

QUEBEC'S CAP-AND-TRADE SYSTEM FOR GREENHOUSE GAS EMISSION ALLOWANCES: INSIGHTS FOR VIETNAM'S UPCOMING CARBON MARKET INITIATIVE

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Abstract

Quebec inaugurated its Cap-and-Trade System for greenhouse gas emission allowances in 2013, and in 2014 linked with California's program to create the largest North American carbon market and the first cross-border subnational trading system. Despite over a decade of trading and nearly ten years since the Paris Agreement, global warming remains off track. Emerging economies are acting, notably Vietnam, which is establishing a carbon market to support sustainable development and achieve Net Zero by 2050. The present article thus retraces the evolution of Quebec's Cap-and-Trade system from its beginnings until today, highlighting some of its successes, challenges, before underlining some key insights for Viet Nam. This is done with the goal to provide Vietnamese officials and experts with valuable tools and insights at an important moment in the development of Viet Nam's carbon market initiative.

Keywords: *Quebec cap-and-trade system, cross-border carbon market, greenhouse gas allowances, Vietnam, sustainable development*

In 2013, the Canadian province of Quebec established a Cap-and-Trade System for greenhouse gas (GHG) emission allowances as part of its strategy to combat climate change. A year later, it linked its system to the one in place in the American state of California, forming the largest carbon market in North America and the first in the world to be designed and operated by sub-national governments in different countries.¹ While this initiative has generally been heralded as a success, it has also faced some obstacles since its inception. The abrupt withdrawal of the province of Ontario from the market in 2018, only a year after its accession, has been one of them. Quebec's Cap-and-Trade system has also faced criticism, with certain stakeholders pointing to an insufficient level of ambition, a lack of stringency as well as an opaque management and allocation of its proceeds. The first part of the present article will thus retrace the evolution of Quebec's Cap-and-Trade system from its beginnings until today, primarily analyzing the design of the Quebec market while also examining its governance structure and linkage with the California market in a complementary manner.

1 Government of Quebec. (2025). *The carbon market, a green economy growth tool!*. Government of Quebec. https://www.environnement.gouv.qc.ca/changementsclimatiques/marche-carbone_en.asp

Over a decade after the inception of Quebec's Cap-and-Trade system, and nearly ten years after the adoption of the Paris Agreement, the international community is still far from reaching its goal of limiting global warming to 1.5°C/2°C. In this context, several emerging economies are taking action to contribute to the fight against climate change. This is notably the case of Vietnam, which is in the process of establishing its own carbon market to promote its sustainable development while also achieving its Net Zero by 2050 objective. In its second part, the article will highlight some of the Quebec market's successes and challenges, pointing towards some key lessons for developing economies wishing to establish their own carbon markets, such as Vietnam. This will be done with the goal of providing Vietnamese officials and experts with valuable tools and insights at an important moment in the development of Vietnam's carbon market initiative. For this purpose, the article's two-part analysis will be centered around a qualitative analysis of the relevant legal and policy documents, integrating a comparative law component in the analysis of the Quebec system and of its lessons for the Vietnamese initiative.

1. The Quebec Cap-and-Trade System: Origins, design, and evolution

1.1. Carbon markets worldwide: Origins and evolution

The idea of using market-based mechanisms to regulate the emissions of damaging substances can be traced back to the 1960s.² It is the economist Ronald H Coase who is credited with conceptualizing the idea that in the absence of transaction costs, actors operating in a market setting could reach efficient solutions to environmental problems through bargaining.³ Over the 1970s and 1980s, the United States relied on cap-and-trade mechanisms as a cost-efficient type of regulation for curbing emissions of sulfur dioxide and nitrogen oxide, two substances at the root of environmentally damaging acid rain,⁴ as well as for operating the phase-out of lead in gasoline.⁵ The first international environmental market-based mechanism was also enacted

2 Chandrasekhar, A. (2023, September 25). *Timeline: The 60-year history of carbon offsets*. Carbon Brief. <https://interactive.carbonbrief.org/carbon-offsets-2023/timeline.html>

3 Coase, R. H. (1960). The problem of social cost. *Journal of Law and Economics*, 3, 1-44. <https://www.sfu.ca/~wainwrig/Econ400/coase-socialcost.pdf>

4 *Acid Rain Program Regulations*, 40 C.F.R. Parts 72-78 (1990). For an overview of the instrument, see Environmental Protection Agency. (1990). *1990 Clean Air Act Amendment Summary: Title IV – Acid Deposition Control*. EPA.

5 Newell, R. G. and Rogers, K. (2003, November). *The market-based lead phasedown*. Resources for the Future. <https://media.rff.org/documents/RFF-DP-03-37.pdf>

in the 1980s under the Montreal Protocol to the Vienna Convention for the Protection of the ozone layer.⁶

In the wake of these largely successful initiatives, the idea of applying similar market mechanisms to GHG emissions was put forward by scientists and policymakers in the United States and the United Kingdom.⁷ GHG emissions trading was made possible through the Kyoto Protocol to the United Nations Framework Convention on Climate Change (UNFCCC), which was adopted in 1997. The Kyoto Protocol indeed provided for flexibility mechanisms through which its 37 developed country parties with binding emissions targets could either trade emissions credits among themselves or finance projects in developing countries in return for emissions reduction credits to be used against their own domestic targets.⁸

In the years following the adoption of the Kyoto Protocol, several jurisdictions established market mechanisms for GHG emissions trading (hereafter referred to as carbon markets). The largest and most well-known of these mechanisms is the EU emissions-trading scheme (ETS),⁹ which was launched in 2005 and spans 31 countries in addition to being linked to Switzerland's national ETS. In the years following its launch, the EU ETS initially faced challenges linked to the over-allocation of credits, which created a surplus of available credits on the market and hindered emissions reductions, a phenomenon known as "hot air".¹⁰ Now in its fourth phase, the ETS has undergone several revisions, and the problem of hot air appears to be under control as significant amounts of excess credits have been retired from circulation.¹¹ The ETS remains one of the pillars of EU climate action.

In North America, the first jurisdiction to formally establish a carbon market was the province of Alberta in Canada, with the launch of its Emission Offset System for industrial emitters in 2007.¹² Two years later, a group of ten northeastern American states formed of Connecticut,

6 Article 2 of the Montreal Protocol on Substances that Deplete the Ozone Layer, 16 September 1987, 1522 UNTS 3.

7 Chandrasekhar (2023), *supra* note 2.

8 Article 6 and 2 of the Kyoto Protocol to the United Nations Framework Convention on Climate Change, 11 December 1997, UN Doc FCCC/CP/1997/7/Add.1, 37 I.L.M. 22.

9 European Union. (2023). *About the EU ETS*. EU. https://climate.ec.europa.eu/eu-action/eu-emissions-trading-system-eu-ets/about-eu-ets_en

10 Jong, F. D. (2015, November). The EU's hot air – lifting the fog. *Carbon Market Watch*. https://carbonmarketwatch.org/wp-content/uploads/2015/11/HOT-AIR-IN-THE-EU_final.pdf

11 Fjellheim, H. and Sorhus, I. (2023, 15 May). *The hot air is gone: EU ETS has entered a new era*. Veyt. <https://veyt.com/articles/the-hot-air-is-gone-eu-ets-has-entered-a-new-era/>

12 Government of Alberta. (2025). *Alberta emission offset system*. Government of Alberta. <https://www.alberta.ca/alberta-emission-offset-system>

Delaware, Maine, Maryland, Massachusetts, New Hampshire, New Jersey, New York, Rhode Island and Vermont established the Regional Greenhouse Gas Initiative (RGGI), which sets a regional cap and trade system for emissions from power plants.¹³ The Quebec and Californian carbon markets followed: they were both launched in 2012 and formally linked in 2013.¹⁴

1.2. Context, design and evolution of the Quebec system

Before turning to a more technical analysis of the Quebec carbon market, it appears useful to give some general context about the enactment of climate regulation in the constitutional system of Canada as well as the intended role of a carbon market in Quebec's climate policy strategy.

In the context of the division of legislative powers that characterizes Canadian federalism, jurisdiction over environmental matters is divided between the two levels of government, federal and provincial. As was confirmed several times by the Supreme Court of Canada,¹⁵ each level of government has the power to legislate on environmental matters when it acts based on one of its own powers listed in the 1867 Constitution Act. As regards the specific issue of climate change, it appears at first glance that the responsibility for the regulation of GHG emissions would incur to the provinces, through their legislative jurisdiction over the exploitation, conservation and management of non-renewable natural resources as well as their jurisdiction over the development, conservation and management of provincial facilities for the production of electrical energy.¹⁶ This is because a major part of Canada's national emissions originate from the energy sector. Another significant contributor to Canadian GHG is its industrial sector, the regulation of which is also primarily the responsibility of the provinces due to the combined effect of several of the powers recognized by the Constitution.

Following the ratification of the Kyoto Protocol by Canada in 2002, the government of Quebec adopted a decree through which it committed to follow Kyoto Protocol objectives according to its legislative

13 Regional Greenhouse Gas Initiative. (2025). *Elements of RGGI*. RGGI. <https://www.rggi.org/program-overview-and-design/elements>

14 *Entente entre le gouvernement du Québec et le California Air Resources Board concernant l'harmonisation et l'intégration des programmes de plafonnement et d'échange de droits d'émission de gaz à effet de serre* [trans : Agreement between the Government of Quebec and the California Air Resources Board concerning the harmonization and integration of the cap-and-trade program for greenhouse gas emissions allowances], D 1181-2013, (2013) GOQ II, 5275. <https://www.mrif.gouv.qc.ca/Document/Engagements/2013-06.pdf>

15 *Friends of the Oldman River Society v. Canada* (Ministry of Transportation), [1992] 1 R.C.S. 3; *R. v. Crown Zellerbach Ltd.*, [1988] 1 R.C.S. 401; *R v. Hydro-Quebec*, [1997] 3 R.C.S. 213.

16 Article 92A of the 1867 Constitution (UK), 30 & 31 Vict, c 3, reprinted in RSC 1985, App II, No 5.

powers.¹⁷ Quebec then joined the Western Climate Initiative (WCI), a group of subnational North-American governments pledging to pursue common climate action through carbon markets.¹⁸ The years preceding the enactment of Quebec's carbon market were, however, marked by inaction on climate change by the Canadian federal government of the time, formed by Stephen Harper's Conservative party. Indeed, under Harper's leadership, Canada's federal government did not take any significant steps to reach its climate objectives, eventually withdrawing from the Kyoto Protocol in 2012. Despite Canada's withdrawal, the Quebec provincial government reiterated its intention to achieve its Kyoto objectives through a legislative motion adopted unanimously.¹⁹ It was in this context that Quebec's provincial government took the lead for regulating GHG emissions on its territory, developing and launching its carbon market.

Quebec's carbon market, called "*Système de plafonnement et d'échange*" (SPEDE), is a core element of the province's climate policy, which is structured around two main components: GHG reduction measures and adaptation measures to the socio-economic impacts of climate change.²⁰ In carrying out this policy, the Quebec government initially proceeded through phases spanning 7–8 years, its goals for each phase formulated in a policy document called a climate action plan. At the time of the establishment of SPEDE, the government was elaborating its second action plan for the years 2013–2020.²¹ As Professor Jacques Papy, a legal expert on SPEDE, explains, the carbon market was at that time set to play a key role in both dimensions of the province's climate policy. It was indeed expected to contribute significantly to GHG emissions reductions, as it was designed to eventually cover emissions from the transport sector, industry, buildings and electricity production, for a total of over 80% of Quebec's emissions.²² SPEDE was also set to play an

17 Decree No. 1074–2007, 5 December 2007.

18 Western Climate Initiative. (2025). *Our work*. WCI. <https://wci-inc.org/>

19 National Assembly of Quebec. (2012, February 15). Journal de l'Assemblée Nationale, 39e législature, 2e session (23 février 2011 au 1 août 2012) [trans : Journal of Debates of the National Assembly, 39th Parliament, 2nd Session (February 23, 2011 to August 1, 2012). *Journal of debates*, 42(77). https://www.assnat.qc.ca/fr/travaux-parlementaires/assemblee-nationale/39-2/journal-debats/20120215/51331.html#_Toc317167213

20 Papy, J. (2024). L'encadrement de l'échange de droits d'émission dans le marché réglementé du carbone au Québec sera-t-il efficace ? Enjeux, constats et predictions. *Revue générale de droit* [trans: Will the framework for emissions trading in Quebec's regulated carbon market be effective? Issues, findings, and predictions. *General Law Review*], 44(1), 7–80, p. 13. <https://doi.org/10.7202/1026398ar>

21 Government of Quebec. (2025). *2013–2020 Climate Change Action Plan*. Government of Quebec. <https://www.environnement.gouv.qc.ca/changementsclimatiques/plan-action-en.asp>

22 Papy (2024), *supra* note 20, p. 13.

important part for adaptation to climate change, as the money collected through the carbon market was expected to be the main source of funding for the adaptation component of the 2013–2020 climate action plan.²³

The modalities of SPEDE can be found in the Quebec Regulation respecting a cap-and-trade system for greenhouse gas emission allowances (hereafter Cap-and-Trade Regulation)²⁴ which was adopted under the provincial 2006 Environment Quality Act.²⁵ The purpose of SPEDE, as stated in Article 1 of the Cap-and-Trade Regulation, is to set:

“Rules for the operation of the cap-and-trade system for greenhouse gas emission allowances [...] [by determining] which emitters are required to cover their emissions, the terms and conditions for registering for the system, the emission allowances that can be validly used, the terms and conditions for the issue, use and trading of emission allowances, and the information that must be provided by emitters and other persons or municipalities that may register for in the system.”²⁶

The objective of SPEDE, like other carbon markets, is thus to reduce GHG emissions by setting a cap for these emissions, which is lowered every year. To comply with this cap, covered emitters must acquire several emissions allocations equal to the number of tons of CO₂ equivalent they emit and surrender these allocations to the government at the end of each three-year compliance period to avoid facing penalties.²⁷ Different types of allocations exist, which can be acquired through different processes. Emissions units can be purchased from the government through auctions, which are held four times every year. Some emissions units are also allocated every year without charge to industrial emitters that are exposed to international competition. These emitters would otherwise be vulnerable to the relocation of their activities to other jurisdictions not applying GHG emission tariffication, a phenomenon known as “carbon leakage.”²⁸ Emitters eligible to emissions units without charge include aluminum smelters, steel mills, cement plants and pulp and paper plants. Emission units acquired through auction or obtained without charge are assigned a year, or a “vintage”: for an emission unit to be eligible

23 *Ibid.*

24 *Regulation respecting a cap-and-trade system for greenhouse gas emission allowances*, O.C. 1297–2011; I.N. 2019–12–01; S.Q. 2022, c. 8, s. 1 (*SPEDE Regulation*).

25 *Environment Quality Act*, 2006, Q-2, R. 46.1, c. 3, s. 35, c. Q-2 ss. 46.1, 46.5, 46.6, 46.8 to 46.16 and 95.1

26 *SPEDE Regulation*, *supra* note 24, s. 1.

27 Government of Quebec. (2025), *supra* note 1.

28 Government of Quebec. (2025). *Allocation of emission units without charge*. Government of Quebec. <https://www.environnement.gouv.qc.ca/changements/carbone/Allocation-gratuite-en.htm>

to cover the emissions of a certain year, its vintage must not be later than year three of that year's compliance period but may correspond to previous vintages.²⁹

Offset credits constitute a second type of emission allocation. These credits are obtained by individuals and companies who carry out projects in sectors not covered by the carbon market and which result in emissions reductions or removals. Projects must be registered with the government and operate in a sector for which a regulation or protocol has been approved for the carrying out of the activity and the obtainment of offset credits. As of 2025, the following sectors have been approved:³⁰

- Landfill methane reclamation and destruction
- Halocarbon destruction
- Carbon sequestration through afforestation or reforestation on private lands
- Methane destruction by covering manure storage facilities
- Destruction of methane from drainage systems at active coal mines
- Destruction of methane from ventilation air at active underground coal mines
- Manure anaerobic digestion

Once obtained, offset credits can be sold on the market to covered emitters which can use them to meet their compliance obligations. Covered emitters can however only use offset credits to cover a maximum of 8% of their total emissions: this limit is set so that an incentive remains for covered emitters to reduce their own emissions.³¹

The third type of emission allocation consists in early reduction credits. These credits could be obtained by certain qualifying emitters who registered certified emissions reductions between 2008 and 2011, thus before the entry into force of SPEDE.³² These early reduction credits can be used and traded in the same way as regular emission units and can cover emissions from all compliance periods.

As Papy explains, trading of emissions allocations under SPEDE, as is common in many carbon markets, is organized along three market levels, with each of these levels characterized by distinct modalities, forms of regulation and barriers to entry.³³ The primary level is where

29 Government of Quebec. (2025). *Eligible emissions allowances*. Government of Quebec. <https://www.environnement.gouv.qc.ca/changements/carbone/admissibilite-droits-emission-en.htm>

30 Government of Quebec. (2025). *Offset credits*. Government of Quebec. <https://www.environnement.gouv.qc.ca/changements/carbone/credits-compensatoires/index-en.htm>

31 *Ibid.*

32 Government of Quebec. (2025). *Early Reduction Credits*. Government of Quebec. <https://www.environnement.gouv.qc.ca/changements/carbone/credits-reduction-hative-en.htm>

33 Papy (2024), *supra* note 20, p. 15.

the different emissions allocations are first placed on the market. One of its main key characteristics is the central role of the government in this process: emissions units are directly created and sold by the government, while offset credits are delivered by it to qualifying project promoters after being certified according to the procedures in place.³⁴

On the secondary market, allocations are resold between participants, either through an organized stock exchange structure or through over-the-counter transactions. The modalities of this “resell market” are generally similar for all types of emissions allocations. As underlined by Papy, it is indeed on the secondary market that the final allocation of emissions rights is carried out and as such, it is there that the economic efficiency of cap-and-trade systems is attained. The enactment of modalities enabling an optimal functioning of this “resell” market hence becomes specifically important.³⁵

The tertiary market is the market for derivatives. Some common types of derivatives include stock options, futures contracts, forward contracts and swaps. Similarly to the secondary market, transactions on derivatives can be carried out on organized markets or in an over-the-counter manner. Transactions on the tertiary market, although not involving emissions allocations directly, often represent a significant share of total carbon market activity. As such, the modalities for carbon market derivatives trading must be taken into consideration by public authorities at the design stage.³⁶

In order to guarantee the integrity of SPEDE, to ensure that emitters comply with their emission reduction obligations and to prevent fraud, Articles 74 and 75 of the Cap-and-Trade Regulation provide for penalties and sanctions in cases of contravention to its rules. Fines ranging up to 3,000,000 US dollars can be imposed in cases of fraud or for the communication of misleading information to the Minister.³⁷ The Minister can also suspend or cancel or refuse the registration of a person other than an emitter, for example a provider of offset credits, as well as refuse to register an emitter for an auction of emission units or suspend that emitter’s allowance transactions if it has reasonable grounds to believe that the integrity of the system is threatened.³⁸

As mentioned in Section 2.1 of this article, the Quebec SPEDE and California’s Cap-and-Trade Program became linked in 2014.

34 *Ibid.* p. 16.

35 *Ibid.* pp. 16-17.

36 *Ibid.* pp. 17-18.

37 *SPEDE Regulation*, *supra* note 24, ss. 74 – 75.2.

38 *Ibid.* s. 75.5.

As explained by Canadian legal specialist Jonathan Drance, the fact that both mechanisms were designed according to the architecture prepared by the WCI made this linkage process quick and seamless.³⁹ The Quebec SPEDE and the California Program indeed share the same emission thresholds for participants, GHG and sectoral coverage and allocation method, although the activity categories eligible for offset credits, as well as the percentage of their emissions that regulated emitters can offset with these credits differ between the two programs.⁴⁰ The linkage with California has allowed SPEDE to benefit from a large pool of emitters and credits, which ensures a more stable and better performing market.

From its inception in 2013 until today, modifications to SPEDE have been enacted by Quebec's provincial government to improve its functioning and to address emerging issues in a rapidly changing context. The annual emission caps for the years 2013 to 2020 were adopted in 2012,⁴¹ while the caps for 2021 to 2030 were adopted in 2017.⁴² Two additional significant modifications have been introduced at the beginning of new commitment periods for the program. At the start of the second commitment period in 2015, SPEDE was expanded to fossil fuel distributors, which significantly expanded the emission coverage of the program.⁴³ Since 2018, emitters operating in sectors covered by SPEDE and whose yearly emissions are between 10,000 and 25,000 tons of carbon dioxide equivalent (CO₂eq) can voluntarily join the Quebec-California market as regulated emitters.⁴⁴ Some more technical amendments to the rules and modalities of SPEDE have also

39 Drance, J. (2015, May 28). *Examining California and Quebec's cap-and-trade systems*. Stikeman Elliott. <https://stikeman.com/en-ca/kh/canadian-energy-law/examining-california-and-quebec-cap-and-trade-systems>

40 Comité Consultatif sur les Changements Climatiques. (2024). *Inscrire le SPEDE dans une réelle démarche de décarbonation de la société québécoise* [trans : *Include SPEDE in a real approach to decarbonizing Quebec society*]. National Library and Archives of Quebec, Government of Quebec, p. 21. <https://cdn-contenu.quebec.ca/cdn-contenu/adm/org/comite-consultatif-changements-climatiques/avis/decarbonation-societe-quebecoise.pdf>

41 Government of Quebec. (2025). *Determination of annual caps on greenhouse gas emission units relating to the cap-and-trade system for greenhouse gas emission allowances for the 2013-2020 period*. Chapter Q-2 r.15.2, references O.C. 1185-2012, 2012 G.O. 2, 3612. <https://www.legisquebec.gouv.qc.ca/en/document/cr/Q-2,%20r.%2015.2>

42 Government of Quebec. (2025). *Determination of annual caps on greenhouse gas emission units relating to the cap-and-trade system for greenhouse gas emission allowances for the 2021-2030 period*. Chapter Q-2 r.15.3, references O.C. 1126-2017, 2017 G.O. 2, 3580. <https://www.legisquebec.gouv.qc.ca/en/document/cr/Q-2,%20r.%2015.3%20>

43 Section 1 of the Décret 1089-2015, 9 décembre 2015, GAZETTE OFFICIELLE DU QUÉBEC, 16 décembre 2015, 147^e année, no 50 4733.

44 Section 2 of the Décret 1125-2017, 22 novembre 2017, GAZETTE OFFICIELLE DU QUÉBEC, 29 novembre 2017, 149^e année, no 48 5283.

been adopted through decree over the years: the most recent one dates from 2023 and consists of adjustments to the methods for estimating and calculating the emission intensity of certain regulated activities.⁴⁵

In the wake of the adoption of the Paris Agreement in 2015, the Quebec government adopted an emissions reduction target of 37.5% compared to 1990 levels for 2030. In 2020, to keep the province on track with this target, the province adopted its first comprehensive policy framework, the 2030 Plan for a Green Economy. This framework, which also states the province's intention to reach carbon neutrality by 2050, underlines the importance of SPEDE for the achievement of these targets and sets forth further adjustments to be enacted in the 2024-2030 period.⁴⁶

In a context marked by economic uncertainty and where carbon pricing is set to be abolished in most other Canadian provinces, there loomed a possibility that Quebec could follow suit and scale back its carbon market. The Quebec government however reaffirmed its commitment to SPEDE in April 2025.⁴⁷ This appears to indicate that the program is here to stay, at least for the foreseeable future.

This section of the article summarized the origin, design and evolution of the Quebec SPEDE, which is set to play a central role in the province's climate policy going forward. The next section of the article will now analyze the strengths and weaknesses of the Quebec SPEDE as it stands today. In doing so, it will outline possible upcoming changes. It will then discuss some lessons that can be learned from Quebec for Vietnam's upcoming carbon market.

2. Lessons to be learnt for emerging carbon markets

2.2. Strengths and weaknesses of the Quebec system

With SPEDE having been in operation for more than 10 years, some insights have been gathered on the strengths and weaknesses of the Quebec system. The main strength of the system, as touted by the Quebec government, has been its contribution to the fulfilment of the province's emission reduction targets. Indeed, government reports show that SPEDE, by allowing the purchase of carbon credits from California,

45 *Décret 1763-2023, 6 décembre 2023*, GAZETTE OFFICIELLE DU QUÉBEC, 13 décembre 2023, 155e année, no 50 5599.

46 Government of Quebec. (2020). *2030 Plan for a Green Economy: Framework Policy on Electrification and the Fight Against Climate Change*. National Library and Archives of Quebec, Government of Quebec, p. 47. <https://cdn-contenu.quebec.ca/cdn-contenu/adm/min/environnement/publications-adm/plan-economie-verte/plan-economie-verte-2030-en.pdf>

47 Lamichhane, B. (2025, April 10). *WCI Markets: Quebec lawmakers reaffirm support for province's cap-and-trade programme, US compliance markets stage recovery*. Carbon Pulse. <https://carbon-pulse.com/386407/>

has contributed to over half of the GHG emission reductions achieved by Quebec, given its 2020 target.⁴⁸ This, combined with the unexpected reduction in economic activity in the aftermath of the COVID pandemic in 2020, led the province to surpass its 20% reduction target compared to 1990 levels, reaching a 26.6% reduction. A more recent governmental analysis of the performance of SPEDE and of the outlook for carbon markets indicates that SPEDE should also allow the province to achieve its 2030 reduction target of 37.5% compared to 1990.⁴⁹

Despite SPEDE appearing successful at first glance, several underlying weaknesses in the system remain. Three main criticisms have been formulated in the literature. The first relates to the way SPEDE has allowed the Quebec government to reach its targets. Indeed, the fact that over half of the emissions reductions attributed to Quebec from 2013 to 2020 were in fact carried out in California means that emissions reductions on the territory of the province have remained marginal.⁵⁰ This raises questions regarding the actual contribution of SPEDE to the decarbonation of Quebec's economy.

A second criticism, linked to the first, relates to the number of credits in circulation in the Quebec-California market relative to its emissions cap. Indeed, the reason the purchase of California reduction credits has been so widely relied upon by Quebec-regulated emitters is that they have remained widely available for a low price. This stems from the fact that regulated emitters in California have achieved superior emissions reductions locally relative to their cap. The abundance of Californian emissions reduction credits has led experts to conclude that the system, as it stands, is not stringent enough and that emissions caps must be further lowered going forward.⁵¹

A third criticism has been formulated regarding the management and reinvestment of funds acquired by the government through SPEDE.

48 Direction des communications du MELCCFP. (2022). *Rapport sur l'atteinte de la cible de réduction des émissions de gaz à effet de serre du Québec pour l'année 2020* [trans : *Report on the achievement of Quebec's greenhouse gas emission reduction target for 2020*]. National Library and Archives of Quebec, Government of Quebec, p. 6. <https://www.environnement.gouv.qc.ca/changementsclimatiques/rapport-atteinte-cible-reduction-emission-ges-qc-2020.pdf>

49 Ministère de l'Environnement, de la Lutte contre les changements climatiques, de la Faune et des Parcs (MELCCFP) (2024). *Bilan 2023-2024 de l'action climatique du gouvernement du Québec* [trans : *2023-2024 Review of the Quebec Government's climate action*]. National Library and Archives of Quebec, Government of Quebec, p. 24. <https://cdn-contenu.quebec.ca/cdn-contenu/adm/min/environnement/publications-adm/plan-economie-verte/bilan-2023-2024-action-climatique-quebec.pdf>

50 Comité Consultatif sur les Changements Climatiques. (2024), *supra* note 40, p. 31

51 *Ibid*, p. 45; Martin, N. & Pineau, P.-O. (2022, April). *Overallocation in the California-Québec Carbon Market: A Useless Cap Until 2030*. CIRANO and HEC Montréal. https://energie.hec.ca/wp-content/uploads/2022/04/RAPPORT_Martin-Pineau_2022.pdf

The government has stated that revenue generated by SPEDE “must be entirely devoted to the fight against climate change, specifically reducing Québec’s greenhouse gas emissions and supporting adaptation.”⁵² In practice, however, several shortcomings in the management of dedicated environmental funds by the provincial government have been identified, including a lack of transparency on financial information disclosure as well as insufficient information on the evaluation of impacts of financed projects and on the allocation of funds.⁵³ The governance structure for the management of SPEDE revenue has been overhauled in 2020, but tangible progress on the shortcomings identified above has yet to be achieved.

As this succinct review shows, many aspects of SPEDE remain to be improved. A positive development on the matter has been the recent release of an expert report mandated by the provincial government, with expected implementation over the coming years.⁵⁴ The following and final section of the article will discuss some paths for improvement which should be considered by Vietnam as it endeavours to develop its carbon market.

2.2. Paths for improvement and takeaways for Vietnam

Since the beginning of 2025, Vietnam has been working towards the adoption of its own carbon market, with full operationalization planned for 2029.⁵⁵ In this context, several insights can be gathered from the Quebec SPEDE, now in its 12th year of operation. According to the Government of Quebec, a first key to the success of the Quebec system has been its linkage with the California system through the WCI, which has enabled the SPEDE to reach the size necessary for effective market fluidity.⁵⁶ Vietnam, whose GDP is comparable in size to Quebec’s,⁵⁷ has stated its intention of allowing trading of credits

52 Government of Quebec. (2020), *supra* note 46, p. 100.

53 Robert-Angers, M. & Latulippe, L. (2024, April). *Le Québec tire-t-il pleinement avantage de ses fonds spéciaux à portée environnementale?* [trans : Is Quebec taking full advantage of its special environmental funds?] [Research notebook 2024/03]. Research Chair in Taxation and Public Finance, University of Sherbrooke. p. ii. https://cffp.recherche.usherbrooke.ca/wp-content/uploads/2024/04/cr-2024-03_qc_avantage_fonds_spec_environn_vf.pdf

54 Comité Consultatif sur les Changements Climatiques. (2024), *supra* note 40.

55 Vu, N. H. (2025, February 4). *Vietnam’s Carbon Market Development: Objectives and Implementation Plan Under Decision 232*. Vietnam Briefing. <https://www.vietnam-briefing.com/news/vietnams-carbon-market-development-objectives-and-implementation-plan-under-decision-232.html/>

56 Government of Quebec. (2018). *Le système de plafonnement et d’échange de droits d’émission de gaz à effet de serre québécois et le marché régional du carbone de la WCI. Survol historique* [trans : Quebec’s cap-and-trade system for greenhouse gas emissions and the WCI regional carbon market. Historical overview]. BANQ, p. 6. <https://numerique.banq.qc.ca/patrimoine/details/52327/3291558>

57 Statistics Canada. (2025, May 1). *Gross domestic product (GDP) at basic prices, by industry, provinces and territories, growth rates (x 1,000,000)*. Statistics Canada <https://www150.statcan.gc.ca/t1/tbl1/en/tv.action?pid=3610040202>; World Bank Group. (2025). *GDP (current US\$) - Viet Nam*. World Bank. <https://data.worldbank.org/indicator/NY.GDP.MKTP.CD?locations=VN>

obtained from international mechanisms such as the ones established under Article 6 of the Paris Agreement. In line with the Quebec experience, linkages with other established national or regional carbon markets could also be pursued by Vietnam to guarantee the resilience and fluidity necessary for a well-functioning carbon market. If it opts for linkages with other systems, however, Vietnam would be advised to design its system in a way to balance the use of credits from other jurisdictions with domestically obtained emissions reductions. This would allow it to harness the power of market mechanisms while at the same time enabling tangible progress in decarbonizing its national economy.

A second key to the successful implementation of the Quebec SPEDE has been a strong social acceptability from the population of the province, which largely supports carbon pricing and carbon markets.⁵⁸ This strong social acceptability has allowed the government to maintain its commitment to a carbon market even as carbon pricing is being rolled back in other parts of the country.⁵⁹ As discussed in the previous section, transparency regarding the management and allocation of funds collected through SPEDE has, however, been a persistent problem for the Quebec system.⁶⁰ Addressing this problem could become more urgent for provincial authorities going forward, to maintain public support for the carbon market. Ensuring transparency on the functioning of its own carbon market, to strengthen its social and political acceptability, is thus something Vietnam should strive for in its design and implementation process.

A third key aspect to keep in mind for Vietnam relates to the use of compensatory credits. Vietnam has stated that it would design its system to allow the use and exchange of such credits.⁶¹ As highlighted in the recent government-mandated report on improving the Quebec SPEDE, most carbon markets worldwide limit the use of such credits, with many markets such as the EU's, Switzerland's and New Zealand's fully excluding their use by regulated emitters to achieve conformity.⁶² Compensatory credits have indeed recently faced increasing scrutiny and criticism: they have been shown to contribute to a lack of

58 Sayegh, A. G. (2022, May 30). La tarification du carbone et l'utilisation de ses revenus au Québec et au Canada. *Politique et Société* [trans: Carbon pricing and the use of its revenues in Quebec and Canada. *The Journal Politique et Sociétés*], 41(3), 163 – 194. <https://doi.org/10.7202/1092341ar>

59 Lamichhane (2025), *supra* note 47.

60 Robert-Angers & Latulippe (2024), *supra* note 53.

61 Vu (2025), *supra* note 55.

62 Comité Consultatif sur les Changements Climatiques. (2024), *supra* note 40, p. 21.

local decarbonation action, as well as, in some cases, increasing the unreliability of market mechanisms and enabling greenwashing.⁶³ In this context, a recommendation for the Quebec SPEDE by the expert group mandated for reviewing the system is to abolish the use of compensatory credits by regulated emitters by 2027.⁶⁴ Vietnam positions itself as a legitimate provider of compensatory credits under REDD+ programs,⁶⁵ but should nevertheless keep in mind the evolving context around this type of credit when designing its market. Vietnam should notably avoid overreliance on carbon credits to ensure the legitimacy of its market, Vietnam should thus try to avoid overreliance on compensatory credits. This would maximize possibilities for international linkages and would also contribute to transparency, and thus social acceptability.

Finally, a fourth key for Vietnam design its system to allow rapid adjustments to its cap, which can ensure the flexibility necessary to adapt to changing contexts and increase ambition over time. As discussed in the previous subsection, an insufficiently stringent cap for the years 2013-2020 has been identified as a weakness of the Quebec-California market, and a recommendation to significantly lower the cap for the years leading up to 2030 to compensate for this lack of stringency has been formulated for the government.⁶⁶ To allow for more ambitious targets while still maintaining the flexibility necessary to respond to eventual changing circumstances affecting the price of allocations, the same group of experts recommends that the Quebec SPEDE integrate an automatic cap adjustment mechanism, similar to the one already in place in the EU ETS.⁶⁷ A similar mechanism should be considered for an eventual Vietnam carbon market.

Conclusion

The objective of the present article was to provide insights from Quebec's carbon market, SPEDE, which could inform the design and development of Vietnam's upcoming carbon market. To do so, it proceeded in two main steps. It first retraced the evolution of Quebec's

63 Iyer, R., Wack, L. & Arias, P. P. (2024, November 20). *Carbon Credits: An Overview of a Climate Controversy*. TOPIC Climate Change, Sustainability. Institutional Shareholder Services. <https://insights.issgovernance.com/posts/carbon-credits-an-overview-of-a-climate-controversy/>

64 Comité Consultatif sur les Changements Climatiques. (2024), *supra* note 40, p. 54.

65 Vu (2025), *supra* note 55.

66 Comité Consultatif sur les Changements Climatiques. (2024), *supra* note 40, p. 48-49.

67 *Ibid.* For more information on the EU's mechanism, the Market Stability Reserve, see European Commission. (2025). *About the Market Stability Reserve (MSR)*. EC. https://climate.ec.europa.eu/eu-action/eu-emissions-trading-system-eu-ets/market-stability-reserve_en

Cap-and-Trade system from its beginnings until today, drawing an overview of its design and structure. It then highlighted some of SPEDE's successes and challenges, identifying some key takeaways for Vietnam's carbon market. These insights gathered from a decade of operation for the Quebec SPEDE will hopefully enable Vietnam, and possibly other jurisdictions worldwide, to build on past experience and deploy more ambitious, transparent and effective carbon markets to reach our global climate goals.

This succinct article focused on carbon market design and as such, excluded some relevant connected questions from its analysis. The article's methodology, which for the most part limited its analytical scope to qualitative data and reported statistics rather than primary quantitative data, was one factor behind this narrow focus. Three relevant questions will here nevertheless be briefly mentioned as they represent paths for further research. A first significant question relates to the real-world feasibility of a direct transposition of a carbon market mechanism from a developed country context (Canada) to a developing country one (Vietnam). A more in-depth, applied analysis of the administrative capacity, legal infrastructure and public perception surrounding carbon markets in Vietnam could be warranted to fully evaluate the opportunities and challenges of implementing a carbon market in the country. A second question relates to alternative regulatory tools for curbing GHG emissions by private actors, such as sectoral limits or climate disclosure and due diligence rules for corporations. As was highlighted in the article's analysis, carbon markets have limits and weaknesses. As such, possibilities for combining market mechanisms with alternative forms of regulation should be explored as they could enable improved effectiveness. A third question relates to the interaction between carbon markets and emerging carbon border adjustment mechanisms (CBAMs), such as the ones currently being implemented in the EU and the UK. These mechanisms are set to affect emerging economies like Vietnam's.⁶⁸ As such, synergies between domestic carbon markets and CBAMs, which could, for example, allow carbon pricing to be levied internally by Vietnam itself instead of by importing countries, should be explored in more detail as they could enable Vietnam to retain some sovereignty over the carbon pricing affecting its exports. ●

⁶⁸ Ngan, V. K., Ha, N. N., Hang, H. T. M., Ngoc, T. P., Phu, T. D. & Tam, L. T. T. (2024, September). *Border Carbon Adjustment Mechanisms and Impacts on Vietnam: IISD Report*. International Institute for Sustainable Development. <https://www.iisd.org/system/files/2024-09/border-carbon-adjustments-vietnam.pdf>

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Author Contribution

The author solely contributed to the study conception and design. The author read and approved the final manuscript.

Declarations

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