We give lots of lip service describing climate change as an emergency or existential threat. According to the Climate Emergency Declaration Organization, 2336 jurisdictions around the world have declared it to be an emergency, but we are not really acting like it. There are many possible emergency actions. I'm looking at 6 that could make a significant difference, are doable, but require real sacrifice and hard choices:

1. Ending financing of fossil fuel projects
2. Accelerating renewable siting on- and offshore
3. Fast tracking transmission
4. Requiring large-scale carbon capture
5. International agreement and focus on methane
6. Ending deforestation

Today, it's requiring large-scale carbon capture. (Here's Part 1 and Part 2).

This may be the most controversial of the emergency response proposals I want to consider, primarily because industrial carbon capture has been branded by the environmental justice community as a false solution. Here's a statement from the Center for International Environmental Law:

> Despite occupying center stage in the "net-zero" climate plans trumpeted by the United States and Canada at the Leaders' Summit on Climate, government spending programs, and bills pending before Congress and Parliament, carbon capture is not a climate solution. On the contrary, investing in carbon capture delays the needed transition away from fossil fuels and other combustible energy sources. It poses significant new environmental, health, and safety risks, particularly to Black, Brown, and Indigenous communities already overburdened by industrial pollution, dispossession, and the impacts of climate change.

Mine is likely a minority view, but I believe that the attack on carbon capture is overbroad, lacks nuance, and fails to reckon with an emergency. First, carbon capture should not take the place of emissions reduction. That remains essential and central. Second, we need to describe what is included in the concept of carbon capture (also referred to as carbon capture and storage and carbon capture, utilization, and storage). There are many forms of carbon capture, including nature-based (in trees, soil, wetlands, ocean, regenerative agriculture, etc.), direct air capture (directly from the air, through a chemical reaction), and industrial carbon capture (from industrial emissions, including cement, steel, and power

plants). "Utilization" refers to use, in some form, of the captured carbon, including for plastics, aviation fuel, and even Vodka. The captured carbon can also be stored underground in certain geologic formations.

While there is little opposition to most nature-based carbon capture (with some exemptions, and it can be expensive and difficult to achieve), and minimal opposition to the concept of utilizing captured carbon (once it's captured), opposition grows exponentially with direct air capture and, particularly, industrial carbon capture. Right now, direct air capture is relatively expensive, uses a lot of energy (to drive air through catalysts that capture carbon), and will require a lot of land if implemented at scale. All of that is changing – the price is dropping as the technology improves, cheaper and more efficient catalysts and processes are being invented, and efficiency and size are improving. Governments are providing incentives, and the industry is progressing. It is likely not yet ripe for an emergency set of actions along the lines of what I have been discussing.

The bigger controversy and bigger set of potential emergency actions focuses on industrial carbon capture. Here's my argument:

Scientists now agree that we can't stay anywhere near 1.5°C of warming without removing carbon from the atmosphere – in other words, carbon capture (or, to use less controversial nomenclature: carbon removal) in some form. Some of that will be through nature-based solutions, and the more of that the better. Some of it will be through direct air capture, but that will not be in a form to scale quickly for a number of years.

We can scale industrial carbon capture more quickly because the higher concentration of carbon at the industrial facility as opposed to the air makes the process more efficient and less costly. The powerful and vehement argument against it is that if dirty, polluting industries and facilities can capture carbon directly, that will extend the lives of those facilities and industries, thereby continuing to impact the overburdened communities that bear the brunt of the pollution. We are talking about steel plants, cement plants, refineries, power plants (coal and natural gas fired), and other large manufacturing operations that use a lot of energy.

If I thought it was realistic that we could transition these manufacturing operations quickly – in something akin to an emergency fashion – I would have a different view. But we are not going to stop using natural gas in the next five or ten years, not going to stop producing cement or steel in that time period, and not going to end polluting emissions. The issue is about what the transition to clean fuels and manufacturing looks like and how long it will take. We should do two things at once: transition rapidly to clean energy but capture

carbon while we make that transition.

Polluting industries will try and extend the lives of their operations for as long as they can regardless of whether they are capturing carbon or not, so in my view carbon capture provides a climate benefit with significantly less downside risk of life extension than opponents contend. (As one example, in California, a number of coastal power plants were supposed to shut down because of rules around once-through-cooling, but because of concerns about blackouts, those plants were given an extension for operation, and will likely get an additional extension. Will cement, steel, and power plants really be shuttered more quickly because they are emitting carbon than they would be if they are capturing the carbon? I'm not convinced.)

Mine is not a popular view, but, in an emergency, shouldn't we carefully consider the risks, rewards, and alternatives?

This approach requires careful consideration of consequences and what the energy transition looks like in more detail than we have done to this point. Shouldn't that be part of emergency response? The climate change emergency response need not be frantic, at least not until climate change impacts become even more acute.

Next time: fast action on methane.