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SEE ENERGY BRIEF

Monthly Analysis

COP28 and the Implications for the Energy Industry

Introduction

Representatives from almost every country in the world reached an agreement on the final text of a new global deal at the COP28 conference, which took place in Dubai between November 30 and December 13, 2023, calling for a transition from fossil fuels to cleaner energy sources. The document was immediately declared historic as it signifies the definitive end of fossil fuel use. Climate activists highlight it as an important step, but they point out that the document contains numerous concerning formulations, while the softened terminology on energy transition allows countries to continue using fossil fuels as before. The consensus of the COP28 conference aims to achieve net zero greenhouse gas emissions no later than 2050 and halt global warming below the 1.5 degrees Celsius limit until the end of the century. **(1)**

For the first time since the inaugural conference in Berlin in 1995, fossil fuels took center stage in the final text of the global climate conference. Coal, oil, and gas were specifically mentioned as energy sources that need to be replaced with cleaner alternatives. Representatives from the fossil fuel industry and the Organization of Petroleum Exporting Countries (OPEC) lobbied against such a shift, leading to the conference being extended for 36 hours to reach an agreement on this crucial issue.

The current Monthly Analysis will attempt to shed light on the successes and failures of COP28, highlighting the major repercussions on the global energy industry, assessing the likelihood of implementation in a number of vital areas and identifying the statements that could be open to multiple interpretations and therefore to slippage or complete lack of action.

The Overview of the Global Stocktake Was Inevitably Gloomy

The key to understanding the outcomes of this huge conference, attended by almost 100,000 delegates, is in the language of the final communique, which seeks to place obligations, demands, and calls to action on the 197 parties participating in the official meeting. The subtle wording of the phrases as well as their content reveal much about the intentions of the COP but also about the obstacles faced in reaching a consensus among so many countries and regions with widely divergent interests, climate ambitions, and national circumstances.

The entire conference was essentially framed around the report of the first Global Stocktake (GST) and the conclusions reached from it about the progress made since the Paris Agreement was signed in 2015 at COP21 and the actions that are now required to meet climate goals. Indeed, the final COP communique was entitled ‘Outcome of the first global stocktake’ and included both a review of current emissions as well as strategies to address not only mitigation but adaptation to a changing climate, the means of implementation

to achieve climate goals (especially finance for the developing world), and the need for international cooperation to keep up the momentum behind the increasingly ambitious goal-setting that will be needed.

Essentially, there is a persistent emissions gap and the current trajectory, as exemplified by the scenarios of the Intergovernmental Panel on Climate Change and implied by global environmental policies, is that the world is set to warm by 2.4-2.6°C by the end of the century. As acknowledged elsewhere at the COP, this is certainly an improvement on the 3.7-4.8°C of warming that was anticipated in 2010, but it still remains well above the 1.5-2.0°C target. In addition, it is clear, and was largely accepted at the COP in Dubai, that the world is very far from the trajectory needed by 2030 to be in line with a net zero goal by 2050. Implementation of the current Nationally Determined Contributions (NDCs) will see a 2% reduction in emissions compared to 2019 by 2030, compared with the 43% fall needed to be on target for net zero. As UN Secretary General Antonio Guterres put it in his opening remarks "Earth's vital signs are failing…[and] we are miles from the goals of the Paris Agreement". **(2)**

His message to delegates concerning the solution was very clear and was captured in three major goals: (a) drastically cut emissions, (b) rapidly transition to renewables and (c) avoid trying to "save a burning planet with a firehose of fossil fuels" and ensure climate justice by helping poorer countries to survive "disasters that they did not cause." Specifically, Guterres stated that "the success of this COP depends on the Global Stocktake prescribing a credible cure in three areas", and indeed the final communique did seek to underline this as early as paragraph 28 (of 196 in total) when it outlined the overall mitigation ambitions that emerged from the COP. "Further recognizes the need for deep, rapid and sustained reductions in greenhouse gas emissions in line with 1.5°C pathways and calls on Parties to contribute to the following global efforts, in a nationally determined manner, taking into account the Paris Agreement and their different national circumstances, pathways and approaches". **(3)**

However, it is at this point that the language and semantics of the COP process need to be questioned. The statement cited above was the result of a heated debate which led to the conclusion of the COP being delayed by around 18 hours (the original timing had planned for the COP conclude on 12 December whereas in fact it ended on the morning of 13 December). In its original form the conclusion had used much less conclusive language, stating that the COP: "also recognizes the need for deep, rapid and sustained reductions in GHG emissions and calls upon Parties to take actions that could include, inter alia…".

In effect, the earlier draft offered the Parties a series of options which they could pick and choose to adopt, and this weak language enraged many delegates and led to numerous threats to walk away from the negotiations. The new text continues to acknowledge the need for a dramatic reduction in GHG emissions

while strengthening the language around the actions needed. However, in a theme that will be echoed across this review, it does also provide get-out clauses.

Parties are asked to 'contribute' to global efforts, although the extent and timing of those contributions is not specified. The phrase 'in a nationally determined manner' leaves open the option for countries to choose their own path, while 'taking into account…their different national circumstances, pathways and approaches' is another invitation to adapt contributions to country objectives, which is consistent with the bottom-up approach of the Paris Agreement. This is particularly aimed at developing countries, to allow the principle of 'common but differentiated responsibility and respective capabilities' to be applied by them. It was analysed throughout the COP that developed countries should move faster to reduce emissions and should also fund progress in the developing world.

As a result, although the language of the communique has been strengthened, it is not the dramatic call for action that many had hoped for. 'Further recognizes' is an acknowledgement of the need for progress but lacks the heft of words such as 'reaffirms', 'emphasizes' or 'underscores' used elsewhere in the document, while 'calls upon' could also have been stronger. While it certainly has more power than 'commends', many would have preferred to see a more positive 'commits to', 'urges' or 'decides to' in order to affirm the overall message. Although such commentary may seem inconsequential in itself, the overall impact of the subtle shifts in language is significant, as in this case it will likely allow many varied interpretations of not only the course of action each country takes but also the urgency with which it takes it depending on national circumstances.

A Dramatic Increase in RES Output and Energy Efficiency Improvements

The goal to triple renewable energy output and to double the energy efficiency improvement rate was probably the least controversial of the objectives outlined in the critical paragraph 28 of the COP28 final GST conclusions. It had effectively been telegraphed via a number of pre-COP meetings, the most important of which were the G20 discussions in India in September 2023 and the meeting between the US and China in California in November.

Although both meetings encountered difficulties over issues related to fossil fuels, there was overall consensus that the growth of renewable energy was a necessary condition of the energy transition and the goal to meet net zero by 2050. G20 leaders also set an initial target to triple global nuclear capacity by 2030 and this was then endorsed by John Kerry and Xie Zhenhua (the leaders of the US and China delegations

respectively at COP28) at their Sunnylands summit, which also confirmed that the two countries would seek to "stabilise the politics between the two countries over environmental issues" ahead of the Dubai conference. **(4)**

As a result, when EU president Ursula von der Leyen came to launch the global pledge on renewables and energy efficiency, it came as little surprise that it was supported by both the COP presidency and 118 other countries, a number which grew to 130 by the end of the conference **(5)**. The major shock was that China was absent from the pledge, as was India, but a number of other groups, including Latin America, the Caribbean and 25 global utilities, announced complimentary pledges to bolster the credibility of the EU initiative.

One other note of controversy was the lack of a specific figure in the final agreement, once again highlighting the difficulties of the COP process. It was widely acknowledged in side meetings that took place in the official COP Blue Zone that the new renewables target was to reach 11,000 GW by 2030, tripling the 3,629 GW installed in 2022 and close to similar figures proposed by the IEA and IRENA **(6)**. However, a few delegates were reluctant to commit to the goal and disputed the use of 2022 as a base year because of the amount of renewables growth that had already taken place in the 2020-2022 period in some countries. As a result, a specific figure was left out of the final communique (despite being in earlier drafts), slightly undermining the result.

On energy efficiency, a specific number was also omitted, but again the underlying goal was widely acknowledged as being to accelerate the decline in energy use per dollar of GDP from 2.1% per annum to 4.1% over the period to 2030. If achieved, this would imply that overall global primary energy demand would be 10% lower in 2030 than in 2022, with electrification and the use of renewables being at the forefront of the overall process.

Despite the lack of specific numerical targets in the final communique, the combination of these two objectives was widely regarded as being the most impactful initiative that emanated from the COP, with some assessments calculating that increased renewable use and improved energy efficiency could account for over 70% of the emissions cuts needed to put the world on the pathway to achieve the IEA's net zero roadmap by 2030. The question of the achievability of the target remained a question at the COP, with financing for projects in the developing world being a key focus as always.

A Historic Transition Away From Fossil Fuels, But Plenty of Room for Manoeuvre

Positive though the decisions on renewables and energy efficiency were, a number of delegates and observers pointed out that they would only work to solve the climate crisis if they worked in tandem with a reduction in the use of fossil fuels. This was probably the most contentious issue at COP28, with little common ground being found between the aggressive anti-fossil fuel lobby, which asserted that the fossil fuel companies and lobbyists should not even be at the conference, to the realists who insisted that fossil fuels are and will remain a part of the energy system for some time and that we therefore need to deal with the transition with that in mind. Importantly, many oil producing countries from the developing world also pointed out that in a just energy transition, developed countries cannot just expect them to commit "economic suicide" by accepting a rapid phase-out of their most important economic resource.

On coal, the language essentially mirrors the statement from COP27, meaning that little further progress was made. This reflects the fact that a number of coal-producing and consuming countries had objected to the COP27 statement and were not prepared to see their use of a vital energy source further undermined. In particular, Indian Prime Minister Narendra Modi argued that his country cannot give up a fuel that accounts for 80% of power output but is nevertheless accelerating the use of renewables and is developing India's own transition strategy that can allow for economic development as well as reduced emissions. He called instead for a focus on all fossil fuels, rather than just targeting one. Importantly, the text also refers to unabated coal power, trailing a later discussion about carbon capture and storage (CCS) but begging questions around the exact definition of abatement.

Modi's request was to an extent answered in the 'historic' call for the world to transition away from fossil fuels as a whole, meaning that oil and gas have implicitly been included in the language of a final outcome from a COP for the first time. However, once again the language is important. The phrase "in a just, orderly and equitable manner" is a direct reference to the right of developing countries to move more slowly on this issue than developed countries and to do so in a way which does not undermine their economic development.

The statement goes on to acknowledge the importance of action this decade (although there is no specific target for 2030) and also mentions acting in line with climate science. This is relevant for two reasons. Firstly, the COP president Sultan Al Jaber had earlier been accused of arguing that there was no scientific evidence that supported a phase out of fossil fuels **(7)**. Although his words had been taken slightly out of context, he no doubt wished to reiterate the importance of science in the final document. Secondly, the mention of

science also allows those who argue for other scientific solutions to emission reductions to promote the arguments for, for instance, carbon capture and storage.

Finally, the specific absence of the phrase 'phase out' or even 'phase down' of fossil fuels is notable. It was rumoured at the COP that as many as 170 countries had been rallied by the High-Ambition Coalition to refuse any outcome that did not include strong language on the ending of fossil fuel use, with the phrase "phase out" being demanded by many. However, on the opposite side of the argument, OPEC urged its members to refuse to endorse any agreement which called for the phase-out of oil and gas, arguing that the Paris Agreement calls for a focus on emissions reduction rather than targeting specific energy sources. The fact that the phrase was omitted from the final wording underlines the influence of individual groups or countries in a conference where consensus is needed to adopt any text.

Focus on Methane Emissions and Flaring

The final GST decision for the first time included a specific mention of methane emissions, highlighting the importance of this short-lived but high impact greenhouse gas. The need to reduce methane emissions and flaring was one of the key themes of the first week of COP28, and while the Oil and Gas Decarbonisation Charter (OGDC) was one of the main fora for its discussion there were a number of other initiatives that also progressed.

The US authorities, led by the Environmental Protection Agency (EPA), made a major announcement early in the COP (on December 2) introducing rules to ban routine flaring of natural gas produced by new oil wells, requiring companies to monitor leaks from well sites, and establishing a system of third-party monitoring of large methane releases or 'super-emitters' **(8)**. Meanwhile, the World Bank launched the Global Flaring and Methane Reduction (GFMR) Partnership, which has an initial fund of $250 million to provide grants and technical assistance to developing countries looking to cut carbon dioxide and methane emissions generated by the oil and gas industry. **(9)**

In parallel with these announcements, 50 oil companies signed up to reduce methane emissions to near zero by 2030 as part of the OGDC and some also offered funding for methane emission reduction in the developing world. A total of $1.2 billion was raised at the COP as part of the methane initiatives and importantly five more countries added their names to the Global Methane Pledge, including major emitters Kazakhstan and Turkmenistan. This means 155 countries have now committed to reduce methane emissions by 30% by 2030. Finally, China announced a new methane plan in mid-November which it then re-affirmed at the COP, pledging to "control methane emissions in a scientific, rational and orderly manner" via a series

of twenty tasks that it set for its main fossil fuel producers and consumers. Although it declined to join the Global Methane Pledge, this was another major step forward in the fight to reduce methane emissions.

Overall, the Global Methane Pledge and its related Oil and Gas Methane Partnership created significant momentum behind the cause of reducing methane emissions at the COP, and it would now genuinely seem to be the case that the issue is firmly established on country and company agendas. In both cases, key players will need to be held to account over the next few years to ensure that pledges are honoured, and there are several initiatives in place to focus on this, but this is one area where the oil and gas industry must have a clear and transparent ambition to deliver if its credibility is to be maintained in future COPs.

Emphasis on Technology Neutrality and a Focus on Carbon Capture and Storage

Another theme related to the future of fossil fuels was the potential use of technologies that would mitigate their use by offsetting or reducing emissions. This topic was highly controversial, being described by some observers as a smokescreen for the fossil fuel industry and a 'fairytale solution.' Nevertheless, carbon capture and storage received a specific mention in the final GST summary and there was also an explicit mention for blue (methane-based) hydrogen.

Saudi Arabia and other hydrocarbon-producing countries have been promoting the concept of the circular carbon economy for some time, with its stated goal of recycling carbon around the energy economy or storing it once it has been removed from the system **(10)**. The US is now also encouraging the development of CCUS technology via the incentives offered in its Inflation Reduction Act (IRA), and a number of its major hydrocarbon companies are now developing domestic projects **(11)**. The Global CCS Institute has identified 41 carbon capture and storage (CCS) facilities that are already in operation across the world, with another 26 in construction and a further 325 in development, underlining the growth that is occurring across the industry **(12)**. The fact that the technology has now been specifically mentioned in a COP final text underlines the increasing focus and will also no doubt inspire further investment.

However, the Global CCS Institute's report also calls for a sense of realism about the extent to which carbon capture, utilisation and storage (CCUS) can play a role, especially in the short term. The IEA has estimated that in order to be on target for a net zero emissions world in 2050 there would need to be 1.6 Gt per annum of CCS capacity globally by 2030 and between 6-8 Gt by 2050. Current capacity is 40 mt, and the projects identified by the Global CCS Institute as under construction and under development would take this to just over 360 mt by 2030 if they are all completed.

As a result, one is justified to question the extent to which CCS can offset the impact of fossil fuels over the next three decades, as viable business models have not been developed and the current plans are far below what is required to meet a 1.5°C scenario. While it is not inconceivable that incentives like the US's IRA could accelerate development, the falling cost of renewables and the lack of a global carbon price at a level to justify the additional cost of carbon capture suggest that CCS may not play as major a role as some at the COP28 would have liked. Furthermore, the role of CCS is likely to be most critical in to hard-to-abate sectors such as chemicals, steel, and cement and it will be important to avoid the argument that its deployment supports the continued use of fossil fuels as this line of debate seems problematic and open to aggressive challenge by an environmental community looking for examples of fossil fuel greenwashing.

Debate Around Article 6 on Carbon Markets Proved to be a Major Disappointment

There was much hope that at COP 28, Article 6 of the Paris Agreement, which is considered the foundation for creating a global carbon market, would be put into full operation with agreement on technical issues around measurement, reporting, and transparency to avoid double-counting. The three most important paragraphs within Article 6 deal with the carbon offset-related relationships between countries (Article 6.2), companies (Article 6.4), and non-market actors (Article 6.8), but a number of issues with all three had been left over from COP27 and had been much discussed during 2023. However, the meeting in Dubai proved to be another disappointment after a year in which the credibility of voluntary carbon markets had already suffered from a series of scandals around the allocation of funds and the veracity of projects. The final GST statement had only two mentions of Article 6, and neither were particularly impactful.

Articles 6.2 and 6.4 are not mentioned at all. Although Article 6.2 is already operational as key guidelines were agreed at COP26 in Glasgow, further guidance on reporting and the rules for reporting trades had been expected but were not forthcoming at COP28. Countries will still be able to carry out cross-border exchanges of carbon credits, but the lack of a carbon market infrastructure in many countries remains an issue that was not resolved at the conference.

Meanwhile, approval for Article 6.4 on voluntary carbon markets for companies has been delayed until COP29 in Baku after delegates disagreed on the rules around carbon removals and the strength of the guidance on environmental integrity. While this was viewed by some participants as a significant setback for a market that had already suffered a turbulent year, others were more sanguine and suggested that issues would be ironed out over the next 12 months. However, it does seem that the recent fall in liquidity and prices in the voluntary carbon market is unlikely to be reversed soon.

More positive news emerged around Article 6.8 which allows companies to cooperate using carbon offsets for the achievement of goals in their respective NDCs without relying on carbon markets. Although the text above is not specific on dates, delegates believed that the mechanism would be fully operational by June 2024.

One final point of note was that beyond the debates on Article 6 the US announced a new initiative called the Energy Transition Accelerator (ETA) which is aimed at catalysing private capital for developing economies by selling credits to companies which want to offset their residual emissions. The credits would be generated via the decarbonisation of the power sectors in developing countries, and the framework includes monitoring requirements to ensure that the offsets have verifiable credibility. Fossil fuel companies have been excluded from participating, but Amazon, Walmart, and McDonald's have already signed up alongside countries such as Chile, Nigeria, and the Philippines. As a result, it may be that specific initiatives such as this can keep the momentum around offsets going while the Article 6 discussions are resolved.

A Good COP for Nuclear

If COP28 was historic for its inclusion of a transition away from fossil fuels for the first time, then it was also historic for the nuclear industry as for the first time it was included as a potential part of the solution to a net zero energy system. The inclusion came after several countries and regions have added nuclear to their transition taxonomies and is effectively an admission that no technologies can be ignored if the world is to meet its climate targets. IAEA director general Rafael Mariano Grossi suggested that "this decision demonstrates there is now a global consensus on the need to scale up this clean and reliable technology to achieve our vital goals on climate change and sustainable development" and he then announced with the French and Belgian prime ministers that there will be a global nuclear summit in Brussels in March 2024 to continue the momentum. **(13)**

Meanwhile, further encouragement was provided by 22 countries, including the US, Canada, and many EU countries, who backed a ministerial declaration calling for the tripling of global nuclear capacity by 2050. This then led to the unveiling of the Net Zero Nuclear Industry Pledge, with 120 companies involved in the nuclear fuel cycle signing up to operate in more than 140 countries in order to facilitate the tripling objective.

It remains to be seen whether the promise can indeed be realised, as even at the COP opposition emerged from some quarters and key questions remained about cost, safety, financing, and the timing of new developments. However, discussions around small modular reactors pointed to new innovations that could

help to accelerate a nuclear rollout, and COP28 at least provided a morale boost to an industry that has stagnated for some decades.

A Big Step Forward on Adaptation

The Global Goal on Adaptation was established as part of the Paris Agreement in 2015 in an attempt to redress the balance between the mitigation efforts that dominate COP discussions and the adaptation that is already required in many developing and developed countries to the changes that are now occurring due to global warming. Developing countries have always been keen to point out that this is a core part of the 'common but differentiated responsibility' principle and that the developed world needs to be ready to discuss and finance adaptation projects.

However, the heterogeneous nature of adaptation across the globe has meant that it has been difficult to focus attention on this issue, and it was only at COP26 that a specific 2-year work programme was set up to create a framework for the debate. COP28 was the venue at which this framework was set to be finalised, and the positive news is that some specific targets were set.

This is certainly a step forward for the discussions on adaptation, as previously they had lacked any specific focus. The emphasis on early warning systems has been pushed by the UN for some time and is now an official goal, while the need for all parties to have certified adaptation plans by 2030 and to be monitoring activity against them provides further momentum, even if specific adaptation targets are missing (reflecting the fact that they will be different for every country).

However, one key issue remained unresolved, and this relates to the means of implementation. As will be discussed below, finance for adaptation has lagged far behind that for mitigation, and despite a pledge at COP26 to double the amount being made available (to around $40 billion), the gap remains enormous. Many developing countries wanted the inclusion of a pledge to provide at least $400 billion annually for adaptation by 2030, and this was in a strongly worded early draft which announced the figure as a decision rather than a request.

However, it was removed in later drafts and many developing countries were disappointed with the ultimate outcome. Nevertheless, a decision has been taken to convene ministerial dialogues on the need to urgently scale-up adaptation finance and so there is some hope that the action called for at COP28 will be supported with extra funds.

Climate Finance – Big Pledges But the Gaps Are Still Enormous

Provision of finance permeated every discussion at COP as developing countries underlined that every step they must take needs monetary support from the developed world. The issue generated some significant highlights but also continued to be a source of frustration and lack of trust between the Global South and the Global North. In addition, although some very significant pledges were made at the conference, the final GST statement fully exposed the yawning gaps that remain if the ambitions laid out in the mitigation and adaptation programmes are to be met.

The $100 billion pledge by 2020 has become a touchstone for the failure of developed countries to deliver on their financial promises and the debate around it continues to colour all discussions of future funding. At COP28 there was much discussion about an OECD report which asserted that the pledge had most likely been met in 2022, but many developing countries dispute whether there was really any hard evidence for this. The failure was noted “with deep regret” in the final text of the conference, but perhaps more importantly the funding required by developing countries for the rest of this decade was also documented.

With just under $6 trillion needed over seven years, the annual requirement is almost ten times the current commitment from the developed countries, highlighting the huge challenges ahead. The New Collective Quantified Goal (NCQG), which will effectively set the figure for developed world financing of the energy transition in the developing world from 2025-2030, is being debated over the next 12 months and it is hard to see how a figure of anything less than $500 billion per annum would be acceptable. This looming challenge provided a somber backdrop for all the green finance discussions at COP28.

Demand Side Management and Hard-to-abate Sectors – Increasing Attention on Major Consumers

While much of the hype at COP28 was focused on the role of fossil fuels, and in particular their production and the need to reduce it, important discussions also took place on the question of demand, especially in hard-to-abate sectors. Despite this lack of acknowledgement in the final text, a significant amount of discussion on the issues in hard-to-abate sectors did take place around the COP venues. Particular points of interest included a focus on the role of cities in the creation of sustainable infrastructure, the launch of the ‘Cement and Concrete Breakthrough’ which aims to reduce the 7% of global emissions which these sectors produce, and the ‘Buildings Breakthrough’ which is seeking to develop a model for near-zero emissions and resilient buildings by 2030.

Importantly too, the WTO announced the launch of a series of 'Steel Standards Principles' on the first day of COP28 which plan to align the methodologies for measuring and ultimately cutting GHG emissions in the steel sector. There is significant overlap here with the efforts being made around measurement, reporting, and verification of emissions in the oil and gas sector and it will be interesting to see if any cross-fertilisation of ideas can occur ahead of the next COP.

In the transport sector, several initiatives were also launched, including the opening of green shipping corridors, the signing of a joint commitment by thirty industry leaders on hydrogen for shipping, and plans for the global deployment of zero-emission buses. Meanwhile, the Global Sustainable Aviation Forum highlighted the industry's drive towards the use of Sustainable Aviation Fuels (SAFs) and suggested that they could cut aviation emissions by 60% by 2050.

However, the issues of infrastructure and fuel availability were highlighted as key challenges, while the use of carbon offsetting was also seen as an important tool for the industry to meet its climate targets. However, despite these initiatives, the overall sense from the COP was that there is a need for more collaboration between the demand and supply sides of the energy system, with the case of the supply of SAFs being a good example. Although the COP process is intended to provide guidance and targets for producers and consumers in the energy transition, a gap still exists as both sides effectively wait for the other to act. A more proactive producer-consumer dialogue may be essential if an efficient transition away from fossil fuels is to be managed without creating stranded assets, supply shortages and wild price volatility.

Discussion

COP28 was certainly more successful than many suspected it might be. The location of the event in a fossil-fuel producing country led to concerns that it might be dominated by the hydrocarbon industry, and although they were certainly much in evidence, the inclusion of a statement on transition away from fossil fuels in the final document was undoubtedly a historic moment and a potentially critical turning point. Furthermore, renewable energy and energy efficiency received a major boost with aggressive plans to expand their impact in the rest of this decade.

Other successes included the finalisation of the loss & damage fund, the general sense of inclusivity encouraging debate on all potential technical solutions in the energy transition, and the overall management of a conference which hosted almost 100,000 delegates over the two weeks. The nuclear industry also hailed a welcome return to the climate debate, while the focus on methane emissions suggested that the reduction of emissions of this critical greenhouse gas has now become a short-term priority. Advocates of carbon capture and storage will also have been pleased with the increased focus on this technology.

As always at COPs, there were also disappointments and caveats. The debate around Article 6 was not resolved and has been deferred to COP29, meaning that the carbon market did not get the boost it was hoping for. Perhaps more importantly, though, the nuances of the fossil fuel debate need to be fully understood. While there was a consensus that the role of oil, gas and unabated coal must decline over time, there was a lack of definition about how much and at what pace.

This is understandable because different countries have very different views on the topic, with producers in developing countries keen to use their resources and adamant that developed countries should move first and fastest on this issue. Furthermore, there is a risk that the role of CCUS could be exaggerated beyond the realms of reality. As a technology for hard-to-abate sectors it seems logical and suitable, but arguments for it being a source of 'net zero' oil are open to critique and claims of greenwashing were plenty, especially as deployment is at a very early stage. **(14)**

In addition, the overall role of fossil fuel companies and countries in the energy transition debate and the COP process needs to be monitored carefully. While there is a very logical argument for their inclusion, given the current importance of oil, gas and coal in the energy system and the relevance of the debate around the economic impact of the transition to net zero, there is also a risk that their financial and political influence could sway the debate. At the very least, they will need to be held fully accountable for pledges made and actions taken, and to be called out for any lack of transparency and failure to increase investment in low- and zero-carbon technologies.

The COP process now moves onto Baku in Azerbaijan for COP29 and Belem in Brazil for COP30. Encouragingly the organisers of all three conferences are now coordinating to ensure continuity of the debate at this critical time. Questions about the efficacy of the COP process and its need for consensus agreement have re-emerged at COP28 but are of little real consequence given the urgency of the actions required. The process is fixed, and the Parties must now focus both on the new finance pledge for the 2025-2030 period, which needs to be agreed in 2024, and the production of more ambitious "ratcheted" NDCs for presentation at COP30. As the Global Stocktake revealed, the world is well off target to meet climate targets for 2050. Arguably 1.5ºC is no longer within reach, but this does not mean that countries should scale down their efforts to accelerate the energy transition and minimise any overshoot by 2030.

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