THIRD WAY

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Al Gore Missed the Memo: There's Nothing Nonsensical about Carbon Capture

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In an interview with Axios's Amy Harder during COP24, Al Gore suggested that carbon capture and storage (CCS) was "nonsense". The former Vice President has dedicated an admirable amount of his life and influence to galvanizing global climate action, so we're willing to give him the benefit of the doubt—maybe he meant to say something more reasonable and just misspoke.

More likely, though, he's operating under the common misconceptions that: 1) carbon capture technology doesn't exist; and/or 2) carbon capture isn't an important piece of the climate solution. Lucky for Mr. Gore, we can put each of these falsehoods to rest pretty quickly.

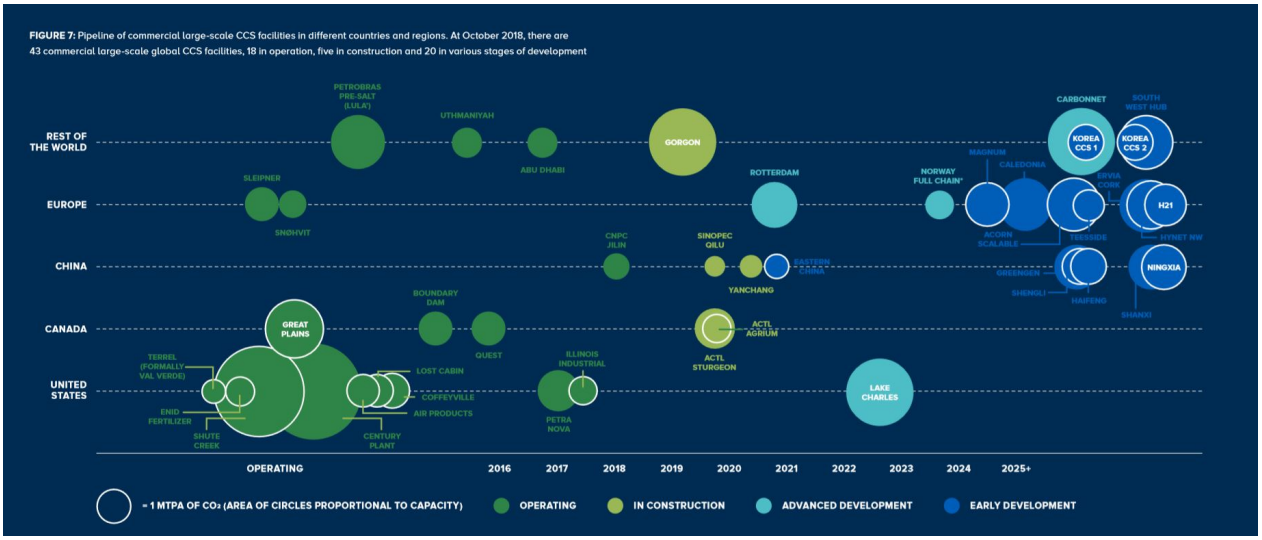
Carbon Capture is a Real Thing That Exists

There's a surprising number of people in the energy world who believe carbon capture, utilization, and storage technologies (often just called "carbon capture" for short) are a pipedream that will

take years to commercialize. To his credit, Al Gore isn't *quite* this extreme in his wrongness. In the *Axios* interview on Wednesday, Gore said,

> *"The fact none of the existing technologies are considered ready for primetime, in the sense that nobody knows how to execute at scale, makes it a daunting challenge for sure."*

But just a day earlier, the Global CCS Institute released its annual "Global Status of CCS" report at COP24, pointing out that 18 commercial scale projects are already in operation, 5 more are under construction, and 20 are in "various stages of development." Third Way released our own map earlier this year showing many of these projects and additional activity in carbon capture, carbon storage, carbon use, and direct air capture. With that in mind, it's not fair to paint carbon capture as an unproven commercial technology.



Source: Global CCS Institute

Gore does have a point…moving from dozens of carbon capture projects to hundreds will be hard. You know what else was really hard? Developing large solar PV projects. The technology became available in the 1950's, but we didn't figure out how to build a utility scale installation in the U.S. until the mid-2000's—and that was thanks to prolonged federal RD&D investment, tax credits, and other support. Things really took off with the grants and financing assistance from the "stimulus," and today we have hundreds of large scale projects. It was hard, but (thankfully) we made it happen.

You know what else is *going* to be really hard? Building immense amounts of transmission infrastructure, battery capacity, and seasonal storage solutions to allow wind and solar to supply a truly significant percentage of the world's power. We should figure out a way to make that happen too, since renewables growth is an important part of most decarbonization strategies.

If we always dismissed technologies that are challenging to scale-up as "nonsense", we'd be left with a pretty short list of solutions. Which brings us to our next point...

Carbon Capture is Actually a Very Important Solution in Most Decarbonization Strategies

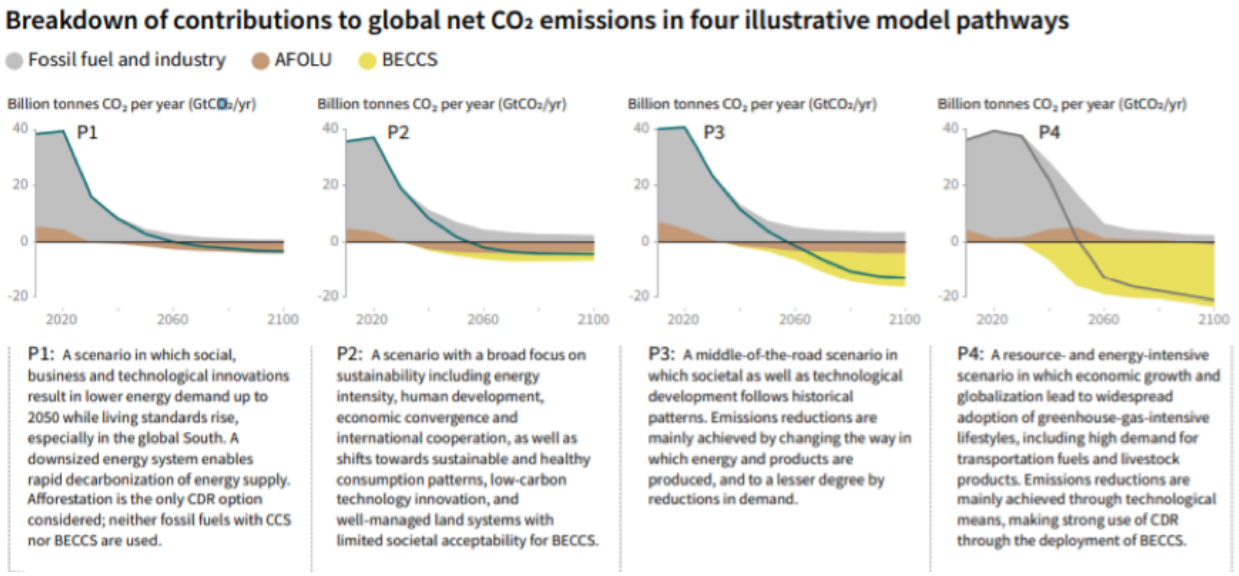
In his interview, Gore dismisses CCS as an insignificant piece of the climate puzzle. However, the IPCC 1.5°C special report tells a different story. Since many people point to the report as evidence of the need to rapidly and aggressively act on climate, it is worth understanding what the report actually has to say about CCS. Spoiler – it makes a compelling case in favor.

The IPCC report outlines the characteristics of "four illustrative model pathways" to limit global warming to 1.5°C. All four pathways use Carbon Dioxide Removal (CDR) to some degree, and three of the pathways include CCS (P2, P3, and P4). [1]

> *"In electricity generation, shares of nuclear and fossil fuels with carbon dioxide capture and storage (CCS) are modelled to increase in most 1.5°C pathways with no or limited overshoot."*

Overshoot means going above 1.5°C and then returning to it using carbon capture.

It is important to understand the underlying assumptions for each of these pathways in order to interpret them. For example, P1 enables a rapid decarbonization of the energy supply by downsizing energy demand with social, business, and technological innovations. Whereas P2 focuses broadly on sustainability, healthy consumption patterns, technology innovation, and land management. The brief descriptions of each pathway are below:



P2, P3, and P4 all include the use of CCS to different degrees, as shown below. Excluding BECCS, P2 sees CCS responsible for removing 197 GTCO2 through 2100, P3 273 GTCO2, and P4 27 GTCO2. Note that P4 has a "higher overshoot" of 1.5°C and the pathway makes strong use of CDR and BECCS. To put these numbers in comparison, in 2017 global energy-related carbon emissions were 32.5 gigatonnes. So P2 sees CCS removing 6 times the amount of energy-related carbon emissions emitted in 2017 by the end of the century.

P2	P3	P4
ted overshoot	No or limited overshoot	No or limited overshoot	Higher overshoot
	348	687	1218
	151	414	1191

If you dive into Chapter 4, there's some more specific information on CCS. The following paragraph stands out in its succinct summary of the role of CCS for fossil fuels in the power sector. It explains how CCS can contribute to cost-effective emissions reductions, may offer employment and political advantages, but may entail more limited co-benefits than other mitigation options.

> *The AR5 (IPCC, 2014b) as well as Chapter 2, Section 2.4.2, assign significant emission reductions over the course of this century to CO2 capture and storage (CCS) in the power sector. This section focuses on CCS in the fossil-fuelled power sector; Section 4.3.4 discusses CCS in non-power industry, and Section 4.3.7 discusses bioenergy with CCS (BECCS). Section 2.4.2 puts the cumulative CO2 stored from fossil-fuelled power at 410 (199–470 interquartile range) GtCO2 over this century. Such modelling suggests that CCS in the power sector can contribute to cost-effective achievement of emission reduction requirements for limiting warming to 1.5°C. CCS may also offer employment and political advantages for fossil fuel-dependent economies (Kern et al., 2016), but may entail more limited co-benefits than other mitigation options (that, e.g., generate power) and therefore relies on climate policy incentives for its business case and economic feasibility. Since 2017, two CCS projects in the power sector capture 2.4 MtCO2 annually, while 30 MtCO2 is captured annually in all CCS projects (Global CCS Institute, 2017).* [2]

Final Thoughts

The world absolutely must reduce its reliance on fossil fuels as much and as quickly as we possibly can as part of any successful climate strategy. But the fact of the matter is, it's extremely likely that some of the world's energy will still come from fossil fuels for the foreseeable future. That's especially true in developing economies that are building fossil plants at a rapid clip, and at many industrial facilities, where carbon capture is currently the only large-scale option to address

emissions. We'll likely need solutions like CCS for these purposes if we want to hit our climate goals. Yes, getting more carbon capture projects deployed will take significant and ongoing policy support. And there's absolutely nothing nonsensical about that.

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ENDNOTES

1. For more detail, see page 16 of https://report.ipcc.ch/sr15/pdf/sr15_spm_final.pdf

2. H. de Coninck, A. Revi, M. Babiker, P. Bertoldi, M. Buckeridge, A. Cartwright, W. Dong, J. Ford, S. Fuss, JC. Hourcade, D. Ley, R. Mechler, P. Newman, A. Revokatova, S. Schultz, L. Steg, T. Sugiyama, 2018, Strengthening and implementing the global response. In: Global warming of 1.5°C. An IPCC Special Report on the impacts of global warming of 1.5°C above pre-industrial levels and related global greenhouse gas emission pathways, in the context of strengthening the global response to the threat of climate change, sustainable development, and efforts to eradicate poverty [V. MassonDelmotte, P. Zhai, H. O. Pörtner, D. Roberts, J. Skea, P.R. Shukla, A. Pirani, W. Moufouma-Okia, C. Péan, R. Pidcock, S. Connors, J. B. R. Matthews, Y. Chen, X. Zhou, M. I. Gomis, E. Lonnoy, T. Maycock, M. Tignor, T. Waterfield (eds.)]. In Press. Page 326. www.ipcc.ch/site/assets/uploads/sites/2/2018/11/SR15_Chapter4_Low_Res.pdf. Accessed December 14, 2018.