



United Nations Economic Commission for Latin America and the Caribbean

Policy Brief
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Caribbean Outlook

Considering a Caribbean emissions trading scheme

Introduction

The Caribbean Community (CARICOM) member States¹ are highly vulnerable to climate change. This vulnerability has been further exacerbated by their large debt burden, high debt servicing costs and limited fiscal space which limit the domestic financial resources available to adequately address climate change (UNDP, 2009).

It is noteworthy that from 2000 and 2019 the Caribbean Community produced between 0.11 and 0.16% of global emissions (World Bank, 2023). However, despite being only minor emitters these countries find themselves on the sharp end of the impact of climate change, being increasingly vulnerable to floods, droughts, rising temperatures, rising sea-levels, hurricanes and coral bleaching etc.

Furthermore, CARICOM member States² have submitted their nationally determined contributions (NDCs)³ to the United Nations Framework Convention for Climate Change (UNFCCC). Whilst the Caribbean has received some measure of grant funding in support of the implementation of NDCs, the financing being offered in this regard has largely been in the form of loans, thereby leaving the subregion lagging behind in the receipt of concessionary support for its climate change adaptation and mitigation needs (Mohan, 2022).

Key recommendations

- **Since carbon dioxide is the most common anthropogenic GHG emission, it would be natural for member States to target this gas.**
- **The sectors for the regional emissions trading scheme should coincide with the sectors identified in countries' NDCs.**
- **At inception, the emissions allowances can be distributed freely. From the second year, a hybrid of free allocation as well as auctions should be used.**
- **The ETS can have penalties for non-compliance.**
- **The ETS should have a monitoring, reporting and verification system.**

¹ The CARICOM member States are Antigua and Barbuda, Bahamas, Barbados, Belize, Dominica, Grenada, Guyana, Haiti, Jamaica, Montserrat, Saint Kitts and Nevis, Saint Lucia, Saint Vincent and the Grenadines, Suriname, and Trinidad and Tobago.

² All the CARICOM member States, except Montserrat, submitted their intended nationally determined contributions (INDCs) to the UNFCCC.

³ The INDCs are the voluntary plans that the countries submitted to UNFCCC to reduce their greenhouse gas emissions. Upon the ratification of the Paris Agreement, countries' INDCs became their NDCs (Nachmany and Mangan, 2018).

The situation is becoming increasingly worrisome as the global stocktake, which will review countries' progress on achieving their NDC targets, is due to be completed in 2023. Following this review, countries are expected to make more ambitious pledges for greenhouse gas (GHG) emission reduction action in their new NDCs. Therefore, the Caribbean may need to pursue innovative mechanisms for financing its NDCs implementation (Van Asselt et al., 2023).

Accordingly, one market-based modality, which may be useful in this regard, would be the development of a regional emissions trading scheme (ETS). presently, no such market-based mechanism exists in the subregion, particularly since CARICOM countries, classified as Non-Annex I countries under the Kyoto Protocol, have no emission reduction commitments (Robinson and Carlson, 2021; Charles, 2022). However, it may be useful to test the merit of an ETS as a tool that could viably facilitate GHG emission reduction action in the CARICOM small island developing States, while simultaneously generating revenue for investment in crucial adaptation and resilience building initiatives.

Background

Emissions trading schemes can facilitate a reduction in GHG emissions. However, in order to work effectively such schemes must of necessity be structured carefully to fit inter alia the peculiar needs, reduction commitments, goals and characteristics of the country or countries involved. The following is an exploration of the mechanics and functioning of an ETS, in part through examination of two common variations of the scheme.

Mandatory emissions trading scheme

Under a mandatory ETS, stakeholders producing GHG emissions in specific sectors would be required to reduce their GHG emissions (Leining et al., 2020). The ETS should at its inception, specify the sectors to be covered by the program. Electricity generation, transportation, and heavy industrial production are typically the highest GHG emitters in countries. Therefore, it is not uncommon for these sectors to be

targeted by countries' ETS. The agriculture and forestry sectors can also produce GHG emissions, and they are targeted by some ETSs (Efthymiou and Papatheodorou, 2019; Stoerk et al, 2019).

It is noteworthy that before the ETS is rolled out there should be a study on emissions for the various sectors, to ensure comprehensive information on which GHGs are being produced annually by each sector and company, and what quantity. The study should also assess the feasibility of reducing GHG emissions for each stakeholder.

The ETS should also state which GHGs should be covered by the scheme. Many ETSs target only carbon dioxide, such as the United States of America's Regional Greenhouse Gas Initiative (RGGI). In such schemes the stakeholders are required solely to reduce carbon dioxide emissions (Chan and Morrow, 2019). Stakeholders participating in the mandatory ETS, also referred to as regulated entities, would be required to cover all their emissions with emission allowances. At the end of the year, the stakeholders would be required to surrender emission allowances for each ton of carbon dioxide equivalent (CO₂eq) of GHG emitted. The ETS would also place a cap or a limit on the amount of GHG emissions that the stakeholders in specific sectors would be allowed to produce each year. The emissions cap could be gradually reduced over time to encourage the reduction of GHG emissions over time.

If the emissions are in excess of the cap, then the stakeholders would face two options. The first would be to purchase emissions allocations to cover their excess over the limit allowed. The second option would be to pay a fine for the excess emissions. Emission allocations can be (and are commonly) allocated by a regulator at the ETS. In turn, the emission allocations can either be distributed freely to stakeholders in the target sectors, or they can be distributed through an auction system. In the auction system, stakeholders bid for the emission allowances, and pay a price for their emission allocations. Emission allowances can be distributed on a quarterly, semi-annual, or annual basis. Irrespective of the frequency of distribution selected, the ETS

regulator must ensure that it stays within the limit intended for distribution in a given year.

Moreover, stakeholders that produce less GHG emissions than their cap, may sell their extra emission allowances and conversely, stakeholders that produce more emissions than their cap may purchase the required extra emission allocations. These emission allocations may be traded on the ETS. Thus, the ETS may function as an exchange to facilitate the trading of the emission allowances. A key component necessary for ensuring the effectiveness of the cap-and-trade system is the price of the emission allowances. As the emission allowances would be traded on the ETS, its price would be marked to market daily. This means that its price can fluctuate daily due to changes in its demand and supply (Marcu and Cecchetti, 2022).

To ensure price stability, the ETS regulator can implement an allowance reserve. The allowance reserve can remove and store excess emission allowances. The ETS should also have a monitoring, reporting, and verification system. This is necessary for the ETS regulator to determine in the regulated entities⁴ have complied with their emissions limits.

Voluntary emissions trading scheme

Apart from the mandatory ETS, there are also voluntary ETSs, where the stakeholders are not mandated to participate in the exchange i.e., to purchase emission allowances to cover their GHG emissions. Instead, they may purchase emissions allowances as a means of improving their public image or may be desirous of contributing to the global fight to reduce GHG emissions. Therefore, in this variation of the ETS, there exists neither a cap on GHG emissions nor a fine for excess GHG emissions (Wongpiyabovorn et al., 2023).

Examples of emissions trading schemes

The first ETS to be developed was in the European Union in 2005 (Bayer and Aklin, 2020). It was implemented over several phases, namely Phase I (2005–2007), Phase II (2008–2012), Phase III

(2013–2020), and Phase IV (2021–2028). Over the phases, the European Union reviewed the successes and failures experienced during its operations, and continuously improved upon the challenges in the ETS operations. This has allowed for the improvement of the European Union ETS over time.

Several states in the United States of America have also developed a regional ETS. New Zealand, Québec (a province of Canada) and South Korea have also developed national ETS. In the Latin American region, ETS have been developed in Brazil, Chile, and Mexico. The regulators of the different ETS tend to adopt a phased approach to implementing the ETS, where it reviews the program and improves upon observed deficiencies over time (Anger, 2008; Alexeeva and Anger, 2016; Black and Zhunussova, 2022; Jung and Song, 2023).

Policy recommendations

If the CARICOM member States are to give serious consideration to implementing an emissions trading scheme as a means of facilitating the reduction of the GHG emissions to achieve their NDC targets, there are several issues surrounding the ETS that will inevitably arise, and which therefore should be carefully contemplated. A few of these issues are explored below.

1. Mandatory or voluntary

The first issue that should be considered is whether or not a potential ETS should be mandatory or voluntary. Under a mandatory scheme, stakeholders producing GHG emissions in particular sectors would be obligated to participate. As such, they would be required to obtain emissions allocations to cover each ton of CO₂e of GHG that they produce. In contrast, under a voluntary system, no stakeholder will be forced to participate in the scheme. Instead, only the stakeholders wishing to contribute to the global fight against climate change may choose to participate.

⁴ The regulated entities are the stakeholders that would be required to reduce the GHG emissions would be companies. These would be

companies from the highest emitting sectors that were identified in countries NDCs.

Considering that CARICOM member States are low emitters of GHGs, some businesses may be reluctant to participate in any ETS. They may hold the view that climate change is a problem that has been caused by the high GHG emitting countries and that they should not be ‘forced’ to reduce their emissions. This line of thinking would be consistent with the prevailing view that has underpinned the glacial pace of meaningful advance in the international climate change negotiations for many years, particularly with respect to the establishment and capitalization of the proposed Loss and Damage Fund within recent time.

2. Regional or national

A key question arises. Should the ETS be regional or national? Individual member States can opt to implement a national ETS. However, collective action to reduce GHGs in the subregion may be better achieved through a regional Scheme. It is clear that any serious consideration of instituting a regional ETS would have to be initiated at the level of a meeting between the Heads of Governments of CARICOM member States and would require agreement among same to pursue such an initiative. Member States would need to discuss and agree on (and calibrate by how much) both national and regional GHG reduction goals. It is this quantification of GHG emission that will be used to set the cap on emissions.

The ETS regulator would need to be responsible for administering the regional ETS in each participating country. Collectively, the member States may work towards the achievement of the regional GHG emission reduction goal, with a built-in mechanism for regulation and monitoring. Notably, for the regional emissions trading scheme to be effective, there must be an agreed regional approach with rules and procedures. It would be essential therefore to have a shared understanding among the participating countries of the scheme's objectives, targets, and scope. The scheme's design must be tailored to suit the specific regional context, taking into account regional characteristics such as the GHGs, the sectors and firms covered.

3. Size of the cap

Given that individual member States produce different volumes of GHG emissions, in the establishment of an ETS, it would be useful from the outset to agree that countries be allowed to set individual caps on their emissions.

The member States should also consider staggering the implementation of any regional GHG emission reduction target over a period of time. Since, in keeping with their commitment to achieving the global Sustainable Development Agenda, most countries identified 2030 as the year the achievement of some results, then this date could be specified as the target date in the ETS. In any event, NDCs are to be updated from 2030. As countries gradually enhance their commitments in their NDCs, the cap can be progressively increased to reflect the new commitments. Accordingly, there could be a cap set for the years 2030, and 2050, respectively.

To ensure that the ETS remains relevant and effective in the long run, the member States would be required to work together to regularly review and update the emissions caps to reflect any changes in their NDCs.

4. Sectors

Consideration also should be given to the sectors best covered by the ETS. Given that the Caribbean countries have already submitted their NDCs to the UNFCCC, the intuition would be to limit the sectors targeted by the potential regional ETS to sectors identified in countries' NDCs in the first instance, bearing in mind that there is considerable variable geometry in sectoral coverage among individual Caribbean country NDC submissions. Interestingly, the European Union ETS has fixed coverage and scope which does not vary from member State to member State. While ideal, such uniformity may be difficult to achieve in the Caribbean in the short-term and would require considerable discussion among the governments of the subregion. This notwithstanding, it would be natural to horizontally cover CO₂ from power production in the first instance.

5. Greenhouse gases

Since carbon dioxide is the most common anthropogenic GHG emission, it would be natural for all member States to target this gas. Other GHGs which are targeted in other ETS include methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons, sulphur hexafluoride, and nitrogen trifluoride. Individual member States, or CARICOM collectively, may therefore decide if they would like to target other GHGs in addition to carbon dioxide, for its emission reduction goals.

6. Auction versus free allocation

The emission allocations in an ETS can be distributed either through free allocation of the emission allowances by the regulator at the ETS or through the auctioning of emission allocations.

The experience of the European Union ETS showed that an ETS can be initiated with the emission allowances being distributed gratis based on grandfathering. It would be logical for the first set of emission allowances to be distributed in this manner, at least in the first year. However, given that the ETS regulator would incur operational costs, such an entity would ultimately need to become self-sufficient by generating revenue to offset its recurrent expenditure. This policy brief therefore recommends that from its second year of operation, a hybrid of free allocation as well as auctions be employed in the case of a Caribbean ETS. Subsequently, the percentage of emissions allowances distributed through auctions should be increased until the free allocation system is phased out.

7. Emissions allocations and emissions allocations reserve

The experience of the European Union ETS highlights the need to safeguard against the distribution of too many emission allowances, since this can lead to an oversupply of emission allocations, putting downward pressure on the price. This policy brief therefore recommends that emission allocations distributed should match the

GHG emissions cap. In this way, if the cap for the region for the first year is 66,497 kt, then only 66,497 thousand emission allocations should be distributed.

Additionally, the ETS should also include an emission allocations reserve. This can help control the supply of emission allowances on the market and keep the price at a controlled level.

8. Non-compliance penalties

In order to encourage stakeholders to reduce their GHG emissions, there should be a penalty for stakeholder non-compliance with assigned caps. The objective of the penalty should be to create sufficient incentive to stimulate GHG emission reduction action, rather than punish local stakeholders. To this end, the fine should also not be excessive and be linked to the number of emissions per ton of CO₂eq.

9. Monitoring, reporting and verification system

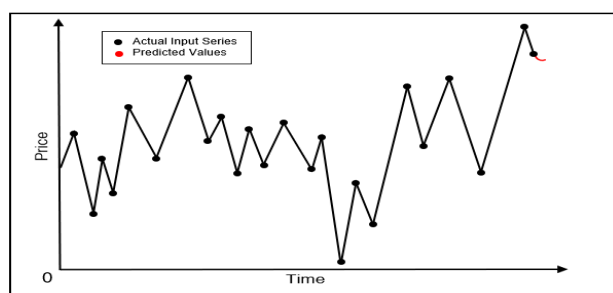
To effectively monitor and measure reduction of GHG emissions in the subregion, the institution of a system is necessary. Indeed, an ETS would not be feasible without a monitoring, reporting and verification system.

Such a system would involve stages for monitoring, reporting, and verification of emissions. The regulated entities would be responsible for submitting their emissions reports to the regulator, and the regulator would review these reports and use an independent auditor to verify the emissions. Once verification is required, the regulated entity would typically be responsible for engaging and paying for the services of the auditor. The auditor would in turn perform an independent assessment of the emissions data and submit a report to the ETS regulator. The ETS regulator would then use the verification report to assess the compliance of the regulated entity with the ETS rules.

10. The emission allowances price

The price of the emission allowances would ultimately influence the extent to which stakeholders will reduce their GHG emissions. If the spot price of the emission allowances is too low, then the regulated entities will have no incentive to reduce their emissions; they would simply purchase the emission allowance. In contrast, if the price of the emission allowance is higher than the non-compliance penalty fee, then it would be rational to pay the non-compliance fee rather than purchase the emission allowance.

Diagram 1: European Union's carbon credit price trend and predictions



Source: Economic Commission for Latin America and the Caribbean (ECLAC).

At the time of writing, no ETS exists in the CARICOM region. Therefore, there are no prices for emission allocations presently in the CARICOM region. However, the price of the emissions allowances on the European Union ETS can be used as a proxy, purely due its easily available price dataset, which can be used in the construct and testing of a forecasting model. The forecast of the future prices should also be of interest to the potential regulator at the ETS as it can provide an outlook of the emissions allocation prices. If the prediction suggests that prices would decline precipitously, then the ETS regulator may make preparations to remove some emission allowances into the emissions allocations reserve. If the forecast suggests that the emissions allocations prices may rise too high, then the regulator at the ETS may add some emissions allocations from the emissions allocations reserve.

Conclusion

Globally, countries have demonstrated an increasing willingness to pursue GHG emission reduction action. These pledges have been expressed in their NDCs. Although the CARICOM member States have low GHG emissions, they demonstrated their commitment to the fight against climate change as they have also submitted NDCs to the UNFCCC. The CARICOM member States may look towards the market-based mechanisms to facilitate the achievement of their NDCs. More specifically, they can consider implementing a Caribbean regional ETS.

Assessing the interest and commitment of the private sector to engage in a ETS is crucial for the success of such an initiative. The private sector, particularly small and medium-sized enterprises, plays a significant role in contributing to greenhouse gas emissions, and their participation in an ETS is critical to achieving emissions reduction targets. To determine the interest and commitment of the private sector in a regional ETS, administering a survey is an effective way to gather information. The survey should be designed to gather information on the following: awareness and knowledge of emissions trading schemes, perceived benefits of participation, barriers to participation and preferences for the ETS design.

As seen in the case studies of several countries, a pilot of the ETS was commonly rolled out before a larger initiative was implemented. Therefore, testing a pilot phase of a regional ETS before considering it at the CARICOM level would be prudent. A pilot phase can provide valuable insights into the practicalities of implementing an ETS, highlight potential challenges, and inform the design of the final ETS. The pilot phase can also provide an opportunity to assess the readiness of the private sector to participate in an ETS and gather feedback on the potential impacts of the ETS on businesses, particularly small and medium enterprises. This information can be used to refine the ETS design and develop appropriate support mechanisms for regulated entities.

Furthermore, conducting a pilot can also help to build capacity and strengthen the institutional frameworks necessary for the successful implementation of an ETS. This can involve training and capacity building for regulatory authorities and the private sector, as well as establishing monitoring, reporting, and verification systems.

Following the pilot, a larger regional ETS could be rolled out. The overall objective of the mandatory ETS may be to meet the collective targets of all the member States. Each member State can be responsible for working on their own targets as specified in their NDCs. More importantly, in order for the ETS to be a success, it must be structured properly. Critical factors to be considered in its design are the size of the emissions cap for the countries, the sectors that will be involved, the GHG to be covered, a monitoring, reporting and verification framework for the GHG emissions, the emissions allowances allocation system, and an emissions allocations reserve. All the aforementioned

factors can influence the market price of the emissions allocations, which in turn will function as the market mechanism to stimulate the climate mitigation action.

The revenue that the governments may generate from the auctions within the framework of the ETS can be used to finance other climate change adaptation and mitigation projects. Collectively, the ETS, as well as the implementation of other climate change adaptation and mitigation projects can assist countries in achieving their NDC targets, and assist the international community to move a step closer to reaching its overall goal of limiting global temperature rise to 1.5°C.

This notwithstanding, this policy brief and the paper on which it is based represent an initial exploration of the notion that an ETS can be a useful tool for leveraging implementation of Caribbean NDCs. Further research through scenario analyses and a game theoretical framework, may provide additional insights into what might be considered optimal features of a Caribbean-wide ETS.

Bibliography

- Alexeeva, V., and Anger, N. (2016). The globalization of the carbon market: Welfare and competitiveness effects of linking emissions trading schemes. *Mitigation and Adaptation Strategies for Global Change*, 21, 905-930.
- Anger, N. (2008). Emissions trading beyond Europe: Linking schemes in a post-Kyoto world. *Energy Economics*, 30(4), 2028-2049.
- Bayer, P., and Aklin, M. (2020). The European Union emissions trading system reduced CO₂ emissions despite low prices. *Proceedings of the National Academy of Sciences*, 117(16), 8804-8812.
- Black, M. S., and Zhunussova, K. (2022). Carbon Taxes or Emissions Trading Systems? Instrument Choice and Design. *International Monetary Fund*.
- Chan, N. W., and Morrow, J. W. (2019). Unintended consequences of cap-and-trade? Evidence from the Regional Greenhouse Gas Initiative. *Energy Economics*, 80, 411-422.
- Charles, D. (2022). Unlocking climate finance to compensate Caribbean small-island developing States for damages and losses from climate change. In *Business and policy solutions to climate change: From mitigation to adaptation* (pp. 391-412). Cham: Springer International Publishing.
- Efthymiou, M., and Papatheodorou, A. (2019). EU Emissions Trading scheme in aviation: Policy analysis and suggestions. *Journal of Cleaner Production*, 237, 117734.
- Jung, H., and Song, C. K. (2023). Effects of emission trading scheme (ETS) on change rate of carbon emission. *Scientific Reports*, 13(1), 912.

- Leining, C., Kerr, S., and Bruce-Brand, B. (2020). The New Zealand Emissions Trading Scheme: critical review and future outlook for three design innovations. *Climate Policy*, 20(2), 246-264.
- Marcu, A., and Cecchetti, F. (2022). The trading of carbon. In *The Palgrave Handbook of International Energy Economics* (pp. 439-469). Cham: Springer International Publishing.
- Mohan, P. S. (2022). Implementing nationally determined contributions under the Paris agreement: an assessment of climate finance in Caribbean small island developing states.
- Nachmany, M., and Mangan, E. (2018). *Aligning National and International Climate Targets*. London, United Kingdom: Grantham Research Institute on Climate Change and the Environment and Centre for Climate Change Economics and Policy, London School of Economics and Political Science.
- Robinson, S. A., and Carlson, D. A. (2021). A just alternative to litigation: applying restorative justice to climate-related loss and damage. *Third World Quarterly*, 42(6), 1384-1395.
- Stoerk, T., Dudek, D. J., and Yang, J. (2019). China's national carbon emissions trading scheme: Lessons from the pilot emission trading schemes, academic literature, and known policy details. *Climate policy*, 19(4), 472-486.
- Van Asselt, H., Obergassel, W., Hall, C., Hermwille, L., Oberthür, S., Otto, S., and Xia-Bauer, C. (2023). Leveraging the Global Stocktake for effective sectoral climate governance. *PLOS Climate*, 2(6), e0000229.
- Wongpiyabovorn, O., Plastina, A., and Crespi, J. M. (2023). Challenges to voluntary Ag carbon markets. *Applied Economic Perspectives and Policy*, 45(2), 1154-1167.
- World Bank. (2023). World Bank Open Data. <https://data.worldbank.org/>.