

Comment to Graeme Sweeney: We must reset our approach to CCS

<http://www.euractiv.com/energy/graeme-sweeney-reset-approach-cc-interview-531001#comment-1>

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What Mr. Sweeney and other advocates of CCS should be asking themselves is this: How much CO<sub>2</sub> would be avoided from ending in the atmosphere if e.g. the IEA Roadmap for CCS was fulfilled?

They should actually also ask themselves: How many Gt of CO<sub>2</sub> would actually end in the atmosphere in such a rapid CCS-scenario? IEA has not given that number. (They never asked the question).

This is nevertheless the key question any proposition for climate mitigation should be faced with. It has to be measured up to the total carbon budget that is available from now on.

If we want a high probability to stay below 2 degrees of global warming this budget is VERY narrow, according to IPCC.

"For the world to have a 50 percent chance of staying below 2 C of warming by 2100, the AR5 identifies a greenhouse gas emissions budget of 840Gt of carbon. More than half of that (over 531GtC) has already been emitted. At current emission rates (around 10 GtC per year), we will use up our carbon budget in just 30 years." (<http://www.c2es.org/science-impacts/ipcc-summaries/fifth-assessment-report>)

I talked to my grandson about this. He will be 39 in 2050, and he said: 'Grandpa, I am sorry, but 50% chance of exceeding 2 C of warming that sounds scary. Isn't it like playing russian roulette with 6 rounds in the cylinder?' I could only nod in agreement.

BACK to CCS: It does not suffice to talk about the expected capture and storage of CO<sub>2</sub> from one power plant. (Often supposed to be 85%). This does not take into account the energy penalty from the capture process in the first place - which is 25-40%. And it does not take into account the upstream emissions due to the extra coal extraction (mining, transport, etc.) It does not include the emissions pertaining to the building of the CCS facility and the necessary pipelines and pumping stations. And it does not include the downstream emissions due to compression, transport, and injection. Nor the leakage.

If all this is considered the climate effect of the single power plant is reduced from 85% to 70% (own calculation at <http://ccs-info.org/klima.html>). Which is to say that 30% of the CO<sub>2</sub> will reach the atmosphere despite CCS.

BUT THIS is only the story of one single point source. CCS is not interesting in such a narrow perspective. In order to assess the climate effect of CCS as such you have to consider the whole sector where CCS should be applied - over time.

At the moment CCS is most of all a mirage, it is a story about a promised land where coal fired plants lie down together with wind mills and solar panels. But they don't work well together. It is like nuclear: nuclear plants have to run 24/7. Coal & gas fired plants do not need to. But when CCS is added, economy and probably also technics will force the plant to go 24/7.

ANOTHER issue that is not highlighted by the CCS-advocates is the water requirement due to CCS. The Department of Energy in the US estimated water withdrawal will grow 20%-130% and water consumption 50%-90%. This is not exactly a message that is easy to defend in a world where water scarcity is growing in many places.

CCS is a costly adventure tale - not a "low cost route" as Mr. Sweeney suggests. This is why the industry has been wooing politicians intensely - with success. Huge support schemes have been put in place in the EU. Because CCS cannot fly by itself. It now looks like it will not take off even with all that support.

I do not talk against public support schemes. Only they should be directed towards goals that are in the public interest.

The first measure must be to bring the DEMAND for energy services down among the rich/in the rich countries. Which is about genuine energy savings (and other demands that affect the climate adversely). The next is about energy efficiency, through technical/technological means. When these two have brought down the demand then renewables must be deployed to meet the demand.

Of course all 3 must happen simultaneously in most situations. But for instance when it comes to installment of heat pumps the demand side must be taken care of through insulation in order to avoid the heat pump being dimensioned too large.

WHAT are the answers to the 2 questions in the beginning of this comment? Well we\* have tried to do the calculations and we were surprised that CCS performed so poorly when viewed over a 40 years period. Only around 10% of the emissions from the large power plants would be avoided. 90% would reach the atmosphere. The carbon budget will burst. This makes CCS a truly false proposition. ([http://ccs-info.org/cumulative\\_co2.pdf](http://ccs-info.org/cumulative_co2.pdf))

The industry has not made these calculations – not publicly. Nor has IPCC, nor has IEA or any of the large CCS-lobby organisations. Instead they continue to repeat dreaming and persuading the rest of the world to share the dream. The persuasion always starts with the predictions: 1) energy demand will continue to grow and 2) fossil fuels will continue to be a large part of the energy mix. It is of course more soothing to look into a future where you do not need to make any changes other than installing a grand techno-fix. The politicians do not need to disturb the consumers – sorry: the citizens. And King Coal & Queen Gas can continue to rule.

BUT WHAT IF these predictions are not viable? What if we must come to terms with a future where we do not have energy (& other resources) available in the extent that has been the case in the industrialised world for decades?

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