IEAGHG Information Paper 2014-26; COP-20 Lima

A Climate Change Agreement?

The UNFCCC's banner for CCS

The COP ended in the early hours on Sunday morning after much contention and differences in views during the two weeks, with an outcome which allows a climate agreement in Paris next year able to be achieved. Called the 'Lima Call for Climate Action', the Lima outcome agreement confirms Parties' intentions to develop and adopt an ambitious global climate agreement at COP-21. The global agreement will apply to all parties (ie developing as well as developed) and will address in a balanced manner mitigation, adaptation, finance, technology development and transfer, capacity-building, and transparency of action and support. It continues the principle of common but differentiated responsibilities between countries. This Lima agreement acknowledges progress made in Lima towards elaborating elements of a draft negotiating text for the global agreement, its 37-pages of multiple options now sit in an annex to the Lima agreement. Agreement was reached on the type of information parties 'may' include when communicating their intended nationally determined contributions (INDCs) – the national building blocks of the global agreement. However this information and its quantifiable nature was only a "may include" not a "shall include". Significantly though, these INDCs will represent "progression beyond the current undertaking of that Party", so some progress in emissions reductions will be achieved whatever. These INDC are to be communicated well in advance of the COP-21 (latest by 1 October 2015) so that the UNFCCC can publish a report on their aggregate effect by 1 November 2015.

The Lima Call for Climate Action also requests further actions such as 'technical examination' of high mitigation opportunities, including further 'technical expert meetings' (as on CCS in Bonn, see my blog on 23 Oct) with these written up into a mitigation technical paper and focusing on actionable policy options, and building on and using the Technology Mechanism. The Lima agreement also calls for more international cooperation on mitigation action. This means more opportunities for information and evidence on CCS to be input, and potentially for CCS activities in developing countries to be supported.

In general, there was an increasing emphasis by developing countries on adaptation. In terms of climate finance, new pledges took the Green Climate Fund over its targeted US$10 billion mark, and around 70 Parties have started processes to work with the GCF so that money could start to flow as soon as 2016.

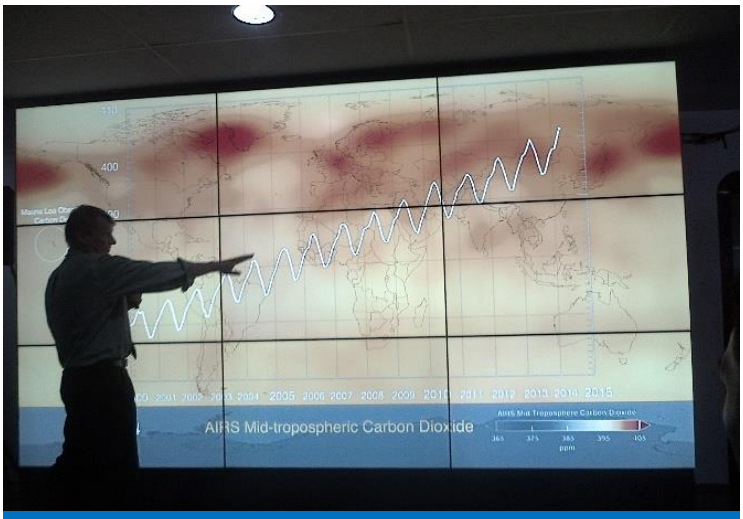
So overall, not as strong an agreement out of Lima as many would have liked, but still enough of a framework to enable a new climate agreement to be achieved in Paris. UNFCCC's ADP will continue its work toward the Paris agreement in February in Geneva.

"Put the CO_2 from the coal back in to the hole"

Throughout time spent in the COP several things were noteworthy. The first was the fresh optimism created by the USA-China bilateral agreement, although the usual differences in views between developed and less-developed countries reduced this as the COP progressed. The USA was proudly showing their emissions reduction achievements and projections and the contributions of the Clean Air Act and the proposed Clean Power Plan, very significant reductions for the second largest emitter, and their confidence in proposing a 26-28% reduction by 2025. The other thing of note was the

increased protesting against production of fossil fuels, with some of this being expressed at related side events (except ours). “Keep the oil in the soil, keep the coal in the hole” was a common chant. This meant a lack of awareness of the powerful and unambiguous messages in the IPCC AR5 in respect of the role of CCS in significantly reducing emissions from fossil fuel use and for its use with biomass to remove atmospheric CO_2. Perhaps one could suggest “put the CO_2 from the coal back into the hole!”

There was good sharing of science and information by many at COP-20. By IPCC on AR5 of course, by IEA (including on how UNFCCC mechanisms can support CCS), by NASA on global CO_2 and other pollutant distribution (using their ‘Hyperwall’ and a real astronaut is impressive), and in a modest way by IEAGHG and collaborators on CCS.



Piers Sellers, NASA, showing CO_2 levels and global distribution

The IEA’s work on how different UNFCCC mechanisms and funds could support CCS activities was well presented by Ellina Levina at the IEA’s Energy Day. See the IEA Information Sheet ‘Carbon Capture and Storage and the UNFCCC Mechanisms (December 2014). The few side-events related to CCS attracted much attention, some of it negative. I was surprised by the apparently increasing anti-fossil energy views being expressed there, and still basic questions on the need for and viability and safety of CCS deployed at scale. It appears the IPCC AR5’s conclusions are being somewhat overlooked by some.

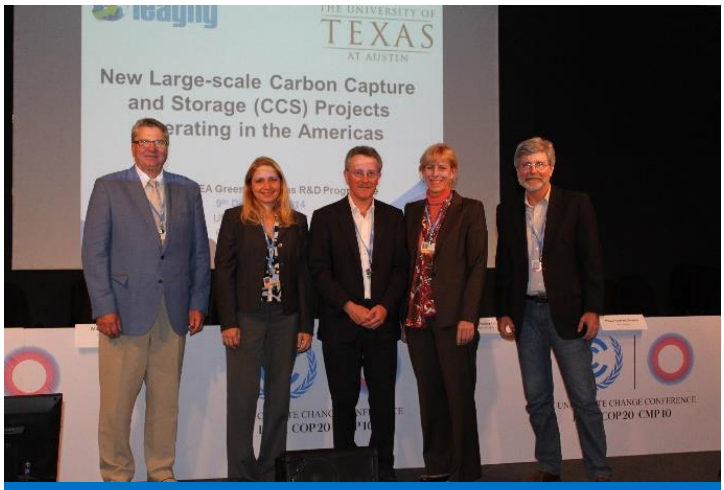
CCS Side Event

The main UNFCCC Side Event on CCS was held on Tuesday 9 December. Entitled “New Large-scale Carbon Capture and Storage (CCS) Projects Operating in the Americas”, it was organised by the IEAGHG with The University of Texas and CCSA. In terms of understanding the role of CCS in future climate ambitions this was a valuable event, as it included the world’s first full-scale CCS project on a coal power plant, at Boundary Dam in Canada, and Brazil’s offshore CO_2 management.

Context-setting was provided by myself, including IEA’s projections, IPCC AR5’s emphasis on CCS, and CCS developments in the UNFCCC. These developments happened when new scientific knowledge and project experiences were input to the UNFCCC processes, notably at the CCS workshop on CCS in CDM in Abu Dhabi in September 2011 (which was followed by CCS being included in the CDM), and recent UNFCCC ADP Technical Expert Meeting (TEM) on CCS held in Bonn. This TEM focussed on CCS project experiences, and our UNFCCC Side event built on that in looking at large-scale project experiences in the Americas. In all of these developments, IEAGHG has been active by inputting evidence-base from its technical programme. The UNFCCC provided special treatment to our event, by including it in their ADP TEM ‘Fair’. This was not only good for CCS to get this high-profile, but the UNFCCC also provided a TEM banner on CCS which was rather pleasing, a cartoon showing CO_2 going into a locked safe (see photo).

Mike Monea, enthralling the audience from the UNFCCC podium

Mike Monea, President, Carbon Capture & Storage Initiatives SaskPower, presented on "SaskPower CCS" focussing on Boundary Dam, the world's first commercial-scale CCS project on a coal power plant. This started operating in October, has already captured 100,000 t CO_2, and it is already over-achieving anticipated performance in terms of energy penalty (less than expected), CO_2 stream purity (food grade 99.9%) and the significant reductions in the other pollutants of SO_2. NO, PM10 and PM2.5. This shows so well the principle of 'learning by doing', with Mike emphasising that what they've learnt will enable them to build the next one at 30% lower cost, and his enthusiasm for the international community to visit and learn from their positive experiences. Questions included on the specifications for CO_2 stream purity, whether the amine capture would work on biomass energy plant, the finance and economics, and the benefits of being the world's first



The UNFCCC Side Event team: Mike Monea, Vanessa Nunez-Lopez, Tim Dixon, Katherine Romanak, Paulo Negrais Seabra

Paulo Negrais Seabra of Petrobras presented on Petrobras' Offshore CO_2 Management using the Pre-salt development. It is impressive in many aspects that Petrobras are undertaking this activity. Firstly that they decided to do the CO_2 separation and injection so that the CO_2 is not vented. Then, that they do it in such deep water conditions (2000m) and then 5000m beneath the seabed. And also the quantities of CO_2 involved. Thick salt layers separate the carbonate oil reservoir into which they are injecting from the seabed (hence the name). The natural gas they are extracting has 8-20% CO_2. This is separated with a membrane technique (smaller footprint which is important offshore, simple to operate, copes with a range of CO_2 concentrations). The CO_2 stream which is re-injected is 30-70% CO_2, the rest being natural gas. CO_2 injection started in 2013 and has reached around 1Mt so far, and is used with water injection for EOR. Because of the water depth, operations are undertaken from a tethered floating vessel called a 'FPSO'. Questions was asked about the future quantities to be injected.

Vanessa Nunez-Lopez of the University of Texas Gulf Coast Carbon Centre presented on USA Large-scale Onshore Projects, covering the operational (six large-scale injections underway) and planned projects in the USA, focussing on those that the University of Texas are directly involved in. Her presentation showed how EOR activities facilitated the infrastructure needed for CCS, specifically

Denbury's 325 miles of Green pipeline which is now taking anthropogenic CO_2 from sources in Port Arthur and Lake Charles to the Hastings oil field.

Katherine Romanak of the University of Texas Gulf Coast Carbon Centre presented on a Global Offshore Demonstration Project. This is a concept initiated by the USA, and being investigated using a new task force set up by the Carbon Sequestration Leadership Forum, which will report in 2015. Katherine showed the global potential for offshore storage, offshore activities so far, and described plans for an international workshop on this topic. She including how countries could potentially use the UNFCCC's Technology Mechanism to assist with their involvement. Questions were asked about the benefits of offshore CO_2 storage including public perception, and on regulations.

I concluded the session by reminding the audience of the IEA's and IPCC's messages on the need for CCS deployment, and hoping that the ADP delivers a good climate agreement at the COP in Paris next year. CCS is not 'science fiction' but 'science fact', as demonstrated by these presenters and these projects.

The event was attended by an interested and positive audience from many countries including USA, UK, Japan, Peru, Sudan, Turkey, Saudi Arabia and India.

The presentations are available on http://www.ieaghg.org/publications/blog and will be made available by UNFCCC also.

Other IEAGHG activities

The booth of the University of Texas shared with IEAGHG was suitably busy. UT, SaskPower and IEAGHG general publications on CCS were disseminated. There continues to be a hunger for information on CCS at COPs, particularly from developing countries.

The University of Texas booth

IEAGHG was invited to present on "CCS as a Critical Part of the Carbon Budget" in an IPIECA side-event on 'Unburnable Carbon in the Context of the Future Energy System'. The IEA's assessments of low carbon technologies in future energy systems and the IPCC AR5 provide strong justification for the role of CCS. The investment in and value of fossil energy reserves and resources appears to be of increasing concern to stakeholders, with the Bank of England launching a review on this topic in the perspective of stranded assets, 'unburnable carbon' and hence risks to financial stability. So it seems CCS is becoming increasingly important to the finance sector also!

In conclusion

Compliments to the hosts Peru for providing a pleasant and functional venue with lots of working space outdoors in fresh air, as it was often rather hot indoors!

So overall, whilst as always more could have been achieved, this was a COP with good science and a COP with some progress.

The IPIECA side-event

For more detailed information on the COP outcomes see:
http://unfccc.int/meetings/lima_dec_2014/meeting/8141.php and
http://www.iisd.ca/climate/cop20/enb/ .

Tim Dixon
22nd December 2014