

The Road to Net-Zero is Paved with Good Intentions

The Promise and Peril of Pricing Carbon

Part One

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Global Carbon Reduction Policy and Commitments

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Call to (Carbon) Action

Nearly six years on from the adoption of the Paris Agreement in December 2015, the world is increasingly awakening to the need for urgent action on halting human-induced climate change. Within a relatively short timeframe, an array of top-down regulatory initiatives have been introduced by policy-makers, including the proposed French Climate and Resilience Law¹, the UK Climate Change Act², as well as the recently adopted European Climate Law³. These are accompanied by a range of mechanisms intended to internalize the cost of carbon emissions, such as carbon trading schemes, renewable energy certificates and carbon offsets, which have emerged as an important driver of climate action by the public and private sector alike.

In this four-part research series, the Arabesque Research team explores the policy and market-based perspectives behind these emissions reduction measures, as well as the viability of carbon trading schemes, carbon taxation, as well as emissions offsets, within the context of the ongoing drive to reach net-zero.

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In the first part of the series, we provide an introduction to the global carbon markets landscape, together with the underlying policy initiatives that underpin carbon trading regimes in key jurisdictions. We also outline the main implementation mechanisms set out by the international climate change legal framework, as well as an overview of how this translates into private sector action and engagement.

Carbon Markets: Global Regulatory Overview

Carbon Markets and the Rise of Climate Regulation

Carbon, or emissions, trading works by limiting the amount of carbon dioxide that entities such as companies, municipalities or countries can release into the atmosphere, creating competition to encourage them to become more energy efficient and adopt cleaner technology. Companies aiming to reduce their carbon output can sell unused pollution allowances and those that exceed their allocated emissions allowance may have to buy more emissions permits, or be subject to monetary fines.

From a global policy perspective, there are currently 39 national and 23 sub-national jurisdictions that have implemented or are scheduled to implement carbon pricing instruments, including emissions trading systems⁴ and carbon taxes. This is situated within an evolving global climate policy landscape: there has been a 20-fold increase in the number of global climate change laws since 1997, according to the most comprehensive database of relevant policy and legislation⁵, spanning over 2000 climate-related laws and policies worldwide⁶.

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More than 170 countries have national policies on adaptation to manage the risks of climate change impacts⁷, with over 120 countries that have at least one framework document that addresses climate change adaptation⁸. In particular, there are 658 national laws and policies focused on adaptation, many of which explicitly acknowledge the potential risks caused by shifts in extreme weather events. Importantly, the analysis also found that most climate-related laws and policies came into force between 2009 and 2016, with 85 countries passing a total of 133 adaptation laws and policies in 2012-13⁹.



While the designation of the 'package' is intended as more of a promotional device, under the umbrella of the strategy are included a series of interconnected legislative proposals aim to align climate, energy and transport policies with the targets agreed in the European Climate Law¹², translating climate goals into concrete action, such as:

- Revision of the EU Emissions Trading System (ETS), including maritime, aviation and CORSIA as well as a proposal for ETS as own resource;
- Carbon Border Adjustment Mechanism (CBAM) and a proposal for CBAM as own resource;
- Effort Sharing Regulation (ESR);
- Revision of the Energy Tax Directive;
- Amendment to the Renewable Energy Directive to implement the ambition of the new 2030 climate target (RED);
- Amendment of the Energy Efficiency Directive to implement the ambition of the new 2030 climate target (EED);
- Reducing methane emissions in the energy sector;
- Revision of the Regulation on the inclusion of greenhouse gas emissions and removals from land use, land use change and forestry (LULUCF);
- Revision of the Directive on deployment of alternative fuels infrastructure;
- Revision of the Regulation setting CO₂ emission performance standards for new passenger cars and for new light commercial vehicles;
- Revision of the energy performance of Buildings Directive (EPBD) in Q4 2021;
- Revision of the Third Energy Package for gas (Directive 2009/73/EU and Regulation 715/2009/EU) to regulate competitive decarbonised gas markets in Q4 2021.

We can see that these proposed revisions to the European ETS, encompassing more sectors and stricter reductions, represent a core aspect of the revamped EU climate strategy.



A sign of the emergence of emissions trading as a dominant climate mitigation measure, in July 2021, the world's largest greenhouse gas emitter – China – launched its nation-wide carbon market¹³ with the aim of furthering the country's goal to reach carbon neutrality before 2060¹⁴. The Chinese nation-wide ETS follows pilots undertaken in a number of Chinese provinces over the last few years that evaluated the impact of emissions trading on the Chinese economy and the environment¹⁵.

However, achieving full reporting transparency is still an elusive element within many a country's economic and political landscape. For instance, in a notorious incident in 2015, China under-reported its coal consumption by a staggering 17 percent (equivalent to the entire coal consumption of Germany)¹⁶. While the official reasons for such flagrant under-reporting remain unclear, it is highly likely that they relate to inadequate enforcement and communications procedures between various carbon-emitting entities and governmental agencies in charge of monitoring environmental data¹⁷. Such instances can easily cast doubt on the ability of ETS mechanisms to achieve substantial carbon reductions over time.

For carbon markets to work, regulators must accurately measure emissions from factories and plants, then ensure that those polluters do not evade the rules by hiding or manipulating emissions data.

One of the main prerequisites for the successful operation of carbon trading and market-based emissions reduction mechanisms is the presence of trustworthy and robust data collection, review and monitoring measures¹⁸

The Private Sector: Carbon Neutrality Commitments by Companies

In addition to top-down national or international policy instruments that aim to regulate the amount and flow of global emissions, the private sector is rising as a potent force for change. A group of leading net zero initiatives has emerged in recent years, representing 733 cities, 31 regions, 3,067 businesses, 173 of the biggest investors, and 622 Higher Education Institutions¹⁹. Indeed, as of spring 2021, over a fifth of the world's biggest companies, representing revenues of nearly \$14 trillion, had committed to a net-zero emissions target²⁰. These 'real economy' actors join 120 countries in the largest ever alliance committed to achieving net zero carbon emissions by 2050 – the Climate Ambition Alliance²¹. Collectively these actors now cover nearly 25% global CO₂ emissions and over 50% GDP.



Financial sector participants have also established a range of net-zero initiatives that focus on the sector's contribution to achieving financial neutrality:

- Net-zero Asset Owners Alliance
- Glasgow Financial Alliance for Net Zero
- Net-zero Asset Managers Initiative
- UNFCCC Race to Zero campaign
- Net-zero Science-based Targets

These pledges signal the systemic awakening of the global financial system, acknowledging that climate-related risks are a source of financial risk and opportunity. As a result, sovereign wealth funds, central banks, supervisors, public pensions, corporate pensions, asset managers, insurance companies, and corporates are awakening to the requirement to design a more resilient and sustainable financial system, underpinned by longer-term thinking. Financial risks as a result of climate change present systemic risks and could potentially cause irreversible damage or portfolio losses. The future climate pathways may be uncertain (in view of the current science, transition, technology and policy considerations), but it is imperative that robust, science-based methodologies are implemented when carrying out emissions reduction strategies, by the public and private sectors alike.

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Given the proliferation of net-zero and climate ambition targets by non-governmental actors, proper transparency and governance mechanisms are essential in making sure these commitments are being implemented in practice. This is especially so in view of the limited democratic oversight of companies as compared to governments or other national actors. Announcing a net-zero target without a clear strategic roadmap for achieving it may well have the opposite effect to what was intended – it risks damaging companies' green credentials more than enhancing them.

The setbacks of carbon trading and how to address them

Some of the main drawbacks of currently operating carbon trading mechanisms could viably be tackled by introducing a concrete carbon price floor, establishing a baseline amount for each tonne of carbon emitted. While this is akin to a minimum carbon tax on emissions, such a measure is necessary to ensure that emission trading serves a viable role in achieving its goal of climate change reduction. Still, currently only two EU member States have introduced a floor price on carbon emissions: the UK (at GBP 18 per tonne)²² and France (at EUR 30 per tonne of emissions)²³. Indeed, in June 2021, an IMF Staff Climate Note paper puts forth a proposal for setting up an International Carbon Price Floor among large emitting nations²⁴. The authors evaluate the feasibility and implementation challenges that accompany having to accommodate multiple regional specificities and levels of development, meaning that reaching an agreement for a commonly recognised carbon price floor is still beyond the near-term policy horizon.

In the absence of a globally agreed minimum carbon price, it would be difficult to assess whether individual actions have a positive impact on overall emission levels. This is because of likely competitiveness concerns arising from a higher cost of doing business in jurisdictions that have introduced a carbon price floor, leading to industry and production moving to countries with more lax standards (thus only shifting the location, but not the amount of overall emissions emitted)²⁵. Moreover, the trade-off between the cost of falsely reporting on carbon emissions (if discovered) and the cost of complying, warrants further investigation.

Additionally, carbon trading does not contribute to solving distributive problems such as inequality and resource scarcity. In this regard, it has been argued that a per capita apportionment of the global greenhouse gas emissions budget would provide an opportunity for carbon trading that would benefit advanced and developing economies alike²⁶. This would arguably create a cost-effective path towards emission reductions for the developed world, whereas at the same time representing a significant source of development finance for underdeveloped states²⁷. Yet, in the absence of a global (as opposed to regional or local) emissions trading scheme, the applicability of distributive justice and differentiation-based principles remains limited. Nevertheless, there are valuable lessons to be learned from the successes and failures of existing market-based instruments such as the EU and Chinese ETS, which shed light on the key elements a potential global trading scheme would need – namely, transparency, accountability and clarity regarding a baseline carbon price to be levied on emissions.



The Paris Agreement itself does not make reference to specific emissions allocations, nor does it go far enough in establishing the need for a concrete internationally accepted minimum carbon price. It instead recommends that incentives for emission reductions be in place by “recognis[ing] the important role of providing incentives for emission reduction activities, including tools such as domestic policies and carbon pricing”²⁸.

Climate-related data, tools, methodologies, and products are still at an early stage and present a number of analytical and empirical challenges for the financial system. For example, the quality and availability of climate data today remains limited, taxonomies and definitions are still evolving, and stakeholders must build intellectual capacity to translate the science into decision-useful financial risk and opportunity assessments. In the next part of the research series, we continue to provide an overview of the intricacies surrounding mandatory and voluntary carbon markets, together with their underlying implications for long-term emissions reduction.



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25. This is also poised to result in a race to the bottom for environmental standards to attract foreign investment. Please see a further elaboration of this point in our forthcoming research piece focusing on the implications of introducing carbon taxes.
26. I.e. countries with a higher population receiving a greater number of emissions permits. See Center for Global Development, <[Center For Global Development](#)>.
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