

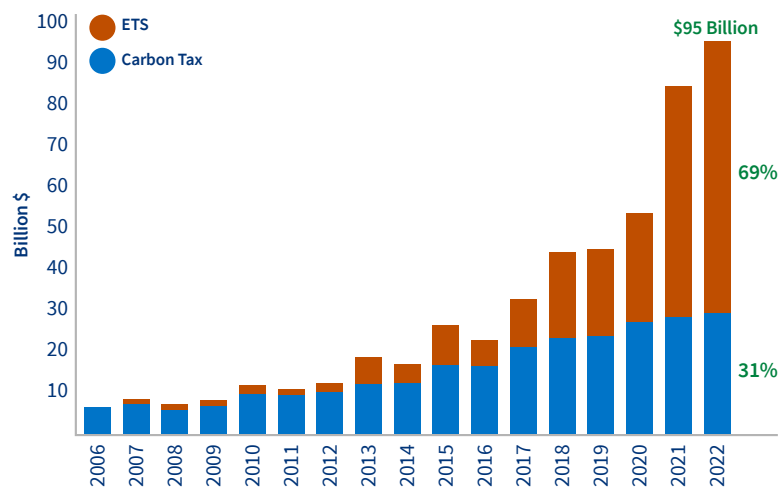


Carbon Markets Are Gathering Steam. Are They Working?

Carbon pricing favors green innovation, forcing those who burn fossil fuels into a competitive disadvantage. But are carbon markets working? If numbers don't lie, the answer must be "yes."

The power to pollute increasingly carries a hefty price tag.

According to the World Bank's [Carbon Pricing Dashboard](#), nearly one quarter of the world's greenhouse gas (GHG) emissions are covered by some type of carbon pricing. In 2022, carbon taxes and emissions trading generated \$95 billion in revenue, nearly half of which came from the European Union Emission Trading System (EU ETS). By mid-2023, there were 73 active carbon pricing initiatives worldwide—a number that continues to climb. (Figure 1)



Carbon credit

Buy

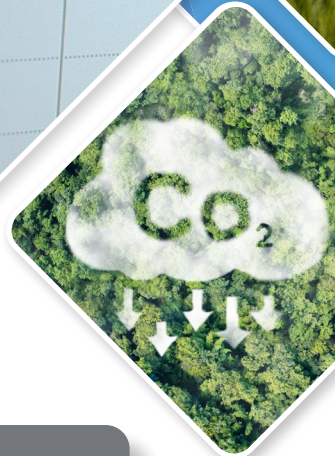


Figure 1

Evolution of Global Revenues from Carbon Taxes and ETSS Over Time (World Bank. 2023. State and Trends of Carbon Pricing 2023. Washington, DC: World Bank. doi: 10.1596/978-1-4648-2006-9. License: Creative Commons Attribution CC BY 3.0 IGO)

CARBON MARKETS: CLIMATE ACTION THAT DRIVES DEVELOPMENT

Carbon markets began to take shape in 1997 after adoption of the Kyoto Protocol by the United Nations Framework Convention on Climate Change (UNFCCC). They gathered steam in 2015 with the UNFCCC’s adoption of the [Paris Agreement](#) and the launch of the [Sustainable Development Goals \(SDGs\)](#). Although independently defined, Paris Agreement and SDG targets are linked. Climate mitigation projects can deliver both emission reductions and [development benefits](#) such as green jobs, energy access, better health and health care, greater food security, gender equity, and more. Around the world, countries are integrating climate policies and national development plans to promote these synergies.

[Article 6 of the Paris Agreement](#) defines carbon finance options that can drive down the cost of cutting emissions, offering a clear path forward for developed and developing countries alike.

Two new Article 6 instruments are generating the momentum and structure needed to realize carbon trading between countries:

1. Cooperative Approach

The Cooperative Approach (Article 6.2) allows the use of direct bilateral arrangements to develop emission reduction activities in a host country. These arrangements generate credits, called international transferred mitigation outcomes (ITMOs), that can be transferred to help the partner country meet its Nationally Determined Contributions (NDCs) under the Paris Agreement. (Figure 2)

For example, Japan’s [Joint Crediting Mechanism](#) (JCM) boasts bilateral agreements with 27 countries hosting more than 70 registered projects. In Mongolia, solar power generation projects implemented under the JCM since 2013 have contributed more than half of the solar generation target outlined in the country’s NDCs. In this way, renewable energy projects that help mitigate climate change and advance SDG 7 (affordable and clean energy) may create [co-benefits](#) such as reducing air pollution caused by coal power plants (SDG 3). Japan benefits, too, as the ITMOs are credited to its emission reductions.

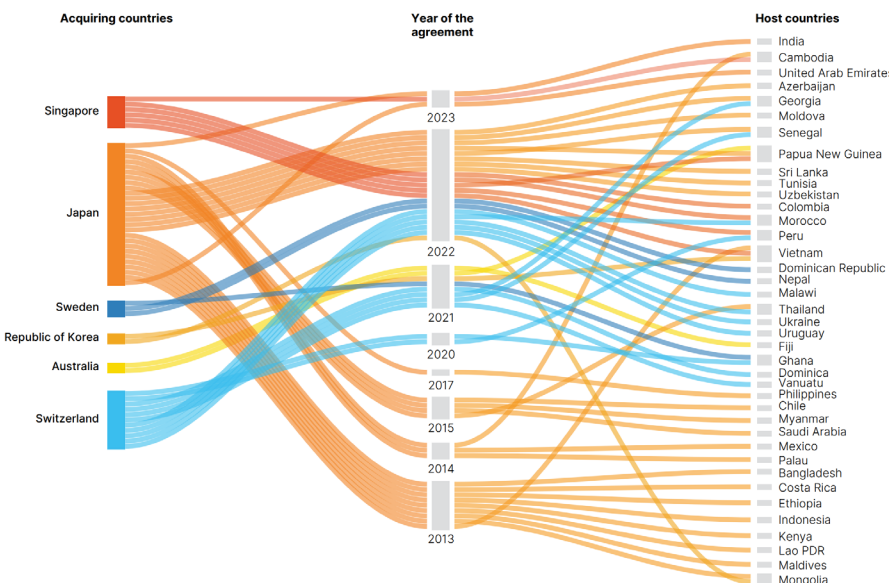


Figure 2

Article 6.2 Bilateral Agreements as of April 1, 2023

(World Bank. 2023. *State and Trends of Carbon Pricing 2023*. Washington, DC: World Bank. doi: 10.1596/978-1-4648-2006-9. License: Creative Commons Attribution CC BY 3.0 IGO)

Similarly, the Swiss government has signed 13 [bilateral agreements](#) thus far, including two that have projects underway: one on [smart agriculture](#) in Ghana and a second on e-buses in Thailand, which “[will help avoid around 500,000 tonnes of CO2 by 2030.](#)” South Korea is also conducting Article 6 bilateral negotiations with major GHG emitters, while [Singapore and Papua New Guinea](#) signed a memorandum of understanding with the same purpose.

2. Sustainable Development Mechanism

The Sustainable Development Mechanism (SDM) (Article 6.4) creates a centralized global market for companies to trade carbon credits. The SDM defines rules that enable a company to reduce emissions in one country and sell credits to another company in another country. The latter company may use the credit to comply with its own emission reduction obligations.

Although there are hurdles to clear for companies wishing to take advantage of these new market mechanisms, recent clarification of the rules reduces market uncertainty for the private sector by facilitating the linking of emissions trading systems between jurisdictions.

The SDM replaces the Clean Development Mechanism (CDM) established under the Kyoto Protocol. Companies must request to transition existing CDM projects to the SDM no later than the end of 2023; requests must be approved before the end of 2025.



NO SMOKING IN EUROPE? THE EU SETS STRICT DECARBONIZATION RULES

In Europe, carbon markets are working so well that nearly 45 percent of all GHG emissions carry a carbon price tag. The EU ETS, a cap-and-trade system established in 2005, works by setting an upper limit on emissions from certain sources and then allowing operators to obtain carbon permits—either purchased via auction or free—to cover the full amount of their emissions. Lowering the caps and phasing out free allowances has propelled a steady uptick in carbon permit prices, which are [projected to increase](#) to more than \$120 per ton by 2030.

Moreover, Europe’s new [carbon border adjustment mechanism](#) (CBAM) aims to address “carbon leakage” by countries searching for a cheaper place to produce. The CBAM levy will mirror the EU’s carbon market price so that non-EU countries are paying the same price as European producers, encouraging trading partners to go green. Companies in countries with a carbon pricing regime equivalent to the EU’s will be able to export to the EU without buying CBAM certificates. Those with less stringent regimes will pay the price.

The CBAM initially applies to carbon-intensive EU imports such as iron and steel, aluminum, electricity, certain fertilizers, cement, and hydrogen, as well as certain precursors (i.e., cathode active materials) and a limited number of downstream products such as screws and bolts. By 2035, free allowances will be obsolete, [driving suppliers](#) around the world to follow in Europe’s footsteps.

Enforcement of CBAM will likely hit developing countries hardest, especially those whose exports of the above products constitute a large share of their total production. Tetra Tech is already working with the Government of Moldova, as well as companies in sub-Saharan Africa and the Balkans, to investigate options for CBAM compliance.

GETTING INTO THE (CARBON) MARKET: FOUR KEY ISSUES FOR DEVELOPING COUNTRIES

Successful implementation of Article 6 rests on the capacity of countries to address the following issues that will likely require support from international development agencies and/or qualified consulting firms:

1. Domestic Action vs. International Transfers

Each country needs to define which mitigation efforts it will implement on its own and which ones will be eligible for international trading. This requires a careful review of the country's NDC targets, a cost-benefit analysis, and policy decisions on which sectors and which GHGs are eligible for international markets. Countries will need to establish guidelines for evaluating carbon credits and deciding which can be sold, how they should be priced, and how the country will report on them.

2. The Corresponding Adjustment

An accounting mechanism known as the “corresponding adjustment” ensures that only one country counts each emission reduction. If a country authorizes a transfer of emissions under Article 6, the mitigating country subtracts the emission reduction from its GHG balance, while the acquiring country adds the emission reduction to its GHG results. The corresponding adjustments are meant to ensure the integrity of carbon markets and the complementary relationship between voluntary carbon markets and the decarbonization efforts under the Paris Agreement. If the credits are authorized by the host country, a formal process to transfer and apply the corresponding adjustments between the two countries will be required. This will involve some technical and legal work as not all countries have the same type of NDC targets.

3. Monitoring, Reporting, and Verification (MRV)

High-quality credits are based on sound accounting principles and meet additionality criteria, meaning they represent emission reductions that would not have occurred otherwise. Tracking emission reduction credits and preventing double counting will require a robust national emissions reporting system that is transparent and secure. This national reporting system should record data that is standardized internationally for ease of auditing to accommodate [bilateral \(Cooperative Approach\) and multilateral \(Sustainable Development Mechanism\) approaches](#). The system for monitoring and evaluation of credits needs to be constructed so that it works across sectors and incorporates all programs and policies related to achievement of the NDCs. Digitalization of MRV processes will reduce the time, and consequently the transaction costs, required to generate emission reduction trades.

4. Regulatory and Administrative Frameworks

Carbon credits subject to a corresponding adjustment will require a formal endorsement by governments. Such transfers affect the NDC targets and are subject to international trade rules. Participating parties will need to establish robust administrative processes to guarantee the transparency of the approval protocols for specific projects. They also will need to establish the legal validity of final transactions and conduct proper and timely reporting to the [UNFCCC](#) of any changes in the NDCs. This implies the creation of new institutions or the appointment of committees with enough authority to endorse those transactions.

Some African countries already have institutional frameworks. The [Ghana Carbon Registry](#) “serves as a database for collecting and tracking transactions from mitigation activities at the sector, city, and corporate levels.” Ghana has also outlined its strategy to participate in Article 6 in its updated NDCs to the UNFCCC. The strategy defines a specific goal to make approximately 24 million tons of its conditional absolute emission reductions available for transactions under Article 6.2 cooperative approaches.



TETRA TECH LEADS ARTICLE 6 PROJECTS IN ZAMBIA AND MOLDOVA

Tetra Tech has extensive experience providing governments with comprehensive programmatic support to develop and implement their low-carbon development strategies and associated NDCs. We also aim to enhance the resilience of systems by maximizing the benefits of carbon credits.

Through the USAID [Alternatives to Charcoal](#) Activity in Zambia, Tetra Tech is helping reduce deforestation and charcoal demand by catalyzing a social, technological, and market shift towards innovative cooking technologies and alternative energy sources.

To establish a clean cooking program using the new Article 6 mechanisms, Tetra Tech's sustainable energy finance team is working with Zambia's government to compile a history of carbon markets and their application to clean cooking, an area that has been the subject of intense criticism due to concerns about lack of transparency, unfair distribution of benefits, and overestimation of carbon credits in projects. The aim is to analyze the business models of clean cooking carbon finance programs and assess how these same programs could be implemented under Article 6 in a way that brings more local benefits, enhances investor confidence, and lays the groundwork for Zambia to implement a clean cooking program.

Tetra Tech is also working with the Government of Moldova to analyze how the CBAM will impact the country's industrial sector, national economy, and emission reduction goals. *Carbon Pricing and the Carbon Border Adjustment Mechanism: Implications and Impacts in Moldova* provides key guidance as Moldova navigates its accession to the EU.



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