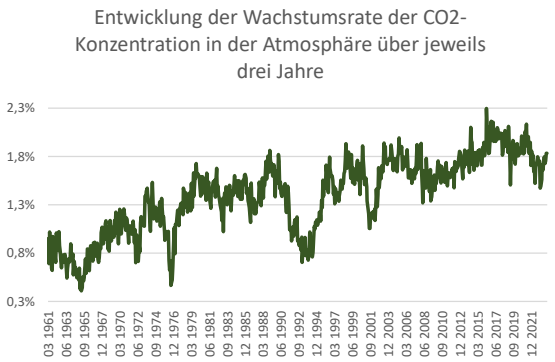
CAP_2 Position

COP28 - Interim conclusion on the last meter

Issue from 11.12.2023

The COP28 conference in Dubai is slowly coming to an end and it is time to draw a first conclusion. The main task of the conference was to take stock of where the world stands eight years after the signing of the Paris Agreement - and how countries intend to remedy the massive deficits that have arisen in the implementation of targets. Measured by the CO_2 concentration in the atmosphere, all previous climate conferences have failed. Since regular measurements began in 1958, the concentration of CO_2 in the atmosphere has risen exponentially, and the conferences of the last 20 years have done little to change this. At best, one could favorably state that the growth rate has not increased in the last 20 years.



Source: Global Monitoring Laboratory - Carbon Cycle Greenhouse Gases (noaa.gov)

But where do we stand now at the conference with the negotiations on the draft treaty?

One of the most important texts yet to be finalized is the Global Stocktake, a biennial comprehensive assessment of countries' nationally determined contributions to climate change mitigation. These national emission reduction strategies will be reviewed every five years in accordance with the 2015 Paris Agreement to limit global warming to 1.5°C.

The draft text published by the UNFCCC contains a number of options for reducing global emissions. These include three options for formulating a phase-out of fossil fuels and a draft text on the role of the private sector and nature.

Fossil fuels

The main topics of discussion for the rest of the conference are now the strategies for phasing out or phasing out fossil fuels. It should be critically noted that fossil fuels are discussed in very general terms and coal, oil or gas are not explicitly addressed. The current positions can be seen in the following quotations. At one point, there is talk of an "orderly and just phase-out" of the use of fossil fuels, whereby there should be an "acceleration of efforts to gradually phase out the use of fossil fuels" in order to achieve a rapid reduction in their use until a net-zero CO_2 balance of the energy systems is achieved around the middle of the century.

This does not sound very ambitious, although the negotiations are currently focusing on two pillars of a phase-out strategy for the fossil fuel industry. These are the technical processes of Direct Air Capture (DAC) and Carbon Capture and Storage (CCS), which can be used to achieve net-zero CO_2 emissions. It will discuss how these processes should be utilized in order to achieve the proclaimed goal.

Direct Air Capture

Technologies for the direct capture of CO_2 from the air (Direct Air Capture, DAC) remove CO_2 directly from the atmosphere for storage or utilization. To date, 27 DAC plants are in operation worldwide, capturing just under 0.01 million tons of CO_2 every year. In 2022, a total of 37 billion tons of CO_2 were emitted, of which the emissions captured by DAC account for only 0.000027% of current emissions.

One disadvantage of this technology is its enormous energy requirement. In 2020, the average estimate of energy consumption for solid sorbent technologies was around 8 GJ/t CO_2, which corresponds to around 2200 kWh/t CO_2. To illustrate this a little more concretely with an example: The electricity of 2200 hoovers running at full load for one hour is required to remove and store one ton of CO_2 from the air using this process. If Germany wanted to use this technology alone to reduce its annual CO_2 emissions from the air by around 660 million tons, this would require around 1452 terawatt hours, which is more than three times Germany's annual electricity consumption. Where these additional quantities of

electricity for CO_2 capture are to come from in addition to the as yet unavailable electricity for future heat pumps, electric cars and e-fuels was also not explained conclusively in Doha. The "Global Commitment on Renewable Energy and Energy Efficiency", which is supported by 123 countries and aims to triple global renewable energy capacity by 2030 and double energy efficiency, will not be sufficient in this context.

Carbon Capture and Storage

Not only OPEC, but also all other major oil nations are in favour of carbon capture and storage (CCS) and the use of CO_2 to improve oil recovery (enhanced oil recovery (EOR)) and reduce gas flaring. This technology is also currently negligible on a global scale. Around 40 commercial plants for the capture and storage of carbon dioxide are currently in operation worldwide. They have a total capture capacity of more than 45 million tons of CO_2 per year and could theoretically capture 0.1216% of global emissions. However, these large plants are used almost exclusively for EOR and do not capture any additional CO_2 from the atmosphere. Enhanced oil recovery (EOR) is an oil extraction process that is only used when conventional primary or secondary technologies are no longer successful. Carbon dioxide enhanced oil recovery (CO_2-EOR) is a method of extracting oil from mature and unproductive fields that are no longer profitable using conventional techniques. Carbon capture and storage and the reduction of gas flaring are also used as measures to reduce greenhouse gas emissions. EOR can extend the life of an existing oil field by several years to decades and enable the production of millions of additional barrels of oil. However, an oil or gas platform requires considerable amounts of energy to do this. The energy is usually generated from the extracted gas using huge turbines, whereby the exhaust gases, i.e. CO_2, are forced back into the reservoir. In this way, the production pressure is maintained and the flow properties of the oil are improved.

Coal phase-out

With regard to the coal phase-out, a rapid phase-out of unabated coal-fired power generation in this decade and an immediate halt to the authorisation of new coal-fired power plants are called for. National contributions to climate change are closely linked to past cumulative CO_2 emissions. This is due to the fact that a significant proportion of the CO_2 emitted remains in the earth's atmosphere for centuries. For this reason, there is great interest in determining and fairly distributing national contributions to climate change. In this way, binding commitments to decarbonisation or reduction pathways can be formulated and the country-specific share of the remaining carbon budget can be determined. In this context, two alternatives for assuming responsibility for historical emissions are under discussion. One of these states that "just" reduction measures are guided by historical responsibility, while the other describes the endeavors to achieve global climate targets as a "future-oriented process". [1]

Methane

Compared to carbon dioxide, which can remain in the atmosphere for hundreds to thousands of years, methane has a comparatively short lifespan of around 12 years. Nevertheless, methane (CH_4) is an extremely powerful greenhouse gas with a global warming potential that is 24 to 28 times higher than that of carbon dioxide (CO_2). Methane accounts for around 17% of the anthropogenic greenhouse effect. It was explicitly included in the negotiations for the first time. "The Parties have considered taking further measures to reduce emissions of greenhouse gases other than carbon dioxide by 2030. These include a global reduction in methane emissions of at least 30 per cent by 2030 and 40 per cent by 2035."

[1] See also: Remaining emission budgets: https://www.nature.com/articles/s41597-023-02041-1

Ecosystems

Since the beginning of the climate conferences, nature-based solutions have been considered promising. However, there is still no reliable framework for avoiding double counting, which would be essential for carbon offsetting. This fact will not change at this year's COP. In order to avoid double counting, the aim in Paris was to establish an internationally monitored mechanism for reducing emissions in one country and then transferring the results to another country. The criteria for a high-quality climate protection project would be the avoidance of exaggerated impact assessments and, above all, the additionality of the measure and the permanence of the storage. The current literature makes it clear that most offset projects have serious shortcomings in terms of their effectiveness, additionality and, in particular, durability.

The draft emphasises the importance of ecosystems as carbon sinks and reservoirs: "It is of great importance to protect, conserve and restore nature and ecosystems. This includes halting and reversing deforestation by 2030, protecting terrestrial and marine ecosystems that act as sinks and reservoirs of greenhouse gases, and protecting biodiversity."

Financing

The current provision of funding for climate action, technology development, technology transfer and adaptation capacity appears insufficient to respond adequately to the worsening impacts of climate change. It should be noted that the projected needs for adaptation measures are about 10-18 times higher than the international public funding flows to support them. Since the official launch of the Loss and Damage Fund, a total of USD 726 million (EUR 674 million) in pledges has been received from a wide range of countries including Germany, Italy, France and the United Arab Emirates. It is well known that the funds pledged at COPs often take a long time to reach those who need them most. A successful COP28 would help to ensure that rich countries step up their efforts and commit the $100 billion agreed in 2009 for climate finance to minimise loss and damage. Parties must reduce financial flows that are incompatible with climate protection and the achievement of the goals of the Paris Agreement. The flow of finance to emission-intensive, maladaptive or non-carbon resilient activities can be reduced through measures such as the phasing out of fossil fuel subsidies, carbon pricing and the introduction of regulations. These measures aim to create the conditions for steering the private and financial sectors, as well as improving transparency and accountability of the private sector by eliminating misleading environmental advertising in the markets and combating greenwashing.

Bloomberg reports that Saudi Arabia has rejected a COP28 text calling for the phase-out of fossil fuels. The OPEC countries are also clearly struggling with resolutions against fossil fuels.[2] "Those countries that really believe in phasing out hydrocarbons should come up with a plan on how to do it," said Prince Abdulaziz bin Salman, Energy Minister of the Kingdom of Saudi Arabia. They are harsh words, but in a way he is getting to the heart of the matter.

And with regard to Europe, the President of the African Development Bank, Dr Akinwumi Adesina, warns that a new EU carbon tax could significantly restrict trade and industrialisation in Africa. Exports of high value-added goods such as steel, cement, iron, aluminum and fertilizers would be disadvantaged. These restrictions could have far-reaching consequences.

Emissions trading as a solution?

Whichever way you look at it, the endeavours may be huge, but the devil is in the detail. The many conferences of recent years have not borne much fruit, as the continuing high growth rates in the CO_2 concentration in the atmosphere show. Since the start of regular and highly precise recording of the CO_2 content in the atmosphere in 1958, the value of the CO_2 concentration has risen cumulatively by almost exactly 33%; a trend that cannot be allowed to continue for much longer if the target of a maximum

[2] World Climate Conference in Dubai: OPEC call causes outrage | tagesschau.de

warming of two degrees compared to the pre-industrial age is not to be significantly missed. However, there is no reason to despair; Europe is now showing how it could succeed in reducing emissions from year to year. The success of this is probably largely due to EU emissions trading. In recent years in particular, it has been noticeable that the sectors subject to emissions trading have been able to successfully reduce emissions. It is not without reason that China has copied the European approach to emissions trading and is currently in the process of implementing a comparable system. In other regions of the world, it is unfortunately not yet recognisable that this approach is gaining acceptance. Ultimately, a well-constructed global emissions trading system would make climate conferences virtually superfluous and at the same time almost guarantee the politically set reduction targets. And at abatement costs that politicians around the world could only dream of so far. It's almost a shame that European politicians are such poor ambassadors for a system that could really make a difference globally.

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