Pathways to a sustainable future; governance of CO_2 removal & mitigation strategies for industry

EC Pavilion 11th December 16:15 – 17:45

Key messages:

- Limiting average global temperature rise to 1.5°C is possible, but the longer we wait to ambitiously reduce net greenhouse gas emissions and change our behaviour, the more expensive and challenging it will be to limit average global warming to 1.5°C by the end of the century
- A range of measures are available for carbon dioxide removal (both nature based and technology based) and emission reduction
- Effective governance (regulatory and financial frameworks) is critical to achieving climate targets, particularly governance of land use which will determine where measures to reduce and remove carbon dioxide (CO_2) will be deployed
- We need to ensure that we pick the right solutions that are effective in the local and global context
- We need to achieve true carbon neutrality through a whole system change, there is something for everyone to do
- The main challenges to achieving climate targets tend to be cultural and political, not technological
- We need both emission reduction/zero CO_2 emissions and CO_2 removal targets and we need to be honest in our carbon accounting to ensure that we account appropriately for applied measures in our carbon budget
- Industry needs policy predictability in order to make investment decisions

Report on the event:

National efforts to meet climate targets involve short and long term strategies to tackle the climate emergency. The side event in the EU Pavilion organised by CO_2GeoNet, Carnegie Climate Governance Initiative and ImplementaSur, set out the need for large scale emission reduction and removal, the importance and role of governance in achieving climate targets and presented some of the key emission reduction measures being implemented and assessed. A few key messages are given here, incorporating the presentations from the event and panel discussion with the audience.

Nicolas Westenenk, a representative of the Chilean government and head of COP25 Climate content, presented scenarios and measures for achieving Chile's target of carbon neutrality by 2050. Over the last 18 months, the Chilean government has focused on consultation with industry, academia and other key stakeholders in order to prepare the reference emission scenario and two emission reduction scenarios that are even more ambitious than current policy (Long term exploratory and Neutrality by 2050). The key area for emission reduction in these scenarios is the energy sector with decarbonisation of electricity supply, energy and building efficiency and electrification of transport playing a major role. The new coal phase out policy means that all coal fired power plants will be closed by 2040. The Neutrality by 2050 scenario calls for additional measures including changes to land use and is still under consultation.

Thelma Krug, vice-chair of IPCC presented results from the IPCC Special Report on Global Warming of 1.5°C, highlighting different emission pathways to limit warming to 1.5°C above pre-industrial levels at the end of the century and measures for the industrial transition. This report was produced as per an invitation from the UNFCCC in 2015 and was approved by the IPCC member governments

in October 2018. The 1.5 Special report assessed a number of emission scenarios, all of which requiring net zero CO_2 emissions by around 2050 and parallel reductions in other non-CO_2 gases and forcers. The report was based on assessment of relevant worldwide literature and reflected the up to date scientific knowledge. One of the results of the report is that the longer actions to curb emissions in all areas of society (energy, industry, infrastructure, land use and ecosystems, agriculture) are delayed, the more challenging it will become to zero the emissions, and the more reliant we will be on negative emissions (removing CO_2 from the atmosphere). In some of the assessed pathways, the global temperature increase exceeds 1.5°C (overshoot pathways) before the end of the century, thus requiring the implementation of Carbon Dioxide Removal (CDR) options to bring warming to 1.5°C or below by 2100. Some of these CDR options involve nature-based solutions, such as afforestation and reforestation. Bioenergy with or without Carbon dioxide Capture and Storage (CCS) is another CDR option that, if well managed and under land-use governance, can avoid potential negative impacts from its implementation. Barriers to achieving 1.5°C are not always technological or financial but often socio-cultural or political. Large scale implementation of anything is challenging! No one will be left out – we need true system transformations in all sectors and strong behavioural changes as well.

The event showcased two case studies on potential measures for reducing emissions; a case study of steel from Chile and a case study of CO_2 Capture and Storage (CCS) from Norway.

Georg Caspary, a senior consultant at ImplementaSur set out a case study for emission reduction from the steel industry in Chile. The steel industry generates direct (process) and indirect (electricity) emissions. From an industry perspective, it is essential to prepare for incoming regulations both in country and internationally; policy predictability and cost implications need to be known and incorporated into investment strategies in order to achieve these ambitious goals in a cost effective manner within the constraints of needed operational reliability. This is still a work in progress and a range of options and their emission reduction potential and cost implications are being considered. Measures being assessed in the scenario include using lower carbon electricity, changes to the manufacturing plants, the use of hydrogen for the direct reduction of iron and CCS. A clear carbon price is needed to help industry respond to low carbon policies, with an emission reduction target and an investment plan on greenhouse gas mitigation technologies. Low carbon products could be very clearly recognised for export through certificates. Most industries don't expect to achieve zero emissions so how will we offset this in a net zero carbon world? We will need negative emissions, nature- or technology-based.

Sofie Fogstad Vold from the Norwegian Ministry of Petroleum and Energy presented on CCS, one of the many measures that can help meet climate targets. The government and industry in Norway have over 20 years of experience in CCS and the two current projects reduce Norwegian annual emissions by 3 – 4%. The latest CCS project under development, a full scale joint government-industry project, is planning for a Final Investment Decision in late 2020/21. The transport and storage infrastructure will be oversized to allow future expansion as more emitters benefit from the open store. This part of the project is referred to as "Northern Lights" and is managed by Equinor, Shell and Total. A well to prove the geological formations is being drilled now. The focus for the Norwegian government is that in the global context, this should be one of many new projects, not one of the last. From the Norwegian government's perspective, it is critical that the project advances the emerging CCS industry through knowledge sharing and experience. CCS can support emission reduction and negative emissions. Real projects moving forward, driven by industry interest, give a clear signal to governments that business cases can be built to support these emission reduction measures.

Niklas Höhne, a founding partner of the New Climate Institute, presented options and considerations on carbon accounting and market/policy mechanisms. The challenge is to keep focus on reduction of emissions while simultaneously preparing for large scale negative emissions (the latter will almost certainly be needed to meet climate targets). There are a range of technologies/nature based solutions we can consider but we need to take into account maturity of the approach and how long and how securely the carbon dioxide will be stored. These measures can be supported through research grants, regulations and standards, economic incentives and private funding, depending on economics and the level of maturity. It is important to consider if measures are really carbon neutral for example if a fossil fuel plant is compensated by afforestation, is this really carbon neutral? We need to reduce emissions and increase carbon sinks and we should set separate targets for carbon dioxide removal and emission reduction to avoid the risk of one diverting attention from the other.