

Cornwall Carbon Scrutiny Response

Please also be aware that some of you may not have actually thought as deeply into climate change and the moral dilemmas that it throws up. This document may cause some climate anxiety. I apologise for this. I have not included everything that I could in this document. Please take this response as the opening to discussion.

In the latest report from the Intergovernmental Panel for Climate Change, (IPCC), they state that we now need to use Carbon Dioxide Reduction, (CDR), in conjunction with a drastic reduction in emissions of greenhouse gases. They state that we are now reaching the tipping point of 1.5 C that the IPCC were stressing that we all needed to stay below. They go on to say that we do not know whether we can reverse any of the tipping points that will be reached.

Governments have moved at a glacial pace to reduce their countries emissions. I have a Ladybird book dating to 1976, with a foreword from Professor Kenneth Mellanby CBE, Sc D, DSc, F I Biol, that tells us what we are doing to the Earth. I was 3 at the time, (I am now 50), and this has just been pushed from generation to generation and is now a problem for my Grandchild. I cannot stress the urgency of this matter enough, and neither can the IPCC and UN. Now is not the time for us to say, "we would prefer to plant more sea grass, trees etc.", We need the whole gamut of CDR technology to save the Earth as we know it, in conjunction with drastic reduction of emissions. I don't think enough people truly understand where we are with this.

Earth has two natural ways of consuming CO₂- the Biological Carbon Cycle through photosynthesis, and the Geological Carbon Cycle through the chemical weathering of rocks. The biological carbon cycle operates on a relatively short scale- tens to hundreds of years. The Geological carbon cycle operates on much longer scales- hundreds of thousands of years to millions of years. From this you can probably tell that if you want to remove CO₂ from the atmosphere to reduce global warming, then one cycle clearly takes the CO₂ from the atmosphere and locks it away for much longer timescales. Both are useful but obviously we don't want the gases to be re-emitted in a few years from now. Therefore, the geological carbon cycle is the one that would be preferable as a long-term solution. Please bear in mind that both are natural processes that occur.

Currently I personally know of two types of activities that are utilising the geological carbon cycle here in the UK. Firstly, Planetary Technologies who are using magnesium hydroxide directly applied to the ocean in very low concentrations. The second is UNDO who are using powdered basalt applied to farmers fields in Scotland. Some of the basalt will provide a fertilisation effect on the crops grown on the field but ultimately it will be washed into rivers, and then the sea where it will react in the same way as PT's magnesium hydroxide. Thus, drawing CO₂ from the atmosphere and locking it into the geological carbon cycle.

I have tried to discuss your demands below.

1. To avoid moral hazard, emission reduction credits for offsetting must only be issued for residual unavoidable emissions following achievement of drastic emission reductions (90%) presented as part of a credible net zero/real zero decarbonisation strategy.

Project Drawdown also asks for donations. A list of companies that have donated in 2022 is easily found. Is your argument about carbon credits only? I can see that Amazon is listed as donations through the Smile part of their business. Isn't this type of funding the same? It is from a huge company that creates many tonnes of emissions every year. Shopify was established in 2006. It is still a growing company, and its emissions will also grow with the company. They have invested in numerous technologies to reduce their carbon footprint, as they grow. PT is just one of these. Is the issue here, that they state that they are doing this to make their business net zero? Isn't that a good thing? Or do we want to stop commercialisation, so no new company could ever exist or grow? I think that that is a very tricky moral and ethical discussion to be had. I believe that only an established, non-growing, or even declining company would have the actual ability to achieve drastic emission reductions of 90%.

2. CDR technologies must not be used to generate carbon removal credits at all currently, due to the risk of this promoting excessive, unregulated commercial activity in the oceans, testing unproven technologies.

Again, I ask if not carbon credits, then what type of funding would you allow? Every section of science needs funding. As I stated above, investment is needed. The technologies used by PT and UNDO are scientifically based on the natural geological carbon cycle. PT have been and are being thoroughly researched by an independent set of researchers chosen from the EA and also in collaboration with our local universities, (Plymouth and Exeter). PT also has its own code of conduct and asks for a global version of this to be implemented. I personally think that a global code of conduct for CDR companies to adhere to would be what I would be requesting.

3. Carbon accounting for emission reductions and removals must be evidenced through transparent, independently verifiable standards and there is a need for guidance on their use.

Both UNDO and PT are doing this at the moment, but an independent verifiable standard would be welcomed for future companies coming forward.

4. Strong, consistent regulatory effort is required at national and global levels to control the carbon market to ensure it drives measurable, high impact climate mitigation now and does not distract, undermine or channel finance away from effective nature-based solutions, emission reductions and habitat restoration we know will work (but may have no commercial appeal), into research ventures exploring unproven technologies.

The CDR technologies that are being used by PT and UNDO are based on nature-based solutions. The nature-based solutions you mention are not effective on their own. Please understand that all technologies are needed, as reported by the IPCC. There is a place and a need for planting trees, planting sea grass, protection of rare habitats, habitat restoration, green energy, enhanced rock weathering, peat restoration. The list goes on and on. The

biggest is to cut emissions drastically. This is not happening quickly enough, so we need everything else. I believe that the only way to stop emissions as drastically as is needed is for a complete culture change. If we don't do it soon then events will happen to make it essential. By then it will be too late. We really need to bombard our governments and keep pressure on them to reduce emissions a lot quicker.

5. To ensure integrity, a non-profit driven mechanism must be developed for directing finance towards solutions that are ready to implement and quantified such as those identified and fully researched by Project Drawdown. For example, four land sink solutions in Drawdown's top 20 have the potential to reduce/sequester between 122 and 190GtCO₂e by 2050: Tropical Forest Restoration (54-85), Silvopasture (27-42), Tree Plantations on Degraded Land (22-35), Temperate Forest Restoration (19-28)[1]. These also have multiple biodiversity co-benefits.

To undertake these activities both companies have received investment. Apart from the government, and environmental prize awards, UNDO are funded by Microsoft and PT by Shopify carbon credits. UNDO is also selling carbon credits. Carbon credits are necessary to fund these activities, as is sponsorship to most scientific or medical research. This is nothing new. How do you think that research is funded? You mention that "to ensure integrity, a non-profit driven mechanism must be developed for directing finance towards solutions that are ready to implement and quantified such as those identified and fully researched by Project Drawdown. Having looked at Project Drawdown in depth there are no ideas that utilise the geological carbon cycle. Most are things that we should be doing, but as the IPCC have stressed, we need more. We need to be doing them all.

6. Due to lack of understanding and uncertainty of risks and verification of ocean CDR, projects must not commence without prior local consent.

That is a given. However, you have to bear in mind that the general public do not all have degrees in geosciences. If they do not understand the processes behind the technologies, then how will they know that they will work. It could promote fear and then this could stop the technology from being used. If this happens all around the globe then we could be in a dire situation, because the technologies the IPCC says we need, wouldn't be able to be used. If you remove the long-term geological carbon cycle from the equation, then our planet as we know it is doomed. At the moment we can influence and engage with these CDR companies. There could be a point very soon when, in desperation, a project ramps up on a massive scale, untested and unresearched, to try and bring our climate back to a reasonable state. As mentioned previously, we need this global code of conduct.

7. In a statement on CDR: Nature-based and technological solutions, the European Parliament (2021) stated that nature-based solutions stand out as more cost effective and viable in the short run, while some technological alternatives have potential to become more relevant later this century [2].

This comment was dated before the latest IPCC report came out stating that we need to utilise all technologies now. I'm sure that in the light of this new advice, the comment would have to change.

8. We support the formation of a coordinated ethical framework to evaluate ocean climate actions prior to any deployment of geo-engineering in the ocean or on land.

Yes, the Global code of conduct mentioned above.

9. In terms of contribution to the global stocktake, we think the priorities are to protect blue carbon ecosystems and their climate services, through natural enhancement (e.g., seagrass, kelp, saltmarsh) amplify ocean-based renewable energy and harmonise all ocean with climate goals.

These are all very laudable schemes, but we now need CDR technologies too. Please bear in mind that the two CDR schemes mentioned are based on the natural geological carbon cycle and are just as important as the enhancements that you mention. They would play a key role in locking carbon away from the atmosphere on much larger time scales.

To summarise, we support an open-minded approach to climate solutions but expect project methodology to be independently validated prior to commencement, impacts to be measurable in the field so that verification can take place and, most important of all, potential harm to fragile ecosystems to be assessed following the precautionary principle. We are also aware that there are alternative ways to sequester the amount of carbon that PT have theoretically proposed, which we believe are more effective, lower risk and lower environmental impact with multiple co-benefits for biodiversity and society.

This is indeed happening with the PT scheme. You have not proposed a scheme that would lock away that amount of carbon in the long-term carbon cycle. All similar carbon sequestration schemes are operable in the short-term carbon cycle. These would emit CO₂ again within tens to hundreds of years causing vast problems for just a couple of generations down the line.

In conclusion, what we need is a global code of conduct that promotes responsible research and development in all areas of CDR removal. We need to take the best scientific minds behind these CDR technologies, use their research, and work with independent scientists to produce it. All governments should be made to implement it. We should demand that all governments stick to a drastic reduction in emissions in their countries. None of this mentality of delaying its implementation for the next government in power should be allowed. What really needs to happen is a vast culture change from commercialisation and consumerism. Will this happen? Yes, when it is too late. Let's hope that it doesn't get that far.

And remember, thanks should be given to all of those people who are actively working in science, technology and policy areas, to solve the myriad of problems associated with climate change. They have to work against climate change deniers, well intentioned do-gooders, unmoving governments whilst constantly dealing with climate change anxiety, because they see it all and have to deal with it on the general public's behalf. These are the real superheroes.