



Leveraging ambition through carbon markets

Effectiveness of abatement action through international carbon markets





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Executive Summary

- A broader uptake of carbon markets can help lower the cost of achieving mitigation targets. This can help countries ratchet up Nationally Determined Contributions (NDCs) ambitions to limit global warming to 1.5 °C.
- The cost savings potential of carbon markets post-2020 is larger than it was under the Kyoto Protocol. Both developed and developing countries must commit to emission reduction targets now, enabling them to benefit from regional abatement cost differentials.
- Carbon markets can offer much-needed flexibility for countries to meet their NDC commitments, acting as a risk management tool in the transition to a net zero economy.
- The global Covid-19 pandemic is straining public finances and fuelling a rise in government debt,
 stressing the importance of cost-effective abatement action and the increased role of private financing.
- Carbon markets have been shown to be effective at crowding in private finance. A strong enough
 carbon price can guide new investment opportunities in emission reductions and removals in a post2020 market.
- Accurate and robust accounting of greenhouse gas emission reductions is a pre-requisite for securing environmental integrity. Innovative carbon market measurement, reporting and verification (MRV) approaches utilising digital technologies can lend a helping hand.





Introduction

The Paris Agreement marks a transition in the use of international carbon markets for mitigation action. Article 6 of the Agreement lays the foundation for two new international market-based approaches that are meant to facilitate the achievement of targets communicated by countries in their Nationally Determined Contributions (NDCs). Article 6.2 establishes a decentralised mechanism through which Internationally Transferred Mitigation Outcomes (ITMO) can be generated in one country and acquired by another. Article 6.4 creates a centralised crediting mechanism governed by the United Nations Framework Convention on Climate Change (UNFCCC), in many ways akin to the Clean Development Mechanism (CDM), establishing a carbon market under international supervision where public and private actors can engage. 1,2

Carbon markets under the Paris regime can play a pivotal role in incentivising the generation of cost-efficient emission reductions. Research shows that collaboration on Article 6 is sensible from the perspective of costeffective global abatement as it allows trading partners to lower the overall costs of achieving global mitigation targets. It further encourages international collaboration through which knowledge and technological developments can be accelerated. International emissions trading can furthermore mobilise significant private sector investment in mitigation action, which in the absence of markets would not be realised.^{3,4} Despite this potential, one-third of the countries that have submitted NDCs indicate an intention not to make use of international carbon markets, while another third has not yet specified the role of markets in their NDCs.5 Moreover, only a few major climate donors and funds have so far explicitly stated their willingness to actively engage with carbon markets.6

Under the Paris Agreement, all countries are expected to enhance ambition of their climate efforts when updating their current NDCs or communicating subsequent ones. As of November 2020, 15⁷ of the 189 countries that have ratified the Paris Agreement submitted new and updated NDCs to the UNFCCC,8 kickstarting the first NDC update process and defining policies that will drive national climate action for the next five to 10 years. It is not clear at this stage how many countries will indeed commit to more ambitious pledges, and there is a risk that parties will simply "re-communicate" their current pledges9 at a time when it is clear that current pledges will not suffice. 10 This paper argues that a broader uptake of carbon markets can help lower the cost of achieving mitigation targets, encouraging countries to ratchet up their NDC ambitions to reflect the goals of the Paris Agreement. On the basis of available literature, a stocktake is presented of how carbon markets to date have succeeded in unlocking cost-effective abatement opportunities, have contributed to leveraging private investment in mitigation action, and offered an environmentally integral way of achieving climate action objectives.

¹ The implementation rules for Article 6 are expected to be finalised at the end of 2021 at COP26 in Glasgow.

² The Article 6 rulebook will also cover the mechanism introduced under Article 6.8, which relates to a "non-market approach" and aims to provide a framework for climate cooperation between countries without trading modalities.

J. Edmonds et al. (2019), "The Economic Potential of Article 6 of the Paris Agreement and Implementation Challenges", IETA, University of Maryland and CPLC. Available at https://bit.ly/2Lhmon3 (last accessed 26 November 2020).

4 S. Mikolajczyk and L. 't Gilde (2019), "Modelling of Article 6 Implementation Scenarios - Significance for the EBRD Regions", Climate

Focus and IETA. Available at h (last accessed 26 November 2020).

⁵ The World Bank (2018), "Carbon Markets under the Kyoto Protocol: Lessons Learned for Building an International Carbon Market under the Paris Agreement", World Bank Working Paper, Washington, DC. Available at https://bit.ly/384Wuge (last accessed 26 November 2020). ⁶ For example, see: S. Mikolajczyk et al. (2016), "Why linking the CDM with the GCF is a good idea", Climate Focus, Perspectives and Aera Group. Available at h (last accessed 26 November 2020).

⁷ 13 updated NDCs and 2 new submissions from Suriname and the Marshall Islands.

⁸ C. Brahic (2020), "The world could turn a corner on climate change", The Economist. Available at https://econ.st/3kBqR2M (last accessed 26 November 2020).

⁹ S. Evans and J. Gabbatiss (2019), "COP25: Key outcomes agreed at the UN climate talks in Madrid", Climate Diplomacy. Available at w (last accessed 26 November 2020).

¹⁰ With current climate commitments, temperatures are expected to rise to 3.2°C this century. See: UN Environment Programme (2019), "Emissions Gap Report 2019". Available at https://bit.ly/2vlm7oF (last accessed 26 November 2020).





Path to cost-effective abatement

The Kyoto Protocol introduced three mechanisms (so-called "flexible mechanisms") to help industrialised nations achieve their greenhouse gas emission reduction targets. The International Emissions Trading¹¹ and the two project-based mechanisms (the CDM)¹² and Joint Implementation (JI)¹³ have played a vital role in enabling cost-effective mitigation action, the benefits of which would have not been realised in the absence of markets. By allowing nations and companies to trade, these markets enabled investments to be channelled to low-cost abatement options, thereby lowering the overall economic cost of achieving targets.

Research on the economic impact of trading in project-based carbon credits on countries covered under the Kyoto Protocol suggests realised savings of at least US\$ 2.3 billion from 2008-12, when a lion's share of Certified Emission Reductions (CERs) were purchased by compliance buyers covered under the EU Emissions Trading Scheme (EU ETS). This benefit has been generated through the purchase of emission reductions generated under the CDM alone, and excludes those of JI.¹⁴ Buyers located in developed economies benefited from investing in projects in less-developed regions that offered cheaper abatement options across a wide range of sectors, spanning from the energy sector and removal of industrial gases to municipal waste and energy efficiency measures.

While Kyoto credits were successful in lowering costs for buyers and triggered an accelerated dissemination of new emission reduction technologies in developing regions, certain investments raised concerns in terms of environmental integrity. These were partially a result of the inherent design of the Kyoto Protocol, which did not require host countries to implement any "corresponding adjustments" on exported emission reductions, facilitating the domestic approval process of carbon projects. As under the Paris Agreement all parties have adopted emission reduction targets, host countries will be more attentive towards deciding which project types and emission reduction units can be transacted, and which should not be credited.

The ability to ensure environmental integrity and realise a cost-saving potential by international carbon markets is therefore considerably larger under the Paris regime, as different regions in the world continue to present vastly different abatement cost curves. Recent modelling estimates suggest that if countries were to fully cooperate in their mitigation efforts to reduce emissions in places where the abatement cost is most cost-effective, global abatement costs could be reduced significantly. International carbon markets could reduce the costs for implementing current NDCs by more than half (US\$ 250 billion per year in 2030), compared with a scenario where all countries would implement their NDCs independently. Related research supported by the EBRD, finds that collaboration between countries in carbon markets under Article 6 can unlock economic benefits of US\$ 53 billion across EBRD regions alone by 2050. A deeper analysis of the emission trajectories of different sectors and subsectors provides additional information on sectors where cost-effective abatement opportunities exist in the studied regions. For example, in the case of the EBRD analysis, certain regions (eg, the Middle East) present low hanging fruit opportunities that exist in sectors such as electricity (gas, refined liquids), biomass (co-generation), and refining. These investment opportunities can be unlocked only if additional financial incentives are offered to these sectors, as would be the case under increased collaboration under Article 6.

¹¹ Article 17 of the Kyoto Protocol sets out International Emissions Trading, which covered trade between two countries with a target under the Protocol.

¹² Article 13 of the Kyoto Protocol sets out the Clean Development Mechanism, which covered trade of project-based emission units between a country without a reduction target under the Protocol and another country with a reduction target.

¹³ Article 6 of the Kyoto Protocol sets out Joint Implementation, which, paraphrased, is trade of project-based emission units between two countries, both having a reduction target under the Protocol.

¹⁴ R. Spalding-Fecher et al. (2012), "Assessing the impact of the Clean Development Mechanism", CDM Policy Dialogue. Available at https://bit.ly/2Rf9IWR (last accessed 26 November 2020).

¹⁵ J. Edmonds et al. (2019), "The Economic Potential of Árticle 6 of the Paris Agreement and Implementation Challenges", IETA, University of Maryland and CPLC. Available at https://bit.ly/2Lhmon3 (last accessed 26 November 2020).

¹⁶ S. Mikolajczyk and L. 't Gilde (2019), "Modelling of Article 6 Implementation Scenarios - Significance for the EBRD Regions", Climate Focus and IETA. Available at https://bit.ly/2Q2hSv6 (last accessed 26 November 2020).





The ability of carbon markets to help identify cost-effective mitigation actions is not only helpful in lowering the economic cost of meeting current ambitions, but can also play a powerful role in facilitating countries to take up more ambitious mitigation targets in the years ahead. If countries were to reinvest the savings identified in the aforementioned research by the University of Maryland and IETA, mitigation ambition could be enhanced up to 5 GtCO₂ per year in 2030 compared with a scenario where all countries implement their NDCs independently. As such, trade enabled by international carbon markets can help countries bridge the emissions gap that currently exists between NDCs and the level of ambition required to deliver on the 1.5°C target of the Paris Agreement.

Potential to unlock private investment

To close the emissions gap and realise the transition required to align the global economy to a 1.5°C scenario, research estimates that annual investments of US\$ 6.3 trillion will be needed until 2030, and US\$ 6.9 trillion per year thereafter. This requires a fundamental shift in finance flows, in stark contrast to the incremental change that we have been witnessing to date. Article 2.1(c) of the Paris Agreement reinforces this necessity by insisting on "making finance flows consistent with a pathway towards low greenhouse gas emissions and climate-resilient development". Progress on initiatives such as the EU sustainable finance taxonomy, green bond standards, green banking regulations and mandatory climate-change-related reporting for institutional investors are sending the right signals to capital markets, but more effort is needed to "green" finance. Climate finance has an important role to play: according to the latest data, the annual flow of climate finance amounted to US\$ 546 billion (2018), of which just over half came in the form of private finance.

A big financing gap remains, and recognising the restricted availability of public resources that has been further strained by the onset of the global Covid-19 pandemic, there is an urgent need to promote financing mechanisms that can effectively unlock private finance at scale. Carbon finance delivered through international carbon markets has proven to be an effective means for shifting the risk-return profiles of climate-friendly investments, as a result crowding in private sector investment into mitigation action across the developing world. The UNFCCC reports that under the Kyoto Protocol, the CDM created a market that leveraged US\$ 10 for every US\$ 1 in public financing.²² The market had mobilised over US\$ 360 billion in mainly private sector investments²³, a value that will be easily exceeded if the use of markets is widely promoted post-2020.

Countries should recognise the private sector's near 20-year track record with carbon markets, and build on this familiarity to incentivise scaled-up private investment going forward. To enable Article 6 to fulfil its role as successor of the Kyoto era markets post-2020, a number of factors that determined the success of the project-based flexibility mechanisms should be considered. First, private sector engagement was bolstered by the fact that there was limited market intervention from governments, restricted to the provision of approval letters from both host and recipient countries for the initial transfer of carbon credits.²⁴ Second, reforms implemented by the

¹⁷ J. Edmonds et al. (2019), "The Economic Potential of Article 6 of the Paris Agreement and Implementation Challenges", IETA, University of Maryland and CPLC. Available at https://bit.ly/2Lhmon3 (last accessed 26 November 2020).

¹⁸ OEĆD/The World Bank/UN Environment (2018), "Financing Climate Futures: Rethinking Infrastructure: Policy Highlights". Available at https://bit.ly/2Jc9eq0 (last accessed 26 November 2020).

¹⁹ UNFCCC (2015), "Paris Agreement". Available at https://bit.ly/2WCj503 (last accessed 26 November 2020).

²⁰ K. Berensmann et al. (2020), "Fostering sustainable global growth through green finance – what role for the G20?" G20 Insights. Available at https://bit.ly/2JLBXSC (last accessed 26 November 2020).

²¹ IPCC (2018), "Global Warming of 1.5° C: An IPCC Special Report". Available at: https://www.ipcc.ch/sr15/ (last accessed 26 November 2020), as found in Buchner et al. (2019), "Global Landscape of Climate Finance 2019", Climate Policy Initiative. Available at https://bit.ly/2P5Mquw (last accessed 26 November 2020).

²² UNFCCC (2014), "CDM Fact Sheet: Leveraging private finance, delivering verified results". Available at https://bit.ly/2DGB2Ac (last accessed 26 November 2020).

²³ Accounting only investment data that have been made public. Perspectives Climate Group, Frankfurt School and Climate Focus (2019), "Opportunities for mobilizing private climate finance through Article 6", Swedish Energy Agency. Available at https://bit.ly/2rPrRum (last accessed 26 November 2020).

²⁴ Perspectives Climate Group, Frankfurt School and Climate Focus (2019), "Opportunities for mobilizing private climate finance through Article 6", Swedish Energy Agency. Available at https://bit.ly/2rPrRum (last accessed 26 November 2020).





UNFCCC over the years helped overcome barriers for private sector engagement by consolidating methodologies, improving the consistency of third-party validation requirements, and simplifying and improving project registration and issuance processes. ^{25,26} Third, the presence of a liquid market and the development of spot and futures trading enabled the monetisation of the carbon assets in a standardised, formalised fashion. All of these factors have reduced the transaction costs associated with engaging with carbon markets, encouraging private entities to finance new project development and engage in trading activities.

Looking ahead, more can be done in the context of Article 6 to facilitate scaled-up private sector engagement. Striving for further standardisation of baselines, additionality testing and monitoring, reporting and verification (MRV) procedures, while further lowering transaction costs by streamlining administrative procedures and digitalising and automating MRV processes, are just some avenues to encouraging private sector involvement.²⁷ It is imperative, however, that any such improvements will have to carefully consider the potential trade-off between further easing market participation on the one hand, and environmental integrity considerations on the other.

Provisions for ensuring environmental integrity

Environmental integrity will be a central principle for using Article 6 mechanisms under the Paris Agreement. Buyers will require that international transfers of emission reduction units realised under cooperative approaches will translate into at least the same, and preferably lower aggregated global emissions, eliminating the risk of transferring "hot air" or the double counting of emission reductions. If this is not ensured, trade in emission reductions could jeopardise climate action efforts and increase the cost of mitigating climate change over the long term.²⁸

Accurate and robust accounting of greenhouse gas emission reductions is a pre-requisite for securing environmental integrity. ²⁹ Both the CDM and voluntary market standards have, over many years, built extensive and comprehensive tools and MRV frameworks to mitigate environmental integrity risks. More than 200 methodologies offer UNFCCC-approved MRV approaches that have been widely tested and improved over the past two decades, covering a range of avoided emissions and carbon removal activities. ³⁰ In addition, these carbon standards offer approaches to determining baselines that can serve as reference points for sectoral crediting and the setting of carbon budgets. As these baselines and budgets are to be updated over time (eg, in line with the five- to 10-year NDC update cycles), countries will have to eventually shift towards negative emissions to be able to keep global warming below 1.5°C. ³¹ This, over time, will lead to economy-wide emissions accounting, with harmonised accounting approaches and interconnected registry systems being crucial in ensuring the environmental integrity of activities supported through carbon markets and climate finance. By building on existing carbon market methodologies and toolkits to deliver a robust accounting framework, Article 6 mechanisms can preserve a sense of continuation in the new era of carbon markets, an

²⁵ I. Shishlov and V. Bellassen (2012), "10 lessons from 10 years of the CDM". Retrieved on 7 November 2019, from https://bit.ly/380lAwC (last accessed 26 November 2020).

²⁶ Carbon Pulse (29 May 2015), "CDM Board asks UN to find ways to cut red tape". Available at https://bit.ly/380m4mg (last accessed 26 November 2020).

²⁷ Perspectives Climate Group, Frankfurt School and Climate Focus (2019), "Opportunities for mobilizing private climate finance through Article 6", Swedish Energy Agency. Available at https://bit.ly/2rPrRum (last accessed 26 November 2020).

²⁸ L. Schneider (2019), "Carbon markets under the Paris Agreement: how can environmental integrity be ensured?" PhD thesis, Wageningen University, Wageningen, The Netherlands. Available at https://bit.ly/2wyfmGm (last accessed 26 November 2020).

²⁹ L. Schneider and S. La Hoz Theuer (2018), "Environmental integrity of international carbon market mechanisms under the Paris Agreement", *Climate Policy*. Available at https://bit.ly/2WEIN4g (last accessed 26 November 2020).

³⁰ S. Mikolajczyk et al. (2016), "Linking the Clean Development Mechanism with the Green Climate Fund: Models for scaling up mitigation action", Climate Focus, Perspectives Climate Group and AERA. Available at https://bit.ly/2Ya9Umg (last accessed 26 November 2020).

³¹ IPCC (2018), "Mitigation Pathways Compatible with 1.5°C in the Context of Sustainable Development". Available at https://bit.ly/3o0akr4 (last accessed 26 November 2020).





important consideration for private sector participants. This includes adopting clear protocols for defining additionality, as without such guidance Article 6 rules could weaken NDCs.³²

Approaches to quantify emission reductions developed by the various carbon standards may also be applied more structurally in international climate finance programmes. Countries are currently required to report on the underlying assumptions and methodologies to produce information on climate finance, but no overarching requirements apply.³³ Existing UNFCCC guidelines also leave significant discretion to countries to decide what counts as climate finance, and how climate finance is considered "new and additional".³⁴ Multilateral funders also struggle with this lack of guidance. For example, so far, the Green Climate Fund has only defined high-level performance indicators under its results management framework and requested Accredited Entities to utilise best practice MRV approaches, however, a lack of common guidelines on monitoring and reporting by GCF projects makes it hard to aggregate greenhouse gas emission reduction results, including its contribution to a country's NDC targets.

The different nature of climate finance, where financiers only report but typically do not claim a certain amount of emission reductions, has made the need for such a standardised and widely accepted framework less pressing. However, when climate finance and carbon market financing are used in conjunction to support new investments, there is a need to clarify claims between project sponsors, financiers and donors. In such blended financing arrangements, it is important to establish clear titles or claims on any generated emission reductions, and agree on how carbon credit transfers are to be accounted for in national registries and how donors are to report their climate financing activities. Only with clear accounting guidelines will the risk of double claiming and double counting be eliminated, ensuring robust environmental integrity of carbon market transactions.

Examples of how public climate funds can support carbon market activities

- Providing a long-term price signal. Traditional grants and subsidies for low-carbon development, while necessary for new technologies or high-cost projects, do not provide price signals to catalyse private investment at scale. Programmes which underwrite the value of carbon reductions, such as through auctioned price floors (subsidies that offer a guaranteed future emission reduction price), can offer price certainty over a longer timeframe, both improving the cost-effectiveness of public expenditure and effectively stimulating private investment. If used in combination with carbon pricing and other complementary policies, such a method can facilitate the transition from a subsidy-based to market-based climate mitigation approach.³⁵
- Contributing to market liquidity. Investments into carbon market liquidity can incentivise the development of new era carbon markets by ensuring sufficient offtake potential from the pilot project, thus creating a clear route to market from the very beginning. Public climate funds can also enhance market liquidity through supporting the development of derivative instruments, which lower the costs to buyers of insuring against future price uncertainty and can help market maturation.³⁶ This could also support the ambitions of the Taskforce on Scaling Voluntary Carbon Markets launched in September 2020, which aims to scale voluntary carbon markets by building a market with both high integrity and sufficient liquidity.³⁷

³² K. Kizzier et al. (2019), "What You Need to Know About Article 6 of the Paris Agreement", World Resources Institute. Available at https://bit.ly/3bTHiDw (last accessed 26 November 2020).

³³ FCCC (2012), "Report of the conference of the parties on its seventeenth session, held in Durban from 28 November to 11 December 2011 addendum part Two: Action taken by the conference of the parties at its seventeenth session". Document FCCC/CP/2011/9/Add.1.

³⁴ R. Weikmans and J. Timmons Roberts (2019), "The International Climate Finance Accounting Muddle: Is There Hope on the Horizon?" Climate and Development. Available at https://bit.ly/2YdviHC (last accessed 26 November 2020).

³⁵ P. Bodnar, et al. (2017), "Underwriting 1.5°C: competitive approaches to financing accelerated climate change mitigation", *Climate Policy*. Available at https://bit.ly/3lJo3lA (last accessed 26 November 2020).

³⁶ R. Dellink et al. (2013), "Towards global carbon pricing: Direct and indirect linking of carbon markets", OECD. Available at https://bit.ly/2Hdpf1z (last accessed 26 November 2020).

³⁷ IIF (2020), "The Taskforce on Scaling Voluntary Carbon Markets – Consultation Document". Available at https://bit.ly/3m6veV7 (last accessed 26 November 2020).





• Supporting a green recovery. Public climate funds can provide "abatement payments" in recovery packages which provide direct support for decarbonisation until stronger carbon pricing reforms are politically feasible. These payments could account for the difference between current carbon pricing levels and price levels compatible with the rate of decarbonisation required to reach the goals of the Paris Agreement. Initially, they can be financed with public debt, and costs contained by prioritising projects relating to essential low-carbon technologies, such as carbon capture and storage. Such an approach could help avoid "locking-in" carbon-intensive systems during the recovery period, as well as facilitate later carbon price reforms by reducing the cost of future compliance.³⁸

Conclusion

Achieving the temperature goals of the Paris Agreement will require a rapid shift and massive scale up in green finance flows. Recognising that public resources alone will not be sufficient to realise the transition, governments need to urgently look for ways to incentivise private sector investments. This urgency has been further strengthened by the ongoing Covid-19 pandemic, where rapidly rising public debt is limiting the prospects of public finance to lead the fight against climate change in the near-term future. Policymakers should recognise that the new market mechanisms introduced under Article 6 of the Paris Agreement offer a powerful opportunity to deliver a much-needed catalyst to stimulate scaled up private sector investment in cost-effective abatement action that can be transparently accounted for, thus safeguarding environmental integrity.

Research supported by economic modelling has shown that by facilitating access to lower abatement cost investments, carbon markets can play an instrumental role in helping countries to raise ambition. If the economic gains achieved from such trade were to be used to realise additional mitigation, annual global carbon emissions mitigation could be increased by as much as 5 GtCO₂ per year in 2030.³⁹ This represents 50 per cent more mitigation compared with a scenario where parties do not revert to the use of carbon markets. Other modelling results show that using the cost savings from global emissions trading between 2020-35 could nearly double the emissions reductions under current NDCs, at no additional cost.⁴⁰ These findings should encourage countries to not only more prominently feature Article 6 in their existing commitments, but also to view markets as an enabler of deeper emission reduction cuts.

The impact of post-2020 carbon markets can be further strengthened if climate finance and carbon finance is blended to support a green recovery in a post-Covid-19 world. A targeted deployment of concessional climate finance aligned with carbon market development needs can effectively promote private sector engagement by de-risking investments or reducing market price risk. By utilising the interplay between carbon markets and climate finance, adopting best practices, and ensuring the two instruments complement each other, international carbon markets can play an important role in driving the transformational change that is needed to get us on the path to 1.5 °C.

³⁸ OECD (2020), "Green budgeting and tax policy tools to support a green recovery". Available at https://bit.ly/3pCS4FX (last accessed 26 November 2020).

³⁹ J. Edmonds et al. (2019), "The Economic Potential of Article 6 of the Paris Agreement and Implementation Challenges", IETA, University of Maryland and CPLC. Available at https://bit.ly/2Lhmon3 (last accessed 26 November 2020).

⁴⁰ EDF (2018), "The power of markets to increase ambition: Evidence supports efforts to realize the promise of Paris". Available at https://bit.ly/2UD00XV (last accessed 26 November 2020).





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