" be in chapter 1, given chapter 1's title? Is this in the report somewhere else? Perhaps changing the chapter name might help here and mean we can keep this in the chapter?

* There is quite a bit still in here on storage and regulations.....could this, or some of this, not be in the storage chapter?

* I wonder if the sections on policy and R&D would be more powerful and help the flow of the chapter, if written in the context of the role they play in underpinning or enabling the USA to be more competitive on energy and low carbon energy technology - CCUS.

* A minor point, but the figure nomenclature style is inconsistent. Some times it is 1.2 other times 1-2.

I really hope these comments are helpful and are for your consideration – you hold the pen. Many thanks for the opportunity to comment and help.

Finally, can we confirm the time to meet on Tuesday afternoon? What time could you be in the BP DC office? I think Julio said he was available Tuesday afternoon – so would 12:30 till 4pm work? Do let me know so I can make myself available to skype in for the afternoon session.

Looking forward to working with you on this.

Very best regards,

Gardiner

From: Julio Friedmann <[REDACTED]>>
Sent: 03 July 2019 05:39
To: Yeilding, Cindy <[REDACTED]>; Hill, Gardiner
<[REDACTED]>>; 'Mark Finley'
<[REDACTED]>
Cc: Jason Bordoff <[REDACTED]>>; Minge, John C
<[REDACTED]>>
Subject: Latest draft, Chapter 1

Hi All,

As promised, please find the attached draft of Chapter 1. Per our discussion, it includes material that covers both the four key findings outlined by Guy and the 5 sections of the original report.

A few quick points:

- * We have deliberately kept the text limited, since much of the material is well described in other chapters, now fleshed out. This is focused on the state of CCS and the reasons for deployment.
- * I've left the comments & edits that Jason and I made in the materials drafted by Mark, for ease of tracking. In the second half of the document, it's a clean read of the new material.
- * We've removed most of the material Guy added regarding the cost curve deployment models for deployment. That's outside the scope of our chapter. Given that, it's unclear where and how the chapter should end. Your thoughts welcome.
- * We've added a new representation of what "at scale" might mean (Table 1) as a reflection of the discussion Friday with the team. Welcome your thoughts.

We look forward to Gardiner's comments. Specifically, I hope he makes clear if the narrative is lost or confused, or if we need to add or restore material that was removed. I'm about to drop off line for a few days. That said, I

hope to pick the document back up Sunday the 7th, in time for one more iteration before the CSC meeting on the 9th.

All the best, and for those in the US enjoy the 4th of July break and weekend.

Julio

<Redraft of Chapter One based on ExecSumm 07 July 19_SJF3 JB1_GH1.docx><Redraft of Chapter One based on ExecSumm 07 July 19_Clean.docx>

<Redraft of Chapter One based on ExecSumm 08 July 19_MF1_SJF3 JB1_GH1.docx>