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Carbon Markets after COP26: A Price on Carbon

Sustainability Industry Report

The Al-Attiyah Foundation

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The Paris Agreement's Article 6, on carbon markets, was a crucial part of the COP26 negotiations. A price on carbon is a key tool for reducing global emissions in an efficient and fair way. But there were serious challenges in reaching a workable text, that would allow carbon markets to function effectively while avoiding double-counting or encouraging unsustainable activities. What was concluded and what remains to be agreed? Where do global carbon and offset markets now stand? How will Article 6 of the Paris Agreement further accelerate the development of a global carbon market?

SUSTAINABILITY REPORT

This research paper is part of a 12-month series published by The Al-Attiyah Foundation every year. Each in-depth research paper focuses on a prevalent sustainable development topic that is of interest to The Foundation's members and partners. The 12 technical papers are distributed to members, partners, and universities, as well as made available online to all Foundation members.

03 GLOSSARY OF TERMS

IET	International Emissions Trading system
CDM	Clean Development Mechanism
JI	Joint Implementation
CORSIA	Carbon Offsetting and Reduction Scheme for International Aviation
ICAO	International Civil Aviation Organisation
CER	Certified Emission Reduction credits
ERU	Emission Reduction Unit
ETS	Emissions Trading System (EU)
IETA	International Emissions Trading Association
ITMO	Internationally Transferred Mitigations Outcomes
SDM	Sustainable Development Mechanism
A6.4ERs	Article 6.4 Emissions Reductions
OMGE	Overall Mitigation in Global Emissions
VCM	Voluntary Carbon Market

EXECUTIVE SUMMARY

- Lessons learned from the Kyoto Protocol's Clean Development Mechanism (CDM) and the widespread development of carbon markets across the globe, led to the inclusion of an Article 6 on carbon markets at COP21 in 2015.
- Article 6 offers an international governance framework for deploying environmentally effective and transparent carbon markets. It can help to progressively increase carbon markets' environmental and social integrity, liquidity, and value.
- Internationally Transferred Mitigations Outcomes (ITMOs) allow a country that overachieves on its climate targets to transfer carbon credits to another country for use in meeting that country's targets. It mandates countries to apply corresponding adjustments to ensure each credit counts only towards one country's climate targets, thus eliminating the double counting which the Kyoto Protocol flexibility mechanisms were criticized for.
- The Sustainable Development Mechanism (SDM) allows private companies to trade their emissions reductions to count toward another country's climate goals. The SDM sets aside 5% of carbon credits to pay into the United Nations Adaptation Fund to help assist developing countries and LDCs adapt to climate change.

- Large carbon standards-setting bodies can perpetuate the standardisation of carbon credit recognition principles and the development of transparent credit trading platforms and exchanges to facilitate an increase in voluntary carbon markets' liquidity.
- This can raise confidence in high-quality nature-based credits while diminishing the use and credibility of low-quality or non-additive ones. It can also facilitate financing of costly offset-generating projects and spur investments in the deployment of negative emissions technologies that can generate carbon credits.
- Oil and gas companies have a viable option in CCUS to roll out sustainable decarbonisation strategies under Article 6. Carbon pricing through carbon markets under the Article 6 rules will be a more credible catalyst for decarbonising, rather than relying on government support alone, especially in the many regions that have a low carbon price.

GLOBAL CARBON MARKETS PRE-ARTICLE 6

Prior to adoption of Article 6 of the Paris Agreement, most carbon market mechanisms shared a common history, first emerging from the Kyoto Protocol in 1997. The Kyoto Protocol created a set of new legal instruments for emissions reductions and removals' tracking and trading, so-called "flexibility mechanisms", which included the International Emissions Trading (IET) system, the Joint Implementation (JI) system, and the Clean Development Mechanism (CDM).

Table 1 The Kyoto Protocol's Flexibility Mechanisms[i]

Mechanism	Description
International Emissions Trading (IET)	A system that allows developed countries that have emission units to spare to sell their excess capacity to other developed countries to meet their Kyoto targets.
Joint Implementation (JI)	An offsetting arrangement, allowing developed countries with Kyoto targets to earn emission reduction units (ERUs) from an emission-reduction or removal project in another developed country.
Clean Development Mechanism (CDM)	An offsetting arrangement, allowing developed countries with Kyoto targets to earn certified emission reduction (CER) credits, each equivalent to 1tCO2e through an emission-reduction project in developing countries.

Combined, all 3 mechanisms aimed to generate flows of public-private finance for companies and countries to abate greenhouse gases (GHGs), while reducing global emissions by at least 5% below 1990 levels over the first commitment period, and by 18% below 1990 levels over the second commitment period (the Doha Amendment[ii]).

The Kyoto Protocol flexibility mechanisms were well-intentioned to produce significant changes in norms with respect to emissions reductions. However, they lacked a holistic structure and practical framework to be successfully executed, with many regarding the entire protocol to be a failure[iii] as it did not result in any meaningful reduction of global emissions levels since its inception.

Nevertheless, it led to the emergence of several domestic markets' compliance schemes, including the European Union Emission Trading System (EU ETS), the UK Emission Trading System (UK ETS), the Switzerland Emission Trading System (Swiss ETS, now linked to the EU ETS), and the China Emission Trading System (China ETS), as well as voluntary markets' compliance schemes, such as the Carbon Offsetting and Reduction Scheme for International Aviation (CORSIA, which will become mandatory for all ICAO members starting 2027).

Domestic compliance schemes like the UK ETS are some of the largest ETSs in force and have evolved since 2005 to allow use of JI and CDM credits up to a certain percentage limit as per national plans. International credits generated post the Doha Amendment are mandated to originate from projects in least developed countries (LDCs)[iv], promoting clean development in those regions.

Underpinned by the JI and CDM mechanisms, these ETS offer countries and companies the possibility of raising their climate ambitions while lowering the costs of achieving those targets. Such reductions in cost can, in turn, unlock resources to increase the latitude of voluntary markets to scale up their climate ambitions, while reinvesting avoided costs can allow a doubling[v] of pledged annual emission reductions.

However, criticisms against non-additionality[vi], counterproductive emissions reductions (such as emissions reductions from HFC-23 destruction projects under the CDM[vii]), an unequal global stocktake in the climate crisis, benefit to only developed or a small number of wealthy developing countries, a lack of corresponding

adjustments in emissions reductions between host and participant countries, and regulatory loopholes that could facilitate 'greenwashing', meant that global carbon markets needed to take a step back and re-evaluate the market design and technical rules underpinning the flexibility mechanisms.

Fact Box 1 What is non-additionality and greenwashing?

Non-additionality refers to the failure of a project to result in a greater reduction of emissions than would have happened without a carbon market.

Carbon offsetting is considered greenwashing when companies do not prioritise in-house emissions reductions, double-count carbon credits, or invest in non-verified credits. Companies engaging in carbon offsetting can be divided into the three levels of zero, moderate, and severe greenwashing.

By itself, greenwashing refers to tactics deceptively used to persuade consumers, the general public, public institutions, authorities, and/or other regulatory bodies that an organization's products, aims and policies are in line with climate targets.

Controversy began plaguing the CDM rules especially after their adoption as part of the Marrakech Accords in 2001, with observers accusing them of leading to "perverse incentives" by focussing too widely on sustainable development outcomes, and not on the UNFCCC and Kyoto Protocol GHG mitigation objectives.

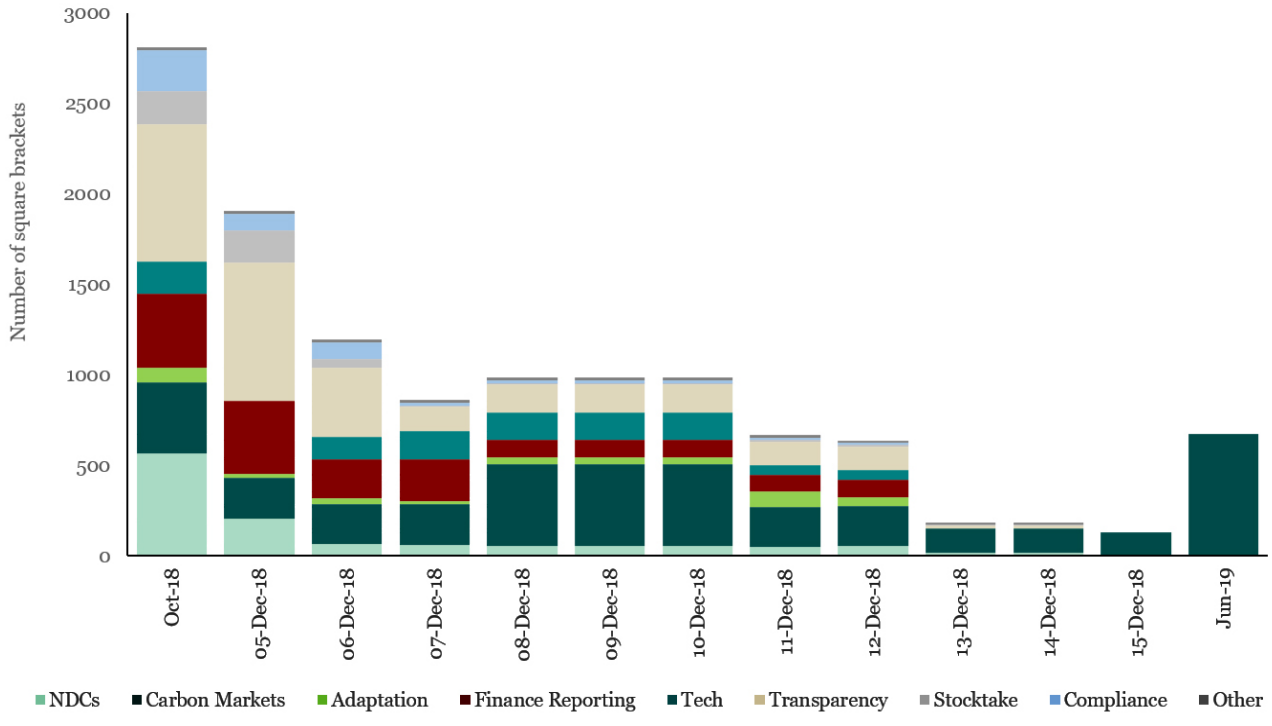
In 2015, just before the close of COP21, participating countries agreed to Article 6 of the Paris Agreement as a final treaty provision to provide new "cooperative approaches" for carbon markets that "resolved" these concerns and "actually" assisted countries trying to achieve climate targets under their Nationally Determined Contributions (NDCs).

Since the adoption of the Paris Agreement, agreement of the rules for operationalising Article 6 eluded any negotiated outcome until COP26 in 2021, with negotiators taking 3 more years to finalise Article 6's implementation rules than the rest of the "Paris Rulebook", which was finalised in 2018. Main reasons alluded to the delay in agreeing to its rules were "impenetrable jargon", "a series of technical accounting challenges", and bear-traps of "constructive ambiguity" in the text that hid incompatible visions of how the Article would work.

Figure 1 shows how draft negotiating texts for each part of the Paris Rulebook were progressively whittled down during COP24, except the sections on Article 6, which remained stuck, and actually increased in unclarity after the intersessional meeting in Bonn preceding COP25 (see Figure 1). Apart from Article 6 on carbon markets, all sections reached zero brackets and were agreed to by the end of COP24. Several negotiators felt that Article 6, "unlike almost anything else in the UN climate negotiations, had the potential to do actual active harm[ix]", due to the risk of introducing loopholes that undermined the ambition of the deal. Rich countries could use carbon markets as a trick to meet emissions reduction targets on paper, while not doing much in practice.

The increased number of unresolved issues in the texts for carbon markets after the Bonn session in 2019 was indicative of a retrenchment, with many countries and negotiating powers retreating to their initial positions in the absence of an agreement. However, it was at COP26 when negotiators finally gavelled Article 6 to finalise the matter of carbon markets".

Figure 1 Unresolved sections of the Paris Rulebook highlighted as number of "square brackets" indicating areas of disagreement[viii]



WHAT IS ARTICLE 6, AND WHAT ARE ITS MOST IMPORTANT ANNEXES?

Throughout the course of negotiations, governments sought to ensure that new carbon market rules would learn from the mixed record of the CDM and other flexibility mechanisms of the Kyoto Protocol. Agreeing to the new rules on Article 6, therefore, was a significant milestone for the Paris Agreement and global climate mitigation efforts.

Article 6 offers an international governance framework for deploying environmentally effective and transparent carbon markets. These carbon markets can help enable countries, companies, and private actors achieve net-zero targets at lower costs, and can generate additional revenues for emissions reduction projects, which could help enhance their commercial viability. They can also help save up to US$ 250 billion annually for climate action by 2030, according to the International Emissions Trading Association (IETA)[x], if adopted into countries' more ambitious (enhanced) NDCs.

If implemented correctly, Article 6 rules can help to progressively increase carbon markets' environmental and social integrity, liquidity, and value. A key observation to note here is that the new Article 6 rules do not regulate the voluntary market, but address market activities and accounting among compliance markets (government-led carbon markets). They do however clarify the space where voluntary carbon markets can operate[xi].

The first cooperative mechanism, established through Article 6.2, allows a country that overachieves on its climate targets to transfer carbon credits, called Internationally Transferred Mitigations Outcomes (ITMOs) to another country for use in meeting that country's targets.

Table 2 Key Annexes on Guidance of Article 6 of the Paris Agreement at a glance[xii]

Article	Description
Article 6.2	Internationally Transferred Mitigations Outcomes (ITMOs) – cover bilateral actions to reduce or remove GHG emissions
Article 6.4	Sustainable Development Mechanism (SDM) – a new multilateral mechanism to replace the CDM
Article 6.8	Non-market Approaches – addresses non-market international cooperation among governments

This mechanism builds on the Kyoto Protocol's IET mechanism but allows countries to make their own bilateral and multilateral arrangements to trade credits, provided they "promote sustainable development, while ensuring environmental integrity and transparency".

Before the COP26 rules, there was difference in opinion on what actually constituted an ITMO, with some countries wanting to decide for themselves what they could trade, and others wanting all trades to be in terms of emissions measured in tCO2e. At COP26, it was decided that countries could denominate ITMOs in either tCO2e, or another non-GHG metric, such as renewable energy targets. ITMOs, therefore, can include emissions cuts or renewable capacity consistent with the participating countries' climate targets.

The Article 6.2 text also mandates countries trading ITMOs to apply corresponding adjustments to ensure each credit counts only towards one country's climate targets, thus eliminating the double counting which the Kyoto Protocol flexibility mechanisms were criticised for.

ITMOs are also required to be 'transparent', a reference to the reporting requirements on participating countries. A country's measure, report and verify (MRV) progress with regards to ITMOs must therefore follow standards set out by the IPCC and the UNFCCC, suggesting that ITMOs could potentially function akin to a gold standard. For example, ITMOs could be fixed to a standard fungible carbon credit such as 1 tCO2e, or another appropriate metric. Even this is not entirely straightforward, particularly due to debate over the correct time-horizon used to calculate the Global Warming Potential (GWP) for methane, a short-lived greenhouse gas.

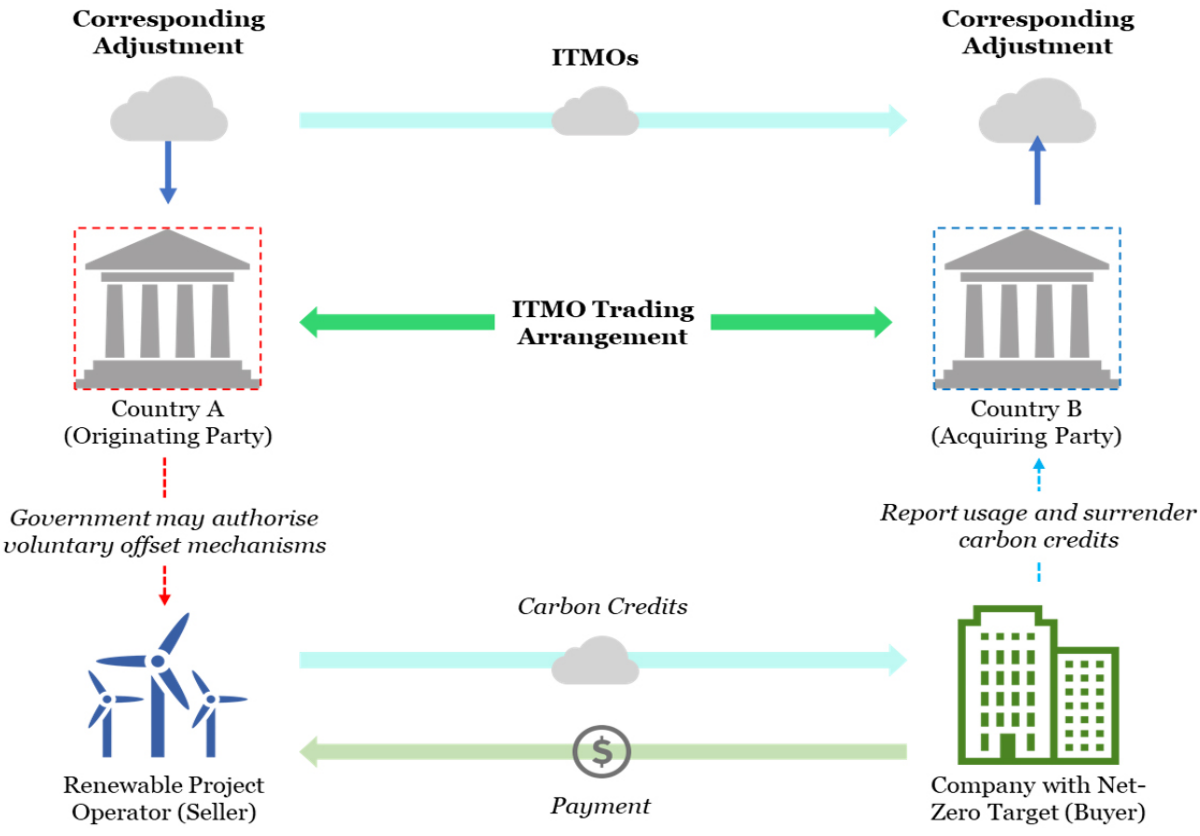
Figure 2 shows how ITMOs would work between two participating countries. In this illustration, Country B, the acquiring party, is in need of emission units that it can direct towards meeting its NDC goals. A company in Country B with a net-zero target (voluntary) becomes the mediator for Country B to acquire an ITMO from a country (Country A) with an excess of emission units, which it generates through

renewable capacity, or emissions reductions in other sectors. The company buys carbon credits from the renewable project operator in Country A, or the seller, and surrenders these to Country B. This results in the transfer of an ITMO from Country A to Country B, who are in an ITMO trading arrangement, whereby they can tap into their countries' voluntary carbon markets to buy or sell emission units. The transfer of an ITMO from Country A to Country B results in a downward corresponding adjustment for Country A, meaning an adjustment of its GHG inventory to reflect that the emission reduction achieved inside its borders is being credited to another country. Simply put, this mitigation outcome is 'un-counted' by Country A from its emission reduction units inventory. Country B, meanwhile, receives an upward corresponding adjustment in its GHG inventory, assisting it in realising its climate goals.

This example also shows how originating parties (or host countries) can work with voluntary and Article 6-related compliance markets. The Article 6.2 rules contain provisions to allow host countries to incorporate voluntary market transactions for their ITMO trading arrangements, which opens up a wealth of opportunities for renewable energy project developers and oil and gas companies with emissions mitigation schemes to contribute to compliance carbon markets. Countries can leverage the voluntary carbon market to help fight climate change and meet their NDCs.

Participants in voluntary carbon markets (such as the renewable project developer in Country A in our example) may regard an "adjusted credit" that has been authorised and subject to

Figure 2 How ITMOs work[xiii]



corresponding adjustments by its originating country as being of higher environmental integrity and therefore quality than a "non-adjusted" carbon credit, which may be subject to less rigorous transparency standards.

Adjusted credits could therefore be perceived as more credible, allaying fears of greenwashing. The divergence between adjusted and non-adjusted credits could lead to bifurcated secondary markets, wherein credits subject to corresponding adjustments command higher prices. This in turn could have significant impacts on carbon credits' demand from voluntary markets.

The second cooperative mechanism, introduced by Article 6.4, creates a new centralised carbon market, called the Sustainable Development Mechanism (SDM), governed by a new supervisory body, as an evolution of the Kyoto Protocol's CDM and JI mechanisms. It allows private companies to trade their emissions reductions generated from emissions avoidance or removal activities in their host country to count toward another country's climate goals. A key differentiator between the ITMO and the SDM is that the SDM will facilitate private investment between participating public and private actors, while the ITMO does not mandate any financial contributions (either through a mandatory levy or a transaction tax) between countries.

The facilitation of finance towards countries requiring investment to meet their climate goals means voluntary carbon market participants will also play an important role as developers and operators of SDM activities. The sale of Article 6.4 emissions reductions (abbreviated as A6.4ERs) could result in a new revenue stream for eligible projects, especially if such projects are accepted for use in compliance markets (EU ETS, UK ETS etc.). Domestic carbon price liabilities could be met through A6.4ERs, thereby increasing demand for those carbon credits.

This could have the unintended effect of reduced domestic climate ambitions (with offsets being sold below country-level/NDC targets), as was witnessed prior to the EU ETS

Table 3 SDM-aligned emissions removal and/or avoidance activities

Wind farms, other renewables	Low-carbon heating solutions	Reforestation, restoration of forest cover	Coal to natural-gas or other low-carbon fuel switching	Carbon capture use and storage integrated industry

Phase 4 reforms, when concerns rose over the EU's environmental integrity and domestic climate ambitions due to firms' usage of credits to cover their compliance costs. However, the SDM governing body should closely examine the potential of A6.4ERs to reduce covered firms' ETS compliance costs without affecting the integrity of domestic or national targets.

A key feature of the SDM is its ruling on eligible activities that can generate credits for "real, measurable, and long-term" emissions reductions, measured against a hypothetical business as usual baseline. All such activities must deliver an overall mitigation in global emissions (OMGE), a nod to the additionality principle. The additionality principle proves that an emissions reduction or removal activity could not have occurred without investment derived from the SDM. In simpler terms, it means that mitigation should go beyond what would have happened had the SDM mechanism not been in place.

The CDM in contrast arguably delivered, at best, a "zero sum" transfer of emissions reductions between countries, and at worst, actively undermined targets which were able to be met through "hot air" credits but did not deliver real emissions cuts[xiv]. The inclusion of baseline tests could set the bar for additionality under the SDM as actions that go beyond what would be needed for the host country to meet its NDC, which project operators can achieve through the following methodologies.

An important provision of Article 6.4 allows countries participating in the SDM to authorise A6.4ERs generated from SDM-aligned activities for use as ITMOs, in which case, those countries would need to apply corresponding adjustments to reflect such transactions. For example, a company could develop a solar power plant in a country that has historically relied on fossil fuel-based power, thereby reducing emissions in its host country. The company will receive A6.4ERs equivalent to the emissions reductions generated from the project, which it could sell to other countries, or alternatively, to private actors seeking to meet their domestic carbon price liabilities. If authorised for use as ITMOs, these A6.4ERs would then count only towards a purchasing country's climate targets (where the company who bought the A6.4ERs is located) once corresponding adjustments are made by the originating country.

Unlike the CDM, the SDM mechanism allows host countries to offer longer credit issuance periods for removals activities (such as CCUS) than avoidance activities (such as installing wind turbines in place of coal), indicating the higher investment risks, time periods, and necessary rates of return intrinsic to removal activities. Approved SDM removals activities could generate credits for 15 years, with an option to renew that period twice, while avoidance activities could receive credits for 5 years, with an option to renew twice, or for a single non-renewable period of 10 years. Carbon market experts have often regarded offsets not related to actual carbon removal as being lesser effective, a concern that seems to have been reflected in the shorter credit issuance periods for avoidance activities.

Article 6.4 also applies a transaction tax to SDM-aligned activities, which sets aside 5% of A6.4ERs to pay into the United Nations Adaptation Fund to help assist developing countries and LDCs adapt to climate change. This is in addition to a 2% administrative fee levied by the supervisory body, which is intended to ensure net increases in climate ambition. These 2% of credits will be cancelled from the generated A6.4ERs, making them ineligible for trading, and therefore encouraging countries to increase their climate goals.

Alongside the OMGE principle, the administrative and transaction taxes have the potential to take Article 6.4 beyond offsetting and the zero-sum game established by the CDM, through increased buying and selling of credits, directly leading to lower emissions.

Table 4 Methodologies to measure baseline emissions trajectory for SDM activities

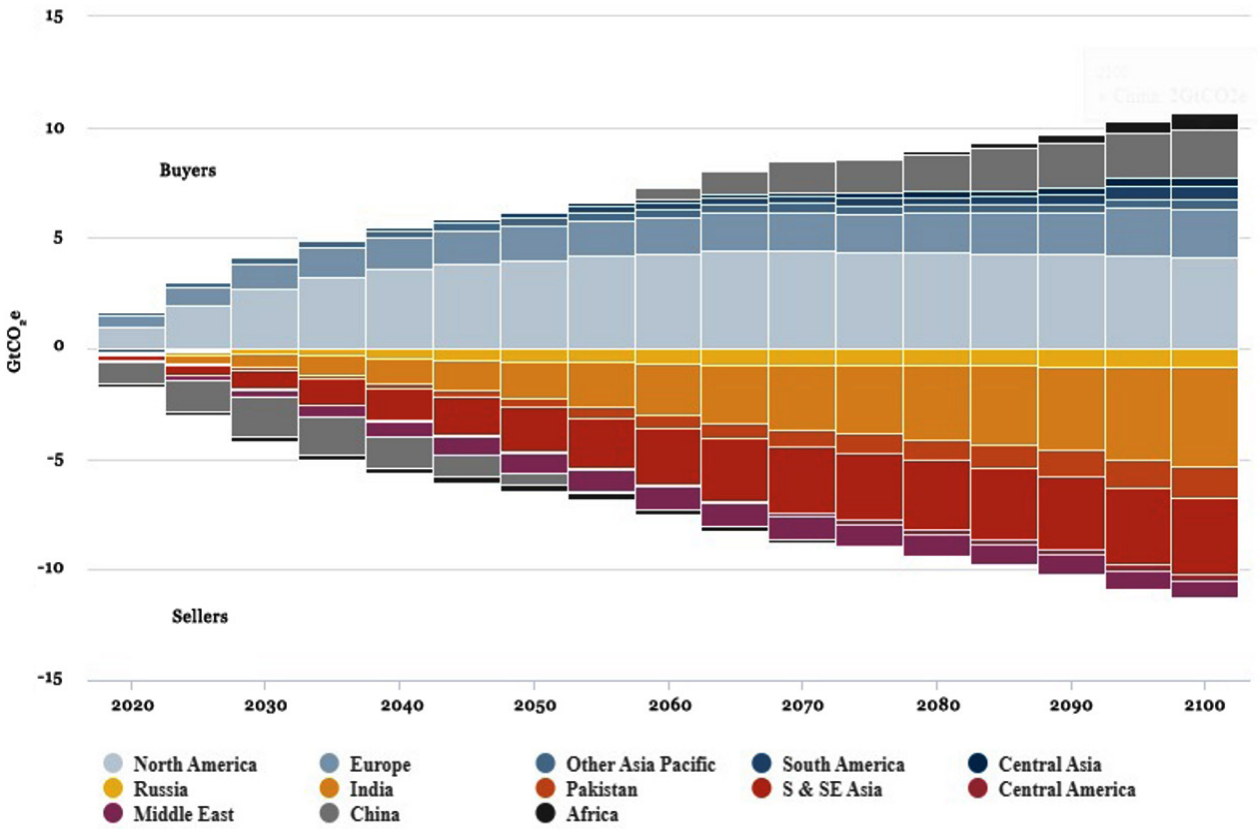
Methodology	
	The best available technologies which are economically feasible and environmentally appropriate for each SDM activity
	The average emissions level of the best-performing comparable activities that provide similar outputs in equivalent social, economic, environmental, and technological circumstances
	Actual or historical emissions, adjusted to align with the host country's NDCs and low-emissions development strategies

Developed markets (such as OECD Americas, Europe, and other regions) could meet part of their climate goals by buying credits generated from emissions reductions activities in developing markets, such as those in Asia.

Figure 3 shows an emissions trading model developed by IETA under an Article 6.4 carbon market. The model includes trading of emissions reductions achieved only from the fossil fuel use and industrial sectors. This means the model shows trade flows between emissions reductions achieved only via displacement of carbon-intensive energy and/or industrial activities with low-carbon alternatives, for example, the replacement of coal-fired electricity generation in China with natural gas. If coal power is cheaper than renewable gases, then a carbon market could incentivise a shift towards cleaner sources. In this way, Article 6.4 can establish an important role for private actors in the voluntary markets to not only meet their own compliance costs, but also increase climate action ambition of their governments by lowering "political resistance"[xvi].

Initially, regions like China and Africa are among those selling emissions reductions, but later become buyers. The buyer-seller split depends on the relative wealth of countries, the carbon intensity of their economies (energy and industry), and the ambition of their climate targets. IETA's report concludes Article 6 could potentially facilitate the removal of 50% more emissions than currently modelled, i.e., an additional 5 GtCO2e/y in 2030 at no additional cost, due to cost savings of US$ 250 billion per year in 2030[xvii].

Figure 3 Carbon Credit Buyers and Sellers Modelled under Article 6.4[xv]



15 WHAT IMPACT WILL ARTICLE 6 HAVE ON CARBON OFFSETS?

Article 6.2 and 6.4 rules will have a significant impact on carbon offsets, mainly due to their creation of two different trading options. These can be narrowed to 4 main sticking points shown in Table 5.

Just as importantly but not immediately addressed by the Article 6 rules, the role and robustness of voluntary carbon markets has also come into question, particularly with respect to financing for government-led compliance markets.

Table 5 Key Concerns from the new Article 6 Rules

Modality		Concern	What could happen at COP27 and COP28?
Double counting	Emissions reductions that are not covered by an NDC can be used in the voluntary carbon market for private entities. However, they could be double counted by both the country of origin and the company, or another private entity that buys the credit to offset its own emissions.	• Companies should not claim emissions reductions that happen in another country either as an ITMO or as a purchase by another company to meet compliance costs. • A "support credit" could be a possible solution, which could provide a climate finance contribution to the host country of the emission removal project by the company which buys the credit but cannot be used as an emission offset by the host country itself. • A special authorisation by the UN for using a specific credit towards any reduction target, i.e., either the country's NDC or a company's climate pledge, could bypass double counting.	So far, the voluntary carbon market has been exempted from corresponding adjustments, but the risk of double counting of emissions reductions not covered by an NDC may rehash dialogue on adjustments for VCMs at COP27 and COP28
Carryover of CDM-era credits	Article 6.4 allows the carry over of a certain amount of carbon credits from CDM projects registered since 2013, but could flood carbon markets and undermine the Paris Agreement.	• 173 million extra carbon credits are now available for countries to meet their first set of Paris Agreement climate targets for a duration of no more than 5 years. • However, these could undermine the Paris Agreement's ambition, due to some countries' economic interests and the interests of project developers holding large volumes of legacy carbon credits (Brazil, India etc.).	A robust accounting system for banking of pre-2020 credits, without which the old credits could dilute the impact of Article 6.4 and lead to low credit prices and therefore less incentive for private sector investment

Share of Proceeds	Article 6.4 mandates a 5% share of proceeds for emissions reductions units trading into the Adaptation Fund, and an additional 2% administrative fee to increase climate ambition. Both measures will reduce projected revenue streams from SDM activities.	• The automatic cancellation of 2% of credits generated from SDM activities was done at the request of small-island states to ensure OMGE and avoid "hot air" emissions reductions. • This could have a reverse effect of watering down effort among private and public sector actors to increase ambition if revenue streams from SDM activities remain low.	The supervisory body governing the SDM intends to charge the 2% additional monetary levy, which it could either gavel or bypass at the next COP edition(s)
Measuring additionalities	Details on how to determine the additionality principle are not fully clear and do not indicate how to develop a baseline emissions trajectory	• The SDM supervisory body can formally register SDM activities, validated by an independent, accredited auditor (known as a Designated Operational Entity), who will verify and certify emissions reductions as a basis for A6.4ERs to be issued into the SDM registry. • It will also develop clear working rules on how a baseline emissions trajectory should be established.	Clarification on the existing methodologies to measure a baseline emissions trajectory will be a must at COP27

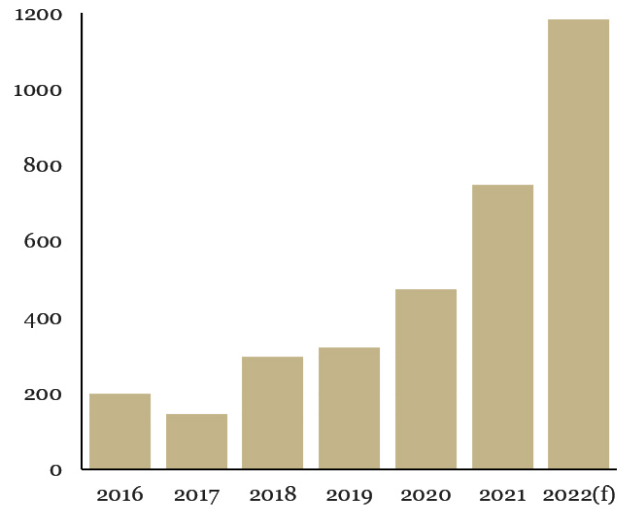
Global taskforces of private and public sector participants like the Voluntary Carbon Markets Integrity Initiative (VCMI) and the Integrity Council for Voluntary Carbon Markets (IC-VCM) can help build compliance markets' capacity to access crucial voluntary carbon market financing opportunities. IC-VCM is already supporting firms access high-integrity carbon offsets in order to foster a robust, transparent, and liquid voluntary carbon market that in addition to meeting compliance costs can support compliance markets' in ITMO transactions between different governments.

Some carbon traders have voiced concern that corresponding adjustments' requirements and the "watertight accounting regime" of the Article 6 rules could "chill the voluntary carbon market" if negotiators decide differently on emissions trading between companies in future COP editions. At the moment voluntary market credits not counted towards countries' climate goals need not be matched with corresponding adjustments in the voluntary market. This could change, especially due to the risk of a new form of double counting, i.e., if a private company claimed emissions reduction against its own voluntary targets and the host country also counted it towards its NDC. In situations where governments tap into voluntary markets under Article 6.2, the creation of adjusted credits could lead to bifurcated secondary markets, wherein credits subject to corresponding adjustments will be in higher demand. This in turn could reduce national ambition towards climate action.

Figure 4 EU ETS Prices show how VCM offsets' demand has increased following Article 6, €/tonne

Major standards-setters in voluntary markets will therefore play a crucial, somewhat "supervisory" role to help companies avoid claiming emissions reductions that happen in another country either through offset projects or purchase of credits. Large organisations can further perpetuate the standardisation of carbon credit recognition principles and the development of transparent credit trading platforms and exchanges to avoid this new form of double counting, and thereby facilitate an increase in credit liquidity (see Figure 5), something that voluntary carbon markets have struggled with historically.

Figure 5 Annual traded value of voluntary carbon offsets (in US$ M) is set to cross US$ 1 B in 2022 [xix]



Fact Box 2 What are "Hot Air" Emissions Reductions?

"Hot Air" emissions reductions or fake emissions reductions are credits that do not demonstrate additionality. In other words, these credits did not provide environmental benefit in any real sense to offset the holders' emissions. A famous example, published by Bloomberg Green in 2020, is JPMorgan and Blackrock's large investments to protect tracts of forest land in the US that were never threatened and that were already protected. At the same time, these companies continue to hold significant investments in fossil fuel industries, rendering any emissions reduction units from the investments into forest cover as "hot air".

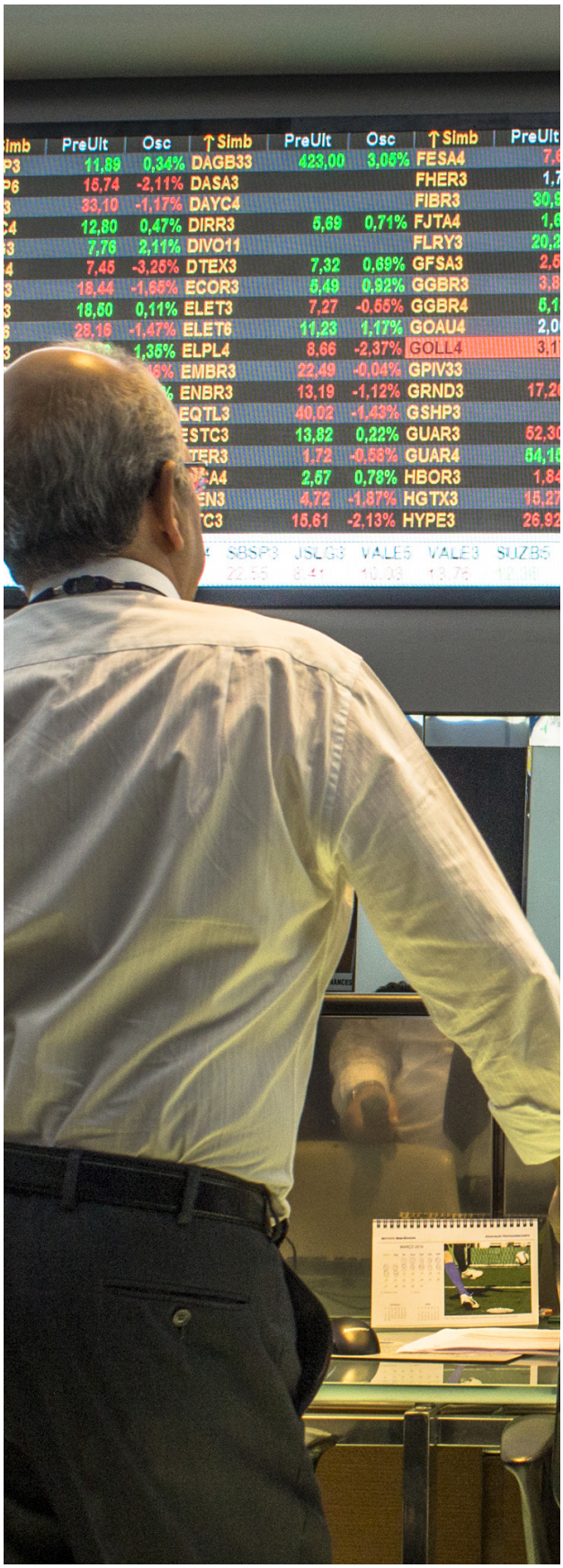
An important consideration to keep in mind is that these kinds of emissions reduction credits are based on storing land-based carbon through schemes such as reforestation. This carbon is ultimately at risk from future extreme events (such as wildfires) that could undo any investment efforts to reduce emissions.

Increased liquidity can also reduce fragmentation among current voluntary carbon credit registries and facilitate more exchange-based and secondary market transactions, leading to greater recognition of voluntary

carbon credits as credible sources of revenue. This in turn can facilitate financing of costly offset-generating projects and spur investments in the deployment of negative emissions technologies that can generate carbon credits.

Mechanisms like REDD++ (reducing emissions from deforestation and forest degradation in developing countries) will be some of the first to experience the benefits of a more liquid voluntary offset market. Private actors can be more proactive and supportive in financing and implementation of voluntary offset projects under such schemes, demand for which has grown significantly in recent years as more companies set net-zero emissions commitments. Private companies and other individual actors in VCMs will additionally need a new approach to trading credits as more and more firms voluntarily adopt net-zero goals. They will need to purchase spot credits but also have to secure offsets for future delivery and capital injection into project development, to ensure inventories will be able to meet rising demand.

Structured public-private cooperation initiatives, meanwhile, like the Oil and Gas Climate Initiative (OGCI) and Clean Energy Ministerial (CEM) led CCUS Initiative , can benefit from the creation of large transferable asset classes in voluntary markets, such as carbon storage units, resulting from cooperation established under Article 6.2 and under the scope of Article 6.4 mechanisms.



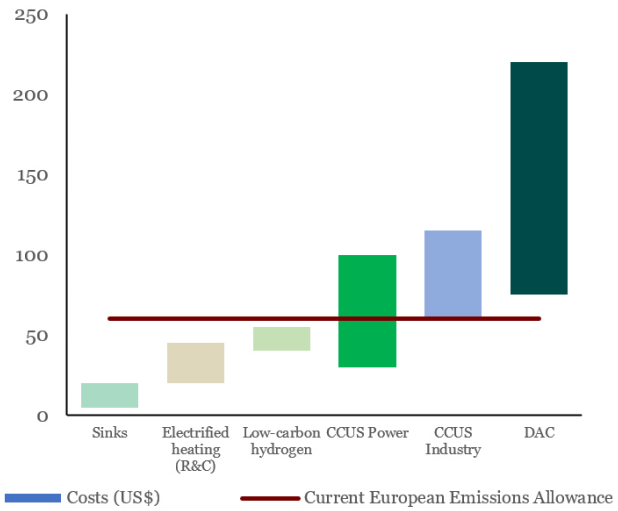
IMPLICATIONS FOR LEADING OIL AND GAS PRODUCERS

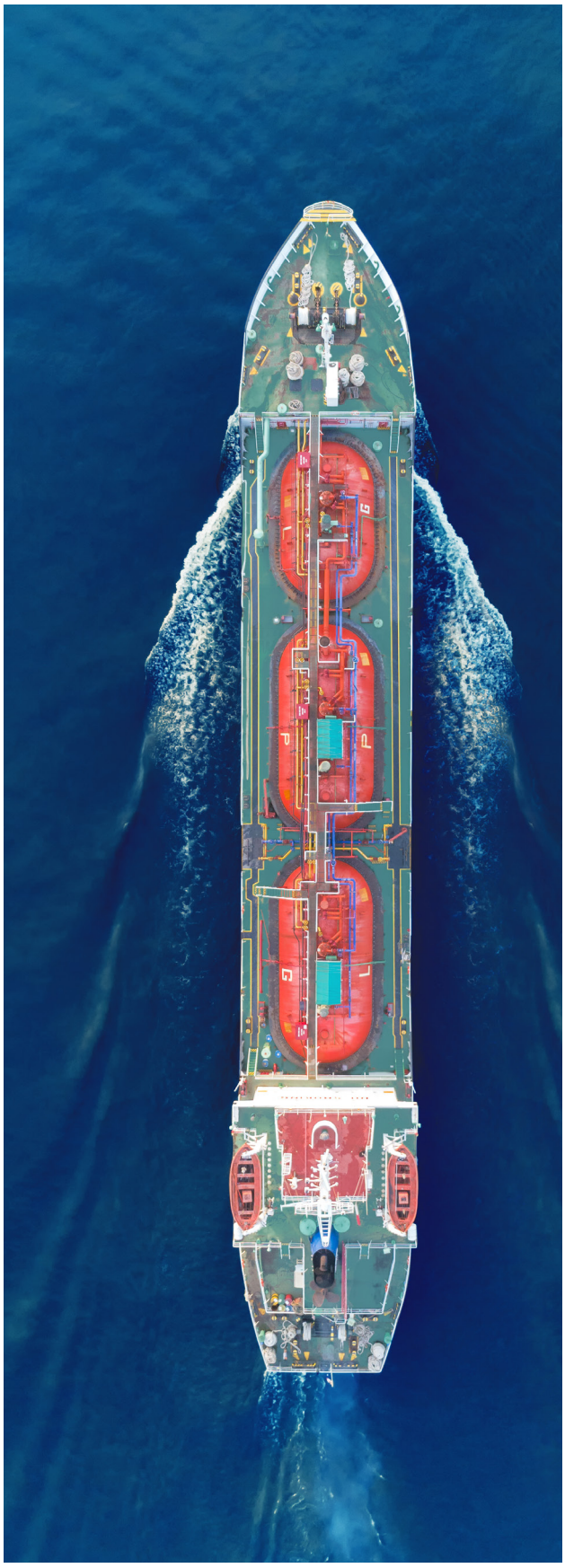
The success of Article 6 rules does not indicate an immediate phase-out of oil and gas activity but does put pressure on hydrocarbon producers to begin seeking new solutions to operate successfully in highly regulated carbon markets. Oil and gas companies can achieve more visibility as demand erodes, by becoming proponents of key offset projects in VCMs such as CCUS, DAC with CCUS, BECCS, and other carbon storage projects. They can become originating parties of important emissions reductions units (under Article 6.4 mechanisms) that they can sell in voluntary markets, or to compliance markets. By selling to compliance markets, they can enable countries to meet their NDCs and domestic climate goals. In the medium-term, they will be large net buyers of offsets themselves, particularly with regards to unavoidable Scope I and II emissions, and Scope III emissions (which their customers could offset through carbon removal projects).

Article 6 rules can also support the creation of new decarbonisation business models. Oil and gas companies can collaborate on a global scale with similar private enterprises and/or public entities to make carbon markets more liquid by commercialising and scaling up offset activities. Companies in host countries with good renewable energy potential can become investors in clean energy, thereby becoming a source of financing for SDM-aligned activities that can generate carbon credits and assist them in meeting their compliance costs. Oil and gas companies can also work with VCM standards-setting bodies to set standards for carbon offsets, thereby providing momentum to the nascent market.

The investible market to support a net-zero pace CCUS scale-up could be over US$ 50 Billion to US$ 100 Billion annually by the mid-2030s, representing about 25% of current upstream spend. Oil and gas companies have a viable option in CCUS to roll out sustainable decarbonisation strategies under Article 6. Carbon pricing through carbon markets under the Article 6 rules will be a more credible catalyst for decarbonising, rather than relying on government support alone. Current costs of carbon are insufficient to incentivise deep decarbonisation (Figure 6), particularly for DAC, which might be significantly higher in different regions and markets, but the uptake of Article 6 rules could not only commercialise CCUS-based offsets beyond current levels, it could also result in meaningful carbon prices that can help close the credibility gap on offsets.

Figure 6 Current carbon abatement costs, US$



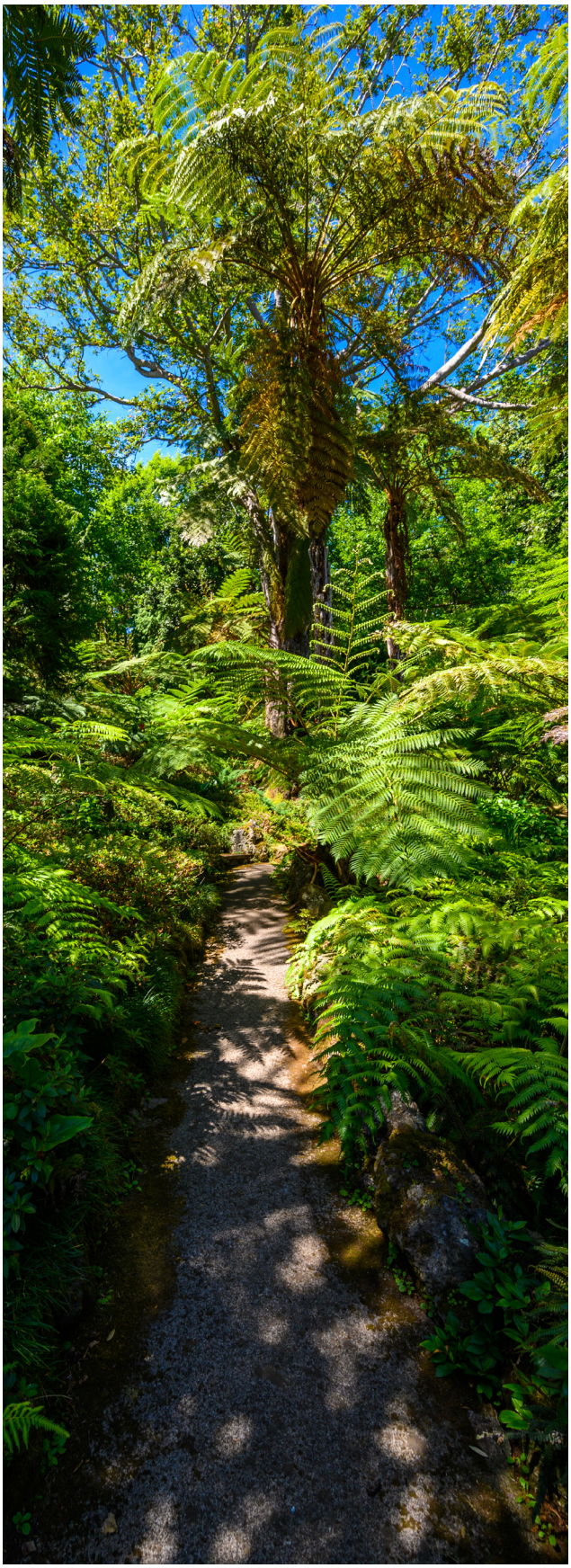


21 CONCLUSIONS

Article 6 has modernised and remodelled the Kyoto Protocol's flexibility mechanisms in a new era of carbon regulation. The new cooperative approaches will impact the way governments look to achieve their targets and opens the door for private actors to contribute to reducing global emissions through clearer guidance on the role of offsetting schemes, particularly under Article 6.4. Companies that buy offsets, the projects that create them, and organisations that handle verifications have historically disagreed that voluntary offsetting hasn't produced any tangible carbon reductions, but adjusted credits could help bolster the carbon market's credibility, by ending "the sense of carbon colonialism".

While further clarity in subsequent COP editions is needed to address situations to cover credits in VCMs, or those not authorised for NDCs, Article 6 has already opened discussions on how the offset market could evolve. For example, adjusted credits could see higher demand for offset purposes, while non-adjusted ones could be used for other purposes, such as a company's own voluntary carbon goals.

Ultimately, the Article 6 rules should boost demand for credits and direct capital flows to carbon credit projects. This increase in demand and financing will boost carbon credits' credibility as being an imperative source of climate change mitigation, thereby helping ambitious projects finally get off the ground.



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January- 2022

Policy & Politics: The EU's Green Taxonomy

The European Union's draft green taxonomy of sustainable investments was released in December 2021. The document is intended to outline which types of projects and technology can be claimed as 'sustainable' by companies, to avoid allegations of 'greenwashing'.

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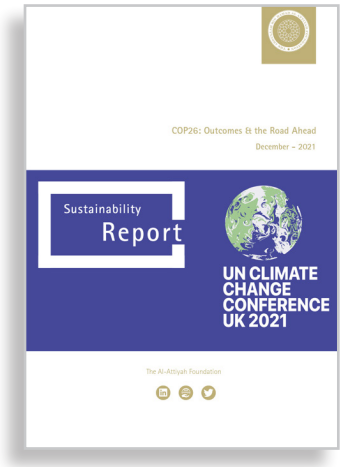

December - 2021

Consensus Forecasts on Long-Term Demand for Fossil Fuels

As the world begins to recover from the COVID-19 pandemic, a fundamental change is unfolding in the global energy system. Climate policy and advancing energy technologies are having an increasing impact alongside the short-term pandemic impacts and the usual long-term effects of economic growth and demographics.

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November - 2021

The Progress of Green New Deals in Europe and the US

Governments in Europe and the USA want the recovery from the Covid-19 pandemic to be the springboard for environmentally and socially progressive policies. The EU has proposed the 'European Green Deal' and 'Fit for 55', while the administration of President Biden has put forward a 'Green New Deal' and the strategy of 'Build Back Better'.

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Our partners collaborate with The Al-Attiyah Foundation on various projects and research within the themes of energy and sustainable development.

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