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POLICY PAPER

UKRAINE VOLUNTARY AND COMPLIANCE CARBON PRICING SCHEMES IN THE CONTEXT OF RECONSTRUCTION AND THE VISION OF A SUSTAINABLE FUTURE

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The study was prepared by Florian Eickhold within Capacities for Climate Action Project implemented by GIZ on behalf of the German Federal Ministry for Economic Affairs and Climate Action (BMWK) and co-financed by European Union within the International Climate Initiative.

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Introduction

This policy paper provides a basic overview of carbon pricing schemes and relates them to the climate policy, geopolitical context of Ukraine and its development priorities. The paper focuses on a potential use of Article 6 of Paris Agreement providing some ideas, provided by the authors of this paper for discussion, on how to build up the institutional framework and in which sectors to implement projects that could potentially fit with the needs of Ukraine and contribute to the goals of the Paris Agreement considering lessons learned from previous systems in the Kyoto era.

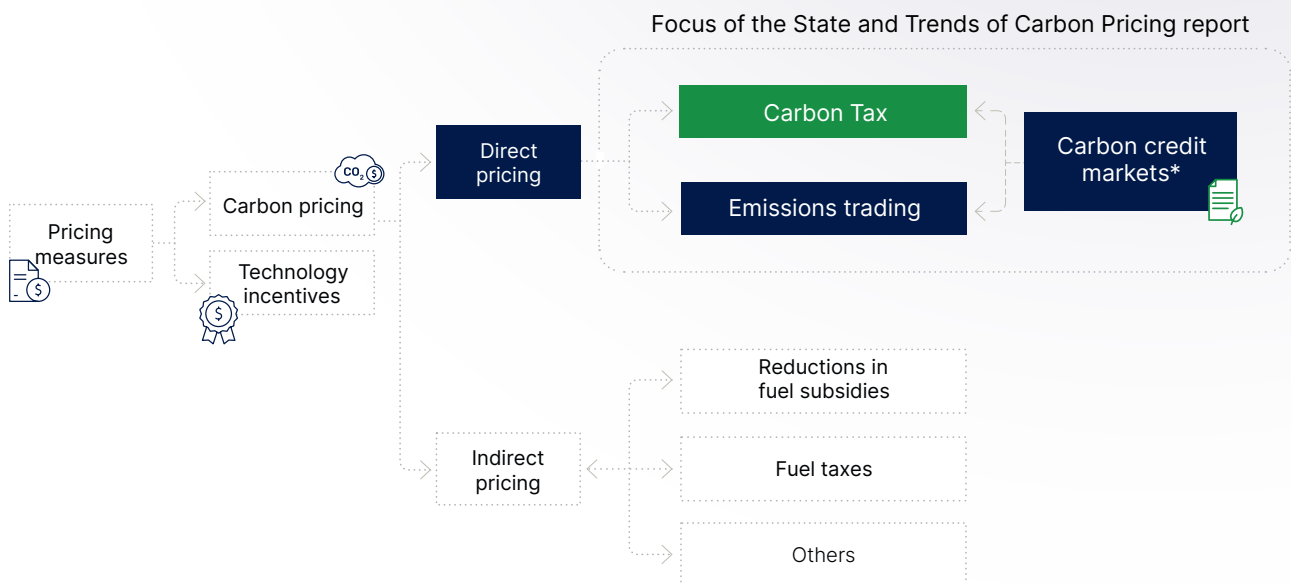
There is rising consensus amongst government and the private sector that carbon pricing instruments can play an effective and efficient role in decarbonizing the economies by putting a price on GHG emissions and by that, internalizing externalities. Carbon pricing instruments all follow the polluter pays principle. That means that the polluter should pay a price for emissions instead of leaving the costs to society. Carbon pricing instruments also include the idea that an actor which is avoiding emissions beyond a business-as-usual scenario should be rewarded for its behavior that is positively affecting society. This paper provides a tailored overview of the facets of carbon pricing instruments in the context of Ukraine. Special attention will be given to compliance schemes such as carbon taxes and emission trading systems and to voluntary schemes such as the voluntary carbon market (VCM) in its diversity and different facets. This overview shall provide some clarity of key concepts to discuss the question of how Ukraine can use these instruments especially the VCM to achieve its strategic goals and international commitments. The paper is directed to public servants in Ukraine and the private sector to facilitate the design and implementation of effective climate change policies and voluntary initiatives aiming at the decarbonization of the economy while recovering from the war building a sustainable and resilient future.

02. General overview on carbon pricing instruments

In this paragraph a schematic and simplified overview is given on the main carbon pricing¹ instruments and about the differentiation of voluntary and regulated use of these tools.

This report focuses like the World Bank's State and Trends of Carbon Pricing 2024 Report² on the direct carbon pricing instrument like in the following graph, but extends the view also to the voluntary carbon market and the context of Ukraine.

Pricing policy ecosystem and report scope



* As highlighted in Box 2, carbon credits can be used for voluntary or compliance purposes. Figure 1 illustrates the interaction between carbon credit markets and domestic compliance markets (ETSs and carbon taxes) whereby carbon credits can be used to offset price liabilities.

1. <https://carbonpricingdashboard.worldbank.org/what-carbon-pricing>

2. <https://openknowledge.worldbank.org/server/api/core/bitstreams/253e6cdd-9631-4db2-8cc5-1d013956de15/content>

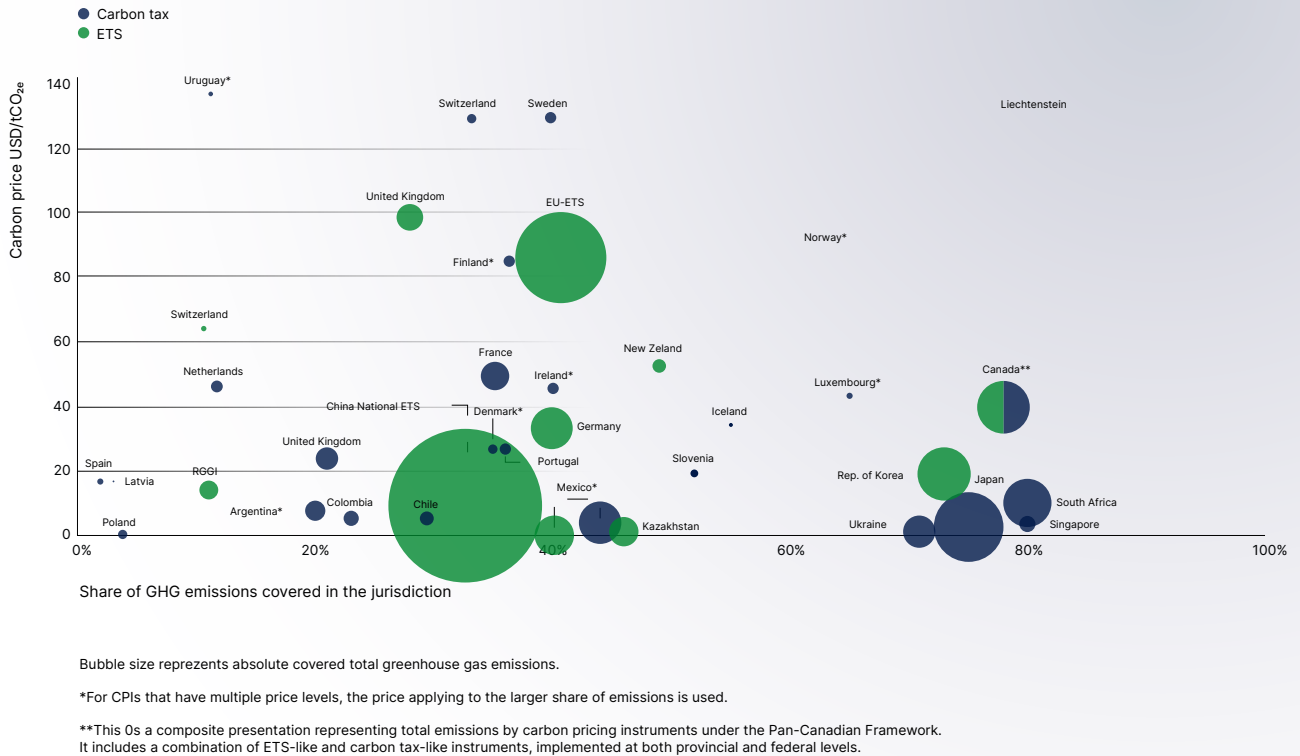
Cap-and-trade: regulating emissions with market flexibility

Key Insights: *This system secures precise emission reductions, enhances business flexibility, and generates governmental revenue via auctioned permits.*

In a cap-and-trade system an emission cap in form of a maximum number of total emission permits is allocated to a defined group of emitters. This total amount is divided in and distributed to the emitters and can be traded amongst them. Emitters are only allowed to pollute if they are in possession of the according amount of emission permits. The most prominent example of a cap-and-trade system is the EU emission trading system (EU-ETS) where large industries, energy facilities, and lately also the shipping and aviation sector are included. Additional sectors like buildings are to be included in future reforms (ETS 2). Positive elements of this approach are that the defined emission cap can be achieved precisely and that the allocation of allowances to the participants can be in the form of an auction that provides a financial flow to the government.

However, the initial definition of the cap and the corresponding allocation of allowances requires a precise overview of emission data from the participants to allocate the right amounts of allowances (which in case of Ukraine could be additionally hampered with industrial groups/large energy monopolistic producers with high influence on formation of allocation plan, particularly lobbying much lower allocation for their businesses). If the volume of allocated emissions is too high the price and the corresponding incentive to reduce emissions can be low. If the volume of allocated emissions is too low, emission allowances can be very expensive and a burden for some industries. Also, such a system requires establishment of large and complicated procedure for emissions inventory, accounting, monitoring, reporting and verification (based on internationally recognized methodologies which shall be approved in Ukraine), accreditation of verifiers, establishing separate designated focal point to centralize all documentation on emission reporting, formation of stock exchange where emissions could be traded and other elements which increase basic administrative costs (further to be covered by emission allowance price, which in case of higher allocation could not cover even administrative costs). On the other hand, the price is formed on the basis of balance of demand and proposition of emission allowance thus the mechanism is considered as market based.

The reasons why the EU-ETS is mentioned as a reference, is its significance in terms of price level and volume in comparison to other systems, which represents the following PMI graph about the share of emissions covered and prices in 2022³.



Cap-and-trade systems can be linked or decoupled. The general trend is the integration of systems. For example, the ETS of the EU was linked to the Swiss ETS in 2020⁴. Linking means that governments agree on a minimum level of compatibility of 2 systems. One of the advantages is that the market size increases, with the potential to improve regarding liquidity and efficiency. Linking challenges can be encountered, if the systems are technically less compatible. An example of an uncoupling of an ETS is the Brexit after which the UK Part was separated from the EU-ETS. Today the UK ETS and the EU-ETS are two different systems and markets after being included in one single ETS for many years.

3. <https://pmiclimate.org/pmi-report#>

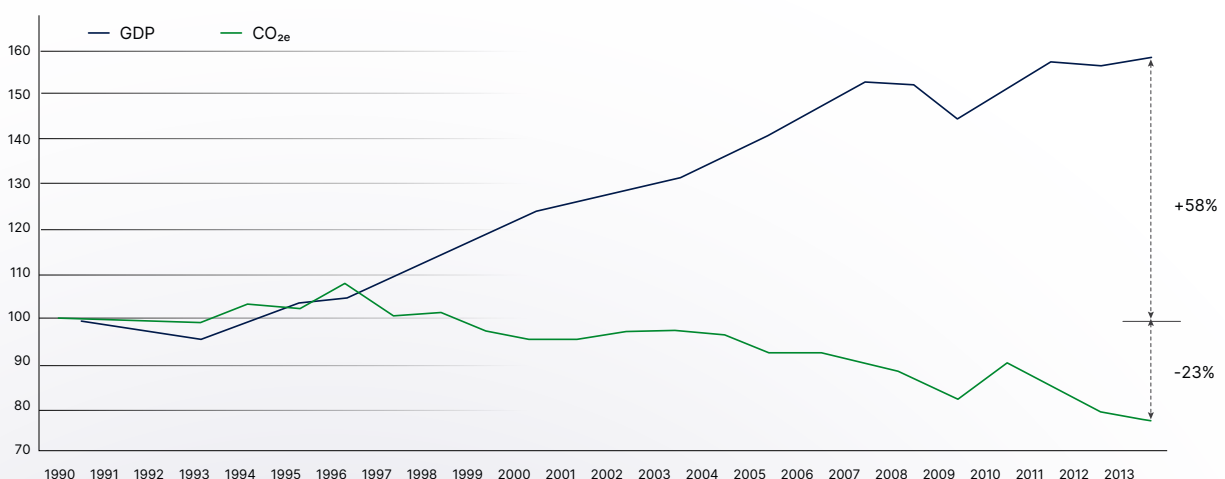
4. <https://www.bafu.admin.ch/bafu/en/home/topics/climate/info-specialists/reduction-measures/ets/linking-swiss-eu.html>

Carbon tax: driving revenue stability and emission reductions

Key Insights: A carbon tax is straightforward to enforce, generating reliable governmental revenues, though it offers less certainty in achieving emission reductions.

A carbon tax is one of the less complex carbon pricing instruments which does not require much less administration in comparison with cap-and-trade systems. Defined emitters must pay a defined tax per amount of emission, for example X USD/ tCO₂. It is possible to define the scope of the carbon tax to be paid only for emissions that exceed certain benchmarks of all emissions. A prominent carbon tax system is the Swedish carbon tax on fossil fuels introduced in 1991⁵. In comparison to the cap-and-trade approach there is less assurance that a certain target for a defined scope is reached as there is no emission cap defined. Interesting is that Sweden was able to decouple the growth of the economy from the growth of emissions with the help of a carbon tax that «...was first introduced in 1991 alongside already existing energy taxes and has gradually been significantly increased, from 29€ in 1991 to 125€ in 2014 for households and services...», as the following graph and the related article⁶ show.

Real GDP and CO_{2e} Emissions in Sweden, 1990-2013



CO_{2e} = approximately 80% of CO_{2e} emissions

Sources: Swedish Environmental Protection Agency, Statistics Sweden

Ministry of Finance, Sweden

5. <https://www.government.se/contentassets/419eb2cafa93423c891c09cb9914801b/230323-carbon-tax-sweden---general-info.pdf>

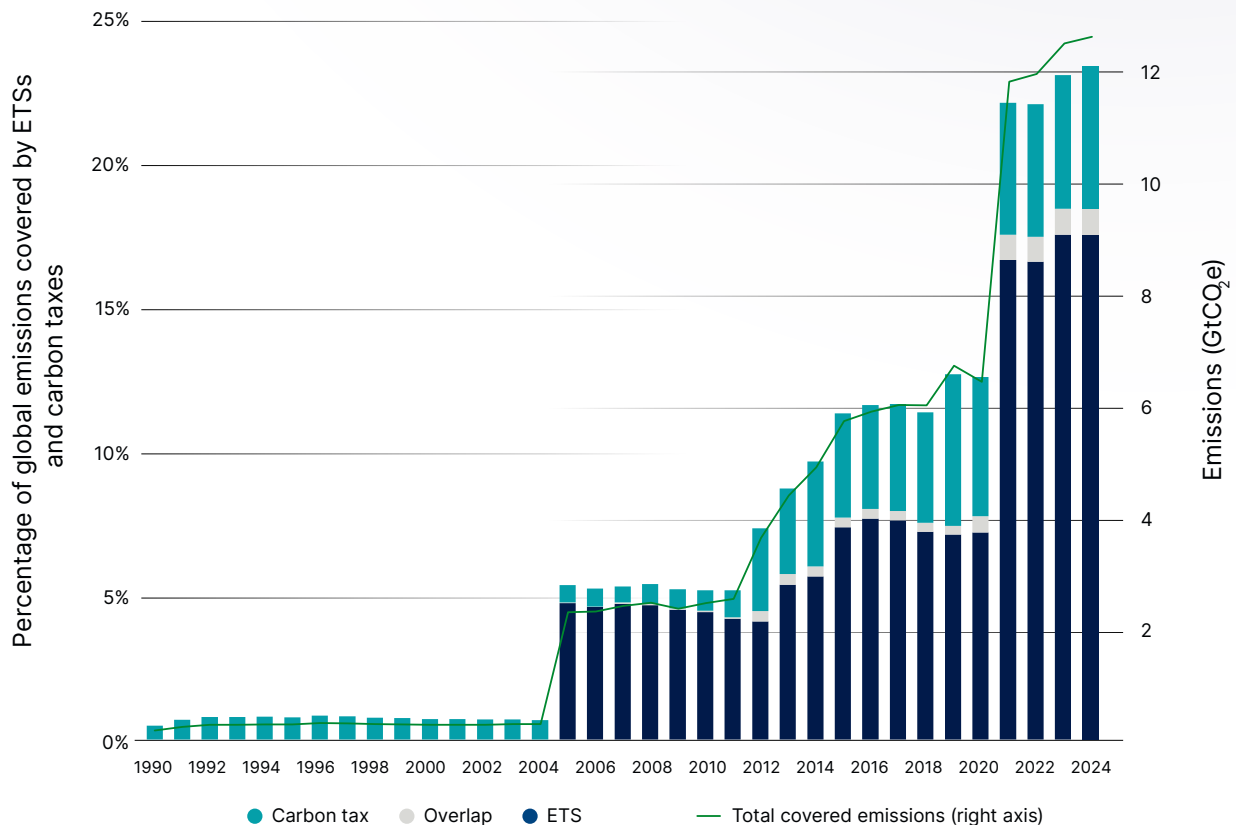
6. <https://blogs.worldbank.org/en/climatechange/sweden-decoupling-gdp-growth-co2-emissions-possible>

One of the challenges with a carbon tax and especially with an ETS is the competitive disadvantage the included sectors and industries have in comparison with sectors or industries not affected by the system. For example, a steel manufacturer in the EU is competing with another steel manufacturer, which is based in a country without any carbon tax or ETS related costs for GHG emissions from the production process. For many years the EU-ETS handled this issue with a so called «carbon leakage list» that carried industries included in the EU-ETS that could potentially leave the EU because of the higher production costs caused by the EU-ETS.

These industries got for many years more free allocations (emission permits) than other industries that weren't on this list. This system is currently changed to a mechanism where the free allocations are reduced to zero for all sectors and the so called «Carbon Border Adjustment Mechanism» is introduced that taxes products with an import tax that is aiming to put an equivalent price burden on the product imported into the EU competing with an industry included in the EU-ETS⁷.

Next to the EU-ETS other ETS systems and carbon tax systems emerged over the last decade and cover about 25% of global Emissions today as illustrated by the next graphic from World Bank's State and Trends of Carbon Pricing 2024 Report⁸.

Global GHG emissions covered by ETs and carbon taxes

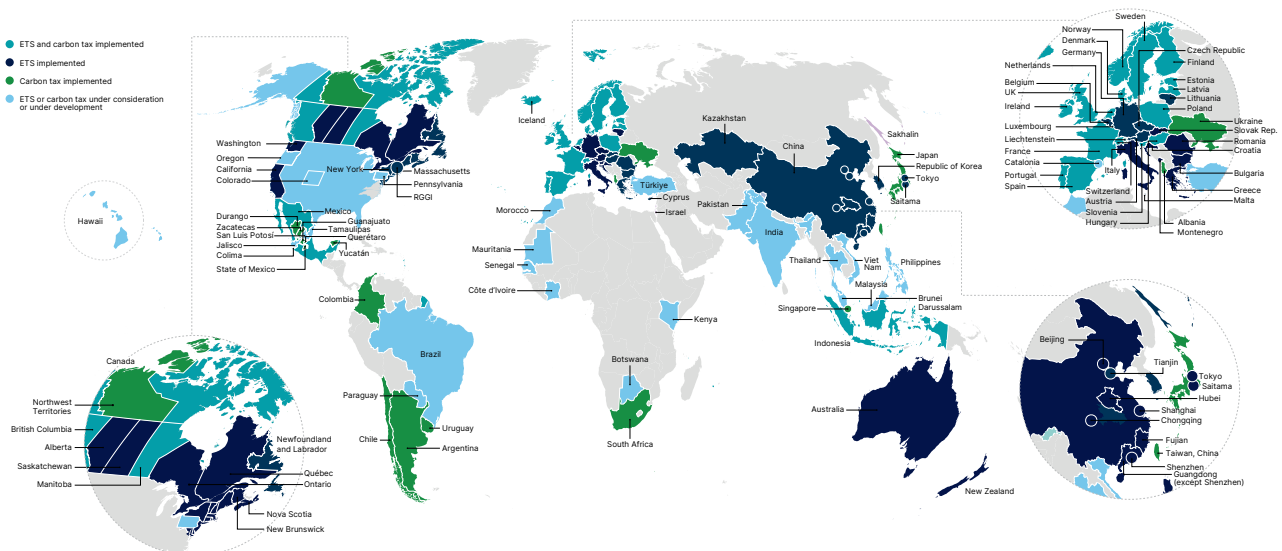


7. https://taxation-customs.ec.europa.eu/carbon-border-adjustment-mechanism_en

8. <https://openknowledge.worldbank.org/server/api/core/bitstreams/253e6cdd-9631-4db2-8cc5-1d013956de15/content>

Carbon pricing systems are globally distributed as illustrated by the following map from World Bank's State and Trends of Carbon Pricing 2024 Report⁹.

Map of carbon taxes and ETSs



Instruments «under development» are where a government is actively working toward the implementation of a carbon pricing instrument and this has been formally confirmed by official government sources. This includes, for example, where a mandate has been established, but regulated entities do not yet face compliance obligations. If a government has announced its intention to work toward the implementation of a carbon pricing instrument and official government sources formally confirm that intention, the instrument is «under consideration». For those countries with multiple instruments that have both «under development» or «under consideration» and «implemented» instruments, the map will show the status of the latter. The status of instruments in subnational jurisdictions is also reflected in the map.



9. <https://openknowledge.worldbank.org/server/api/core/bitstreams/253e6cdd-9631-4db2-8cc5-1d013956de15/content>

Baseline-and-crediting

In contrast to cap-and-trade systems, a baseline and crediting system is not a system where a price for emissions must be paid directly but a credit is generated for reducing emissions against a benchmark or baseline. These credits stand for a volume of emission reduction. One of the most prominent baseline-and-crediting-system is the Clean Development Mechanism of the Kyoto protocol. It allowed the generation of carbon credits called Certified Emission Reductions (CERs) for mitigation projects in countries without legally binding emission targets under the oversight of the UNFCCC. The history of CDM was quite turbulent phase of high prices for carbon credits followed by a collapse of demand for CERs and a decrease of their value towards the mid/end of the Kyoto era. After the end of the Kyoto era in 2020 Article 6 of the Paris Agreement sets the new rules for carbon markets.

The essence of Kyoto Protocol project-based mechanisms (CDM/JI and direct trading between governments called in Ukraine «Scheme of Target Green Investments» – STGI operational in 2008-2013) was about the generation of carbon credits from mitigation projects that governments could buy for their country to reach their Kyoto emission target in a more cost-effective way.

Box1: Fundamental criteria for carbon crediting systems

- ✓ **Additionality:** Projects that generate carbon credits would not have happened in absence of the income from the credits sales.
- ✓ **Permanence:** Emission reductions must be permanent over time.
- ✓ **No double counting:** Emission reductions are not issued, used or claimed twice.



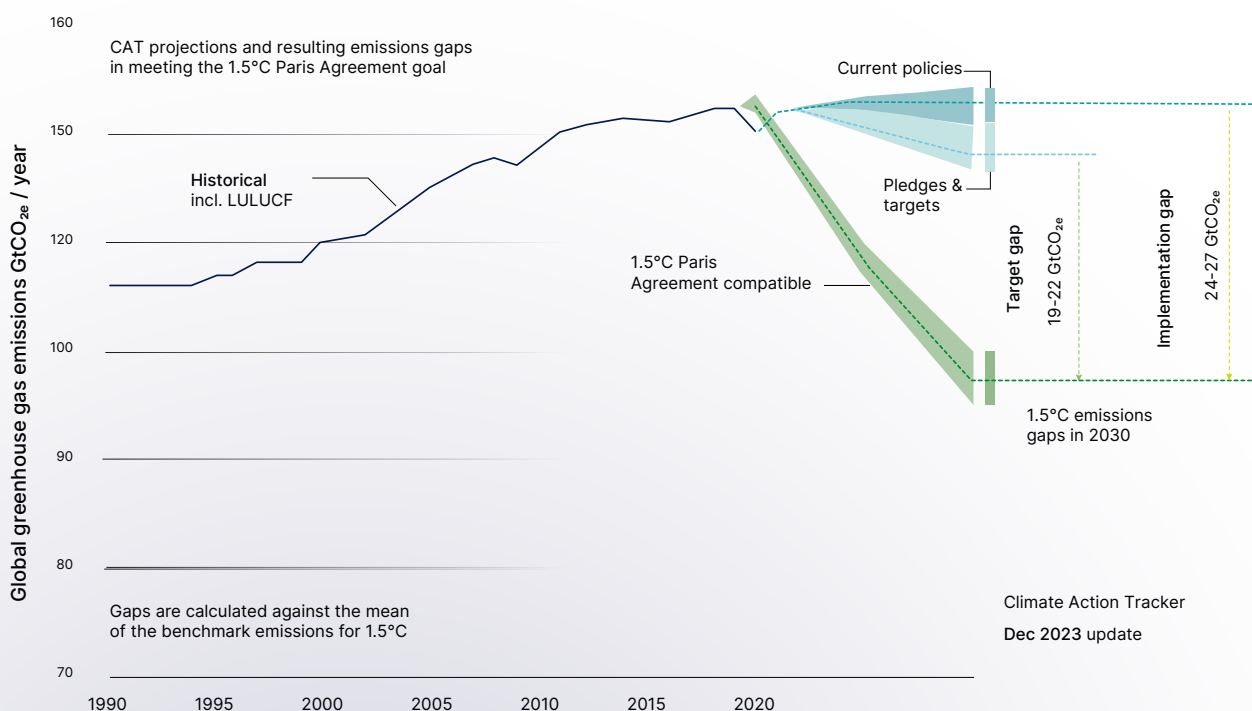
CERs have also been used in the voluntary carbon market for offsetting in the voluntary market but many actors in that market segment moved projects out of the UN Standard into a private registry managed by Verra (Standard VCS) or Gold Standard.

Carbon Trading between countries enshrined in Article 6.2. and the «new» UN baseline and crediting mechanism created with Article 6.4 (also named Paris Agreement Crediting Mechanism (PACM), Sustainable Benefit Mechanism (SBM) or Art. 6.4 Mechanism. This PACM is widely seen as successor of the CDM.

The switch from CDM to PACM and the change of the entire global regulation on climate change management and carbon markets at UNFCCC level led to discussions and dynamics in the VCM. Private Standards are in the process aligning with this new framework conditions of the PA. The difference between the scope and type of targets set under the Kyoto and Paris Regimes are of importance when discussing the use of baseline-and-crediting systems in this changed context. Under Kyoto quantitative targets of emission reductions (in % from baseline year) have been fixed and agreed for each Party and between all Parties-signatories of Kyoto Protocol (and could not be changed over time). Different from this approach Parties of the PA agreed on non-quantitative target regarding avoiding of temperature increase which was not transformed to quantitative internationally set emission reduction targets (each country decide on their own how to make input to fulfillment of PA through regular submission of NDC which is national-level document (not internationally signed by all Parties of PA) and could be changed over time becoming more or less ambitious depending on national policy of each Party).

Observers' respondent to this lack of binding emission targets under the PA with a tool named «Climate Action Tracker». This tool translates the temperature target of the PA into recommendations of emission targets and points to the fact that the world is not on track in achieving the necessary decarbonization to achieve the PA goal even if one would assume that all commitments and promises of governments would be fulfilled. The following graph¹⁰ shows the global target gap and the global implementation gap in GtCO_{2e} to decarbonize in a way which the Paris temperature goal would require. The tool also provides data for specific countries.

2030 Emission gaps



10. <https://climateactiontracker.org/global/cat-emissions-gaps/>

The dynamic nature of targets and commitments under the PA (updating NDCs) leads to situations where dynamic baselines need to be formulated when issuing carbon credits in a PA compatible baseline-and-crediting system. Credits should only be issued for mitigation that goes beyond a PA compatible pathway of countries in case they are used by other countries to substitute higher cost mitigation actions in their own territory.

One of the main discussions establishing a PA compatible baseline-and-crediting system was about the need to follow the new UN rules for the correct accounting for international transfers of carbon credits. Art. 6.2 says that when mitigation units are transferred internationally, they must be authorized by the exporting country and reported as exported units (corresponding adjustments) to avoid double counting. A related discussion was about the narrative of the offsetting claims made by companies based on the retirement of different types of carbon credits and how this narrative might have to align with the principles of the PA and the presence of hopefully (but not obligatory) more and more ambitious (or less ambitious, which is hardly to be assessed on international level and other Parties) national determined contributions (NDCs). For governments it was and still is not always clear how the PA Article 6 rules are interlinked with the VCM.

Nevertheless, the expectations towards the PACM and especially the VCM were extremely high in terms of quality and quantity. High turnover was prominently predicted¹¹ and with that the expectations that this mechanism could make a significant contribution to climate finance, closing the climate finance and ambition gaps, was risen. The attention turned to the still/already operational VCM, because **Article 6 suffered delays with its operationalization** caused by the lengthy decision-making process within UNFCCC and administrative issues. The predicted growth did not come because of the fundamental integrity and credibility issues¹² of the VCM brought to the surface by critical media and watch dogs.

The following table and graph from the report 2024 State of the Voluntary Carbon Market¹³ show the promising numbers in 2021 and 2022, but that the downturn of the VCM in 2023.

11. TSVCN 2021 <https://www.sustainablefinance.hsbc.com/-/media/gbm/sustainable/attachments/voluntary-carbon-markets-a-blueprint.pdf>

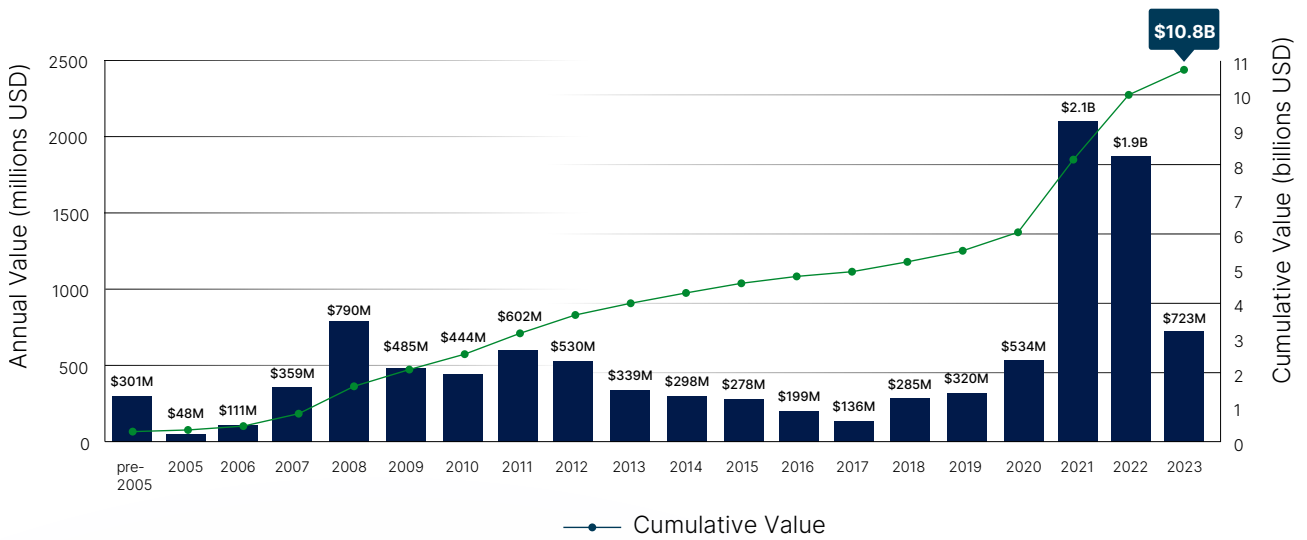
12. <https://www.newyorker.com/magazine/2023/10/23/the-great-cash-for-carbon-hustle>

13. <https://www.ecosystemmarketplace.com/publications/2024-state-of-the-voluntary-carbon-markets-sovcm/>

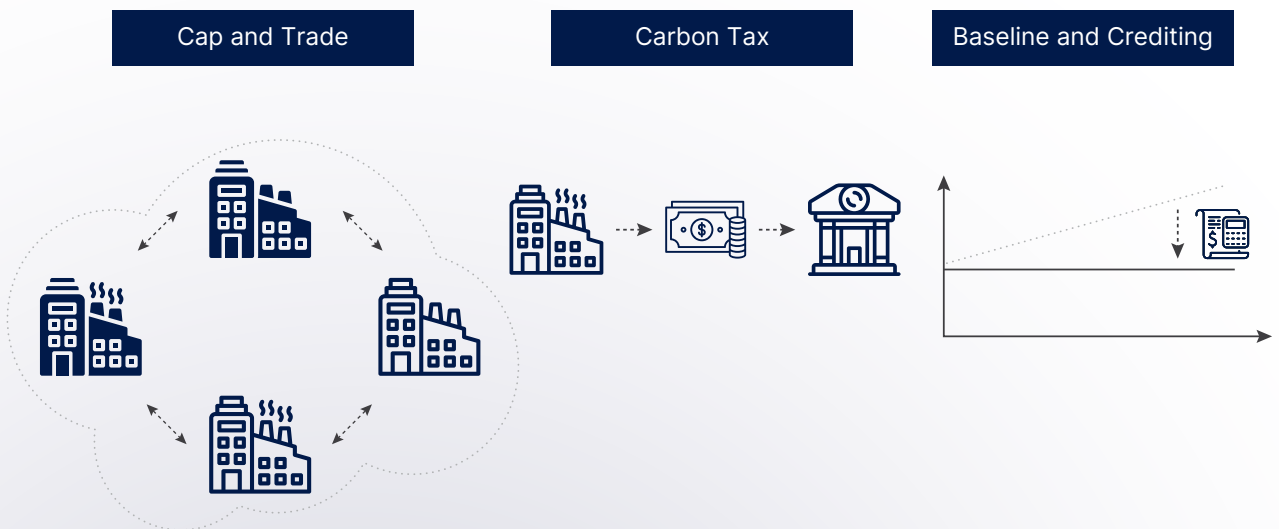
Table #: Annual Total Voluntary Carbon Market Transaction Volume, Value, and Price per tCO₂e for All Projects, 2022-2023

2022			2023			Percent Change		
Volume (mtCO ₂ e)	Value (USD)	Price (USD)	Volume (mtCO ₂ e)	Value (USD)	Price (USD)	Volume	Value	Price
253.8	\$1.87 B	\$7.37	110.8	\$723 M	\$7.37	-56%	-61%	-11%

Voluntary Carbon Market Size, by Value of Traded Carbon Credits, pre-2005 to 2023



Schematic overview of «cap and trade»- , «carbon tax»- and «baseline and crediting»- systems

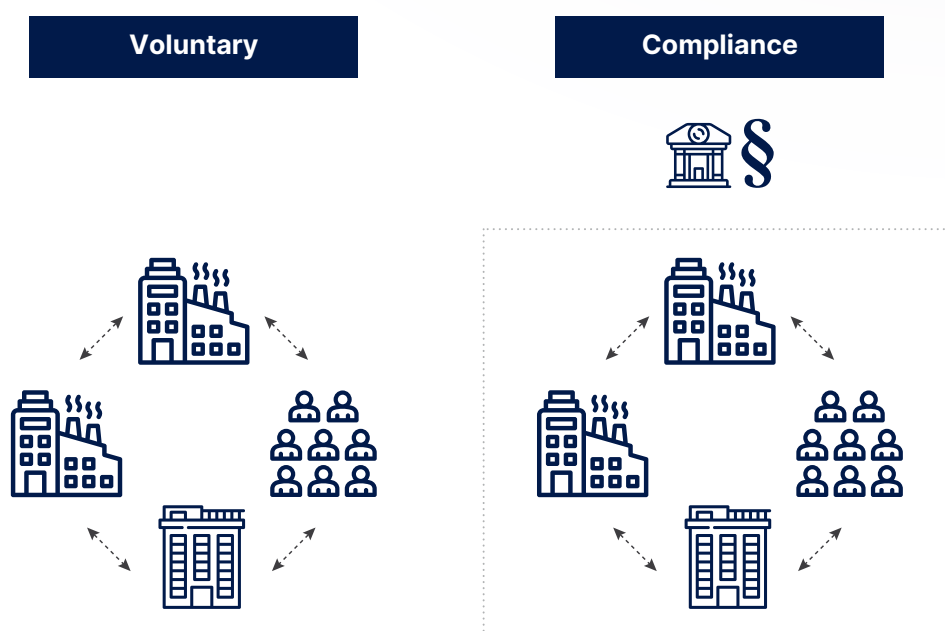


Source: own elaboration

Voluntary and regulated use of carbon pricing systems

All carbon pricing systems can be implemented in some form on a voluntary or regulatory basis. Voluntary means that private actors apply schemes without being forced by law to do so. That means also there are no explicit regulations regarding the scheme that participating actors must follow. In contrast the regulated application of a carbon pricing scheme is initiated by the government or a multilateral body and implemented by law or rule that forces actors to comply with the scheme. Voluntary schemes often follow examples of compliance schemes. The voluntary carbon market, where companies voluntarily purchase and withdraw carbon credits to balance out their carbon footprint, emerged in early 2000s following the ideas and structure of the Clean Development Mechanism of the Kyoto Protocol. Another similarity between a voluntary and regulated application of a carbon price is the carbon tax implemented by a government by regulation and an internal shadow carbon price some companies apply to their business voluntarily. This shadow price is often used as a strategic planning tool. Companies act, as they would have to pay a carbon tax. They measure emissions and apply a hypothetical tax cost per volume. This can help the company to identify the profitability of a business internalizing external costs and anticipate potential market movements and regulation that forces them to reduce emissions. Several organizations provide guidance on an internal carbon price¹⁴. A report provided by World Bank¹⁵ shows the following graph on a shadow price range.

Voluntary - Compliance



14. <https://www.goldstandard.org/news/setting-an-internal-price-on-carbon>

15. <https://documents1.worldbank.org/curated/en/099553203142424068/pdf/IDU1c94753bb1819e14c781831215580060675b1.pdf>

Interlinkages of carbon pricing systems

Key Insights: *Carbon pricing instruments could support Ukraine's decarbonization efforts while promoting post-war economic revitalization and alignment with EU market standards.*

In practice different linkages between voluntary and compliance systems can be observed. Examples for these connections and overlaps are the following. Often the infrastructure is used in a shared manner and the market is connected. An example of a shared infrastructure is the use of UNFCCC CDM monitoring methodologies. Originally this comprehensive set of technology specific monitoring methodologies has been developed under multilateral oversight of the UN to serve the Kyoto compliance market. Later private voluntary carbon market standards allowed to use these methodologies as the basis for issuing carbon credits in a private registry for voluntary use cases. An example where a compliance scheme is building on activities initiated by voluntary/private schemes is the international carbon market of the airline industry created only in the recent years by global multilateral regulation (CORSIA)¹⁶. This compliance market allows the use of some selected private standards for compliance. These examples show that not only voluntary and compliance schemes are interlinked but also that the different carbon pricing policy instruments can be linked. A cap-and-trade program can decide to allow the use of carbon credits issued through a baseline-and-crediting mechanism. These interlinkages can cause confusion when discussing carbon markets from different perspectives. Sometimes regulators introduce a compliance scheme, like an ETS with a pilot phase to test the instrument and the underlying infrastructure. Companies are occasionally invited to join this phase on a voluntary basis without legally binding commitments. But this pilot phase is not the voluntary market as described above.



03. Strategic implementation of carbon pricing for Ukraine's sustainable recovery

All mentioned carbon pricing schemes regulated and voluntary could potentially be instruments to pursue decarbonize pathways and other relevant strategies and objectives. However, the decision when and how to make use of carbon pricing instruments comes is a complex process and opportunities and risks must be balanced. Independent multilateral support units with their respective tools could facilitate the introduction of new elements in the carbon pricing policy landscape in Ukraine. Networks with peers from other countries might facilitated this work. Even if the national context especially the one of Ukraine is unique the consideration of experiences other countries made during the implementation of carbon pricing systems might be useful.



Box 2: Historic and current VCM and article 6 activities in Ukraine

In comparison to other countries the participation in market mechanisms of Ukraine is limited. The following shows some of the ongoing and historic carbon market activities in Ukraine:

- ✓ VCM: In the project registry of Verra¹ – 2 Projects from Ukraine are listed (agriculture and forestry, LULUCF project scope). The Gold Standard² registry shows no projects in Ukraine.
- ✓ Art. 6.2: 2 initiatives under Article 6.2 have been identified, one with Switzerland³ and one with Japan⁴.



Box 3: Support tools and networks

- ✓ Partnership for Market Implementation of the World Bank (PMI)⁵
- ✓ For Article 6:
 - The projects: «Supporting Preparedness for Article 6 Cooperation (Spar6c)»⁶.
 - UNFCCC Regional Collaboration Centers (RCCs)⁷ training and collaboration.
 - Partnerships with other countries can help to share resources and facilitate collaboration building up the capacities on Article 6. As example can be mentioned the partnership launched at COP28 between Peru, Sri Lanka, and Tanzania with the support of UNEP Copenhagen Climate Centre (UNEP-CCC)⁸.
 - Frameworks or regulations developed by other countries can be an inspiration or blueprint for the Ukraine even if the national circumstances are very different. On Nepal's landscape, opportunities and challenges for private sector engagement through the carbon market UNDP published a report⁹. Cambodia developed in collaboration with GGGI a comprehensive regulatory framework that guides carbon markets along the strategic development and sectoral priorities of the country¹⁰. Gold Standard has developed an overview¹¹ about upcoming national regulations related to Article 6 which might help to identify other useful examples.



1 <https://registry.verra.org/app/search/VCS/All%20Projects>

2 <https://registry.goldstandard.org/projects?q=&page=1&countries=UA>

3 <https://www.bafu.admin.ch/bafu/en/home/topics/climate/info-specialists/climate--international-affairs/staatsvertraege-umsetzung-klimaue-bereinkommen-von-paris-artikel6.html>

4 https://www.env.go.jp/en/press/press_02478.html

5 <https://pmiclimat.org/>

6 <https://www.spar6c.org/>

7 <https://unfccc.int/RCCs>

8 <https://unepccc.org/new-carbon-market-partnerships/>

9 <https://www.undp.org/sites/g/files/zskgke326/files/2024-05/UNDP%20-%20Voluntary%20Carbon%20Market%20%28VCM%29%20Report%20-%2005.07.2024.pdf>

10 https://www.moe.gov.kh/wp-content/uploads/2024/01/Article-6-OM_EN.pdf

11 <https://www.goldstandard.org/carbon-market-regulations-tracker#asia>

04. Ukraine's climate and development policies and strategies

The current NDC of Ukraine mentioned specifically the voluntary cooperation under Article 6. Its sectoral focus lies on the energy sector, and its integration in the EU Market, and the LULUCF sector.

In October 2024 Ukraine adopted a climate law that proclaims climate neutrality of the country by 2050 and the consideration of its climate neutrality strategy in its war-recovery programmes. The government underscores the increasing alignment with EU legislation that comes with this important step¹⁷.

Ukraine's Low Emission Development Strategy defines decarbonization and development pathways with a focus on the sectors: energy, waste, agriculture (with its important production of corn, weed, potatoes, sunflower, sugar beet, soja and rapeseed) and land use and land use change and forestry¹⁸.

The Energy Strategy 2050 of Ukraine focuses on energy security, recovery from the loss of power plants due to war and a clean energy roadmap including international investors¹⁹. Corresponding 2030 Strategies (NECP²⁰) and action plans (RE Action Plan 2030²¹) have been developed.



17. <https://www.kmu.gov.ua/en/news/v-ukraini-skhvalenyi-ramkovyi-klimatychnyi-zakon-mindovkillia>

18. https://unfccc.int/sites/default/files/resource/Ukraine_LEDS_en.pdf

19. <https://www.enerdata.net/publications/daily-energy-news/ukraines-government-approves-energy-strategy-ukraine-until-2050.html>

20. <https://zakon.rada.gov.ua/laws/show/587-2024-%D1%80#Text>

21. <https://www.kmu.gov.ua/en/news/uriad-zatverdyyv-natsionalnyi-plan-dii-z-vidnovliuvanoi-enerhetyky-na-period-do-2030-roku-premier-ministr>

05. Ideas for the implementation of a strategy for Article 6 and the VCM in Ukraine

To get further involved in Article 6 and the VCM, Ukraine could build on recent experiences of other countries and making use of new tools made available in the context of the latest Article 6 readiness activities.

A combined strategy for the use of Art 6.2, 6.4 and the VCM might be efficient as core elements are similar²².

It might make sense to build partnerships with countries that already hosted more carbon market projects to gain from their experience and advise.

The EU perspective sets a kind of horizon for the use of carbon markets as ITMO seller or buyer. Therefore the use of carbon markets could be seen as tool to bridge between today and the EU climate policy integration in the future. The use of carbon markets could potentially enhance the implementation of EU compatible policies such as the introduction of the ETS.

Ukraine could potentially use the Art. 6/ VCM to quick start projects in priority sectors. Authorisations for these projects could be provided in a form that a higher share of ITMOS is granted in case projects already start operation during the war and/or in strategic locations.

Project types that address one or several priority sectors could be identified and proactively communicated to the carbon market as potential investment spaces with preferred conditions. Project concepts in form of mitigation action idea notes could be developed.

22. https://www.carbon-mechanisms.de/fileadmin/media/dokumente/VCM_Host_Country_Perspective_final.pdf

06. Ideas for potential projects in priority areas – agriculture and energy: building forward with synergies

Energy production from sustainable biomass: Leverage surplus biomass residues from sustainable agricultural practices to produce renewable energy:

1. Production of energy by direct conversion (combustion) of sustainably removable field agroresidues (10-20%) replacing fossil fuels for own energy purposes of agrocompanies (drying, heating/cooling);
2. Production of biogas/biomethane/liquid biofuels of 2nd/3rd generation for own needs, internal and international trading (added value to core business) with digestate return to field as organic fertilizer.
3. Bio- and thermochemical processes for energy conversion. In particular, the pyrolysis process could be applied to produce biochar, which can be integrated into a sustainable agricultural value chain. Additionally, biochar's application may offer opportunities to restore war-affected soils, enhancing soil health for sustainable food production and ecosystem recovery.
4. Technological changes in agropractices (no-till, drip irrigation, cover crops cultivation, GPS navigation, organic farming, niche cattle breeding, logistical clustering, etc.)

Enhancing energy resilience through innovative renewable solutions: Establish solar power hubs with black start capabilities and integrated battery storage systems. These hubs could be strategically located in key areas to replace costly and inefficient diesel generators. Consideration should be given to semi-portable units, which can be relocated or protected as necessary, ensuring flexibility and resilience in energy supply.



Advancing energy innovation in agriculture: Promote the electrification of agricultural equipment, such as vehicles, pumps, and machinery, to reduce reliance on fossil fuels, lower emissions, and increase energy efficiency in the agricultural sector.

Nature recovery and resilience: Prioritize peatland restoration to significantly reduce emissions, protect natural ecosystems, and enhance climate adaptation efforts. Restored peatlands will not only sequester carbon but also contribute to biodiversity conservation and resilience against environmental changes.



Executive summary

This policy paper delivers an overview of carbon pricing schemes in the context of Ukraine's reconstruction strategy and sustainable future vision. It outlines the potential strategic use of both voluntary and compliance carbon pricing schemes, such as Cap-and-Trade, Carbon Tax, and Baseline-and-Crediting systems. The paper also offers key recommendations for leveraging these mechanisms to foster economic recovery in priority sectors, achieve climate neutrality, and enhance Ukraine's ambition and alignment with EU climate policies.

Essential Recommendations for Policymakers and the Private Sector:

- ✓ Adopt phased implementation of carbon pricing mechanisms starting with pilot programs in key sectors.
- ✓ Build strategic international partnerships to strengthen experience in carbon markets.
- ✓ Ensure the update of regulatory frameworks aligned with EU and global standards.

Strategic Opportunities for the Private Sector:

- ✓ Explore voluntary carbon market opportunities in key sectors for the Ukraine war recovery.
- ✓ Utilize the VCM to quick start projects that go clearly beyond business and usual today and that contribute to paradigm change in a way that can enhance and accelerate the uptake of ambitious climate policies.
- ✓ Create a convincing «build forward better» narrative for the green recovery.
- ✓ Use the VCM to attract business already today, that can contribute to a new green economy boom after the war.



