**Reflections on COP 28 Dubai from the CCS Scientist in the Room**

The Paris Agreement of 2015 was a historic milestone, but it was only the beginning of the journey. The agreement calls on countries to set their own targets to reduce emissions in the form of nationally determined contributions (NDCs) and long-term strategies (LTS). Each country is expected to plan and implement its own emission reduction actions, based on its national priorities and circumstances. The agreement also calls for regular updates of the NDCs to reflect increased ambition over time. The ultimate goal is to limit the global temperature rise to well below 2°C, preferably 1.5°C, above pre-industrial levels.


*Katherine at the entrance to COP28 Dubai*

So, how are we doing so far? At COP28 in the UAE, the first ever Global Stocktake took place to assess the collective progress towards the goals of the Paris Agreement. The result is disappointing. The world is far from what is needed to "keep 1.5 alive". We are already at about 1.1°C of warming and emissions are still rising. Climate change impacts are already being felt and are accelerating at an alarming pace. It is clear that we need to ramp up mitigation actions by orders of magnitude this decade if we want to have a chance of meeting the 1.5°C target, which is being referred to as the "North Star". If not, the IPCC reports warn us of the catastrophic consequences of climate change, such as unprecedented ecosystem collapse, extreme weather events, and human suffering.

As I write this, I am travelling home after spending two weeks at COP28 in the UAE. My time there was dedicated to providing scientific information to the COP on carbon capture and storage (CCS), a mitigation technology that prevents the release of CO2 from industrial facilities by capturing it from the flue gas, compressing it into a liquid, and injecting it deep into geological formations for permanent storage. This technology can also serve as a means of removing CO2 from the air by using direct air capture or bioenergy with CCS.

More than twenty years of research and development on CCS worldwide, including by the Bureau of Economic Geology at The University of Texas at Austin where I work, shows that the technology is safe and viable. We know it works, but misinformation and misunderstanding about this technology abounds at the COPs. As a research scientist who has studied and developed aspects of this technology for almost two decades, my goal at the COP was to help people understand the science behind the technology.

After 10 years of participating in UNFCCC COPs, it was my busiest yet. I co-organized two events, spoke at seven events, set up and ran our information booth, empowered developing country delegates to attend COP, conducted a


*Katherine with her Official UNFCCC Side Event team*

webinar interview, met with ministers and premiers, and intervened in youth events where much of the misinformation resides. I also sought to participate in the spirit of the *majlis* (an indigenous tradition that brings community members together for respectful communication) by listening and hearing what the passionate people who do not support the implementation of CCS are feeling when they call for actions that, in my view, are not supported by science or logic. I wanted them to hear me too, and some did, but the many remain in impassioned beliefs.

The most contentious issue is around the phase-out or phase-down of fossil fuels, or more precisely, of "unabated" fossil fuels. What is meant by unabated? CCS, of course. Is it OK



*Protests against fossil fuel include anti-CCS messages*

to still produce some fossil fuels for energy security and stable baseload if emissions are abated? The Paris Agreement targets emissions, not the activities that produce them. Thus, CCS can abate the emissions from fossil fuel use as we transition to other alternative sources. How long that will take is anyone's guess, but in my view, it will take decades at best. In the meantime, we need to urgently stop emissions and with CCS, we can use fossil fuels (in a limited way) if we do not allow the emissions. This statement is a fiery point of contention for many who believe it's the fossil fuel production that is the problem, not the emissions they produce. I believe, as many others do, that the omission of the word "abated" from the Global Stocktake text could spell a death sentence because it could allow emissions to continue as we try the unprecedented action of moving away from an activity that is deeply entrenched in human society.

So where would the final negotiated text land? With tempers flaring and impassioned pleas from various groups could an agreement even be reached? Would the consensus language on fossil fuels call for phase-out, phase-down, include the word unabated, or be scrapped completely? The world waited as the negotiators wrangled into wee hours of the night, text delayed, delegates scrambling to hear any word from inside the negotiating room on how things were going.

Finally, on December 13, in a miraculous act of consensus, now known as the UAE Consensus, the world learned that a plan was agreed - acceptable to all. I watched John Kerry's speech at the closing plenary from London Heathrow airport. Having just turned 80 years old and working tirelessly for two weeks at COP, his raspy voice was full of strength and hope. He began by complimenting those who went sleepless in the negotiations for hours on end, hammering out an agreement. He recognized


*The Dubai Consensus is agreed!*

that finding consensus among some 200 countries is not easy and that not everyone gets exactly what they want. With 700,000 pages of inputs from countries over two years in the making, no one can see their views completely represented, but consensus is needed to "define the common good". There is great cause for optimism, gratitude, and congratulations in the awe of the spirit of cooperation that was manifested. "Now we must reach as far and as fast as we possibly can". The clock is ticking loudly.

We must keep 1.5 alive and do what is necessary to strengthen our NDCs to be aligned with science. Deep, rapid and sustained reductions in global greenhouse gas emissions must reach net zero emissions by 2050. Here is where some of the text finally landed:

*(a) Tripling renewable energy capacity globally and doubling the global average annual rate of energy efficiency improvements by 2030;*
*(b) Accelerating efforts towards the phase-down of unabated coal power;*
*(c) Accelerating efforts globally towards net zero emission energy systems, utilizing zero- and low-carbon fuels well before or by around mid-century;*
*(d) Transitioning away from fossil fuels in energy systems, in a just, orderly and equitable manner, accelerating action in this critical decade, so as to achieve net zero by 2050 in keeping with the science;*
*(e) Accelerating zero- and low-emission technologies, including, inter alia, renewables, nuclear, abatement and removal technologies such as carbon capture and utilization and storage, particularly in hard-to-abate sectors, and low-carbon hydrogen production;*
*(f) Accelerating and substantially reducing non-carbon-dioxide emissions globally, including in particular methane emissions by 2030;*
*(g) Accelerating the reduction of emissions from road transport on a range of pathways, including through development of infrastructure and rapid deployment of zero and low-emission vehicles;*
*(h) Phasing out inefficient fossil fuel subsidies that do not address energy poverty or just transitions, as soon as possible;*

Kerry also called for the use of transitional fuels with abatement technologies (again CCS), which are needed for energy security in a time when political wars and upheavals are so prevalent. He called for a fundamental change in the international finance system and for finance to support developing countries. Lastly, he mentioned the strong agreement between the US and China, laid out in the Sunnylands Statement, which determines that the US and China will update and strengthen their NDCs to more rapidly and strongly adhere to the goals of the "North Star" and calls upon other countries of the world to do the same. Such an agreement between China and the US is only made possible by the longstanding personal relationships between Kerry and China's climate envoy Xie Zhenhua, that transcend politics.
So, after two weeks of being involved in my own small way in this historic moment in human history, and as I travelled home listening to John Kerry's words, I did have a glimmer of hope that, in the spirit of listening and cooperation, give and take, and the concepts of the majlis, the world could actually come together to save the most precious gift we have all been given. May it be so, I pray.

Katherine Romanak
December 13, 2023


*Our information booth on CCS was popular!*

*Katherine intervenes in the Youth event on transitioning away from fossil fuels.*

*A packed room at our UNFCCC Official Side Event on CCS on Cement*


*Panel discussing the Carbon Management Challenge- A high level initiative led by the USA to incentivize CCS worldwide*


*Our event on CCS in developing countries featuring Trinidad and Tobago, Timor Leste, and Guyana.*


*More anti-Fossil fuel protests*