PHAN PHƯƠNG NAM

Singapore's Carbon Tax Regulations: Lessons for Building a Carbon Tax Legal Framework in Vietnam

Abstract

This paper analyses Singapore's carbon tax regulations and draws conclusions that can inform the development of a legal framework for a carbon tax in Vietnam. Using a qualitative methodology, the paper analyses documents and policies, and compares the legal frameworks of Singapore and Vietnam. By learning from Singapore's experience of implementing a carbon tax since 2019, which has achieved effective greenhouse gas emission reductions with a gradually increasing tax rate up to SGD/tonne by 2024, Vietnam could adopt a similar approach with a phased tax increase roadmap and clear emission thresholds. However, these recommendations are based on inferences that lack a clear basis for verification in the Vietnamese context. The paper also provides a model for designing a carbon tax legal framework that is suitable for Vietnam's economic context. The recommendations aim to promote sustainable development and raise awareness of climate change mitigation by providing a comparative perspective on the application of carbon taxes in Southeast Asia.

KEYWORDS: carbon tax, Singapore, Vietnam, climate policy, greenhouse gas emissions

Phan Phương Nam – PhD in law, Ho Chi Minh City University of Law, ORCID – 0009-0009-6293-0899, e-mail: ppnam@hcmulaw.edu.vn

HTTPS://DOI.ORG/10.36128/PRIW.VI57.1359

1 Introduction

Climate change has been a pressing global issue, with increasingly serious environmental, economic and social impacts. According to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change (IPCC), to limit the increase in global temperature to 1.5°C above pre-industrial levels, greenhouse gas emissions need to be reduced by 45% compared to 2010 levels by 2030.[1] In this context, carbon pricing mechanisms, such as carbon taxes and emissions trading systems (ETS), have been adopted by many countries to encourage emission reductions and promote sustainable development. Singapore is a pioneer country in Southeast Asia with the implementation of a carbon tax since 2019,[2] becoming a potential reference model for countries in the region, including Vietnam.

Vietnam, with a commitment to achieve net zero emissions by 2050 under the Paris Agreement, is facing great pressure to develop effective climate policies.[3] Vietnam's energy and industrial sectors, especially coal-fired power plants, contribute significantly to greenhouse gas emissions, with total CO2 emissions estimated at 314 million tonnes in 2020, according to a report by the Ministry of Natural Resources and Environment.[4] Although the Environmental Protection Law 2020 has laid the foundation for climate policies, Vietnam still does not have a specific legal framework for carbon taxes or a full carbon market.[5] The lack of a carbon pricing mechanism not only hinders progress towards climate goals, but also affects Vietnam's trade competitiveness, especially when major markets such as

1 Intergovernmental Panel on Climate Change, *Global Warming of 1.5°C: An IPCC Special Report on the Impacts of Global Warming of 1.5°C above Pre-industrial Levels* (Geneva: IPCC, 2018), pp.14. https://www.ipcc.ch/sr15/.

2 National Climate Change Secretariat, *Singapore's Climate Action Plan: A Climate-Resilient Singapore for a Sustainable Future* (Singapore: NCCS, 2016). https://sustainabledevelopment.un.org/content/documents/1549Climate_Action_Plan_Publication_Part_2.pdf.

3 Government of Vietnam, *Updated Nationally Determined Contribution (NDC)* (Hanoi: Ministry of Natural Resources and Environment, 2020). https://www4.unfccc.int/sites/ndcstaging/PublishedDocuments/Viet%20Nam%20First/Viet%20Nam_NDC_2020_Eng.pdf.

4 Ministry of Natural Resources and Environment, *Vietnam's Greenhouse Gas Inventory Report 2020* (Hanoi: MONRE, 2021), pp.22.

5 National Assembly of Vietnam, *Law on Environmental Protection 2020*, No. 72/2020/QH14, passed 17 November 2020. https://monre.gov.vn/en/Pages/law-on-environmental-protection-2020.aspx.

the European Union apply the Carbon Border Adjustment Mechanism (CBAM) from 2026.[6]

This study aims to analyse Singapore's carbon tax legal framework, enacted through the Carbon Pricing Act 2018, to draw lessons for Vietnam. Singapore's carbon tax applies an initial tax of S$5/tonne of CO2 to facilities emitting 25,000 tonnes or more of CO2 per year, with a roadmap to increase to S$25/tonne by 2024 and S$45/tonne by 2030.[7] The system has achieved remarkable results, such as reducing 6 million tons of CO2 in the period 2019–2022, and encouraging businesses to transition to clean technologies.[8] The motivation for the research comes from Vietnam's urgent need to build a carbon tax legal framework suitable for the socio-economic context and learn from Singapore's experience in balancing environmental goals and economic growth.

Specific objectives of the paper include: (1) assessing the key characteristics of carbon tax in Singapore, including the scope of application, tax rates and carbon credit offset mechanisms; (2) analyse the success factors and challenges in the implementation of the carbon tax in Singapore; (3) propose policy recommendations for Viet Nam to develop a carbon tax legal framework, focusing on feasibility and economic impact. Through policy analysis and comparative methods, this study aims to contribute to the academic literature on carbon pricing in developing economies and provide practical guidance for policymakers in Vietnam.

6 European Commission, *Carbon Border Adjustment Mechanism*. https://taxation-customs.ec.europa.eu/carbon-border-adjustment-mechanism_en.

7 Ministry of Sustainability and the Environment, Carbon Pricing Act. https://www.mse.gov.sg/policies/climate-change/carbon-pricing-act.

8 National Environment Agency, *Annual Report 2022: Singapore's Progress on Climate Action* (Singapore: NEA, 2023), pp.18. https://www.nea.gov.sg/docs/default-source/our-services/nea-annual-report-2022.pdf.

2 An overview of the literature

Carbon tax, as an economic tool aimed at reducing greenhouse gas emissions, has a profound impact on both the environmental legal framework[9] and the economic development of developing countries such as Vietnam. The relationship between carbon tax, regulatory framework, and sustainable growth is influenced by factors such as governance, regional policies, globalization, and dependence on fossil fuels. Studies show that carbon taxes not only help reduce emissions,[10],[11] but also promote the transfer of green technologies but require a transparent legal framework and strong supervisory capacity to ensure efficiency and fairness.

Policy design and environmental efficiency: Singapore, a pioneer in Southeast Asia, has implemented a carbon tax since 2019 through the Carbon Pricing Act 2018, which applies to large emitters (>25,000 tCO2e/year) with the tax gradually increasing from S$5/tonne CO2e (2019–2023) to S$25/tonne by 2024 and expected to reach S$50–80/tonne by 2030.[12] Studies show that this policy has reduced greenhouse gas emissions in taxable industries by about 3-4%, while encouraging investment in green technology and renewable energy.[13] The lesson for Vietnam lies in building a transparent legal framework, clearly defining taxable objects and enforcement mechanisms, in line with domestic management capacity.

Economic impact and social justice: Carbon taxes can increase the cost of production and living, especially affecting heavy industries and low-income households. In Singapore, programs such as the Climate Friendly Households Programme provide effective energy vouchers to reduce the

9 Angela Köppl, Margit Schratzenstaller, "Carbon taxation: A review of the empirical literature" *Journal of Economic Surveys*, nr 4 (20023): 1353–1388.

10 Ivan Savin, Stefan Drews, Sara Maestre-Andrés, Jeroen van den Bergh, "Public views on carbon taxation and its fairness: a computational-linguistics analysis" *Climatic Change*, Vol. CLVI (2020): 2107–2138.

11 I Gusti Putu Eka Rustiana Dewi, Ni Made Sintya Surya Dewi, "Analysis the effectiveness of implementation carbon tax in Indonesia" *Journal Economina*, No. 4 (2022).

12 Jennifer Chih, "Singapore's Carbon Regulations: Paving the Way for the Green Plan 2030" *Mayer Brown*, 6 February 6 2024. https://www.mayerbrown.com/en/insights/publications/2024/02/singapores-carbon-regulations-paving-the-way--for-the-green-plan-2030.

13 Indrajaya Burnama, *Lessons from Singapore's Successful Carbon Tax*, 2022. https://www.pajak.go.id/index.php/en/artikel/lessons-singapores-successful--carbon-tax. [accessed: 20.5.2025].

burden on vulnerable groups,[14] a model that Vietnam can learn from to ensure social justice. Studies in Vietnam propose a low initial tax rate (US$1.85/tonne CO2e, up 10% annually) to mitigate the economic impact, with potential revenues of US$10.9 billion by 2030, but this should be accompanied by compensatory policies such as subsidies or other tax reductions to avoid exacerbating inequality.[15] Vietnam's legal framework needs to integrate these support measures to minimize the negative impact on rural populations and fossil energy-dependent industries.[16]

Globalization and technology transfer: Singapore has integrated a carbon tax into its Green Plan 2030, using the proceeds to finance renewable energy and green technology projects, and implemented the International Carbon Credit (ICC) Framework that allows 5% of emissions to be offset with voluntary carbon credits.[17] Studies highlight that in developing countries such as Vietnam, carbon taxes can attract foreign direct investment (FDI) in low-carbon technology sectors but require a transparent regulatory framework and an effective measurement, reporting, and verification (MRV) system.[18] Without good governance, carbon taxes can increase production costs, affecting the competitiveness of industries such as cement, steel, and coal-fired power, which account for a large proportion of Vietnam's economy.[19]

Challenges to the regulatory framework: Vietnam, with an economy heavily dependent on fossil fuels, faces the challenge of building a legal framework for a carbon tax. Studies show that developing countries often struggle to set up emissions monitoring systems and ensure legal compliance.[20] The experience from Singapore shows that a clear legal framework,

14 Ibidem.

15 Nam Do Thang, Paul J. Burke, "Carbon pricing in Vietnam: Options for adoption" *Energy and Climate Change*, 2 (2021): 100058.

16 Cristian Alonso, Joey Kilpatrick, "The Distributional Impact of a Carbon Tax in Asia and the Pacific" *IMF Working Paper*, WP/22/116 (2022).

17 Chih, "Singapore's Carbon Regulations: Paving the Way for the Green Plan 2030."

18 World Bank, "Carbon Pricing Aids Vietnam's Efforts Towards Decarbonization" November 11, 2021, https://www.worldbank.org/en/news/feature/2021/11/11/carbon-pricing-aids-vietnam-s-efforts-towards-decarbonization.

19 Do Thang, Burke, "Carbon pricing in Vietnam: Options for adoption."

20 Phan Thi Thanh Duong, Nguyen Thi Thu Hien, "Carbon Tax – International Experiences and Recommendations for Policy Improvement in Vietnam" *Democracy and Law*, 2 December (2022). https://danchuphapluat.vn/thue-carbon-kinh-nghiem-quoc-te-va-kien-nghi-hoan-thien-phap-luat-o-viet-nam.

with specific regulations on who is taxable, the tax rate, and how the revenue is used, is key to success.[21] However, Vietnam needs to adapt these lessons to suit the socio-economic context, especially its governance capacity and lower level of industrialization than Singapore.

Trade liberalization and international pressure: Trade liberalization, especially through mechanisms such as the EU's Carbon Border Adjustment Mechanism (CBAM), puts pressure on Vietnam to apply a carbon tax to avoid trade barriers for exports such as steel and cement.[22] Studies show that domestic carbon taxes can help Vietnam meet international standards, while creating opportunities to access clean technology through FDI and international cooperation.[23] However, the introduction of a carbon tax can also increase production costs, requiring a legal framework to balance environmental goals with economic competitiveness.

Governance and sustainability: The effectiveness of a carbon tax depends on governance and enforcement capacity. Singapore has succeeded thanks to its transparent legal system and strong monitoring capacity, with agencies such as the National Environment Agency (NEA) ensuring compliance[24]. In contrast, Vietnam lacks an MRV system and specific regulations, requiring investment in human resource management and training[25] capacity. Studies suggest that Vietnam's legal framework should prioritize the use of carbon tax revenues to finance renewable energy projects, improve energy efficiency, and support small businesses in transitioning to green technologies, learning from Singapore's experience.[26]

Singapore offers a successful model with a transparent legal framework, an incremental tax roadmap, and measures to support social justice. However, Vietnam needs to build a legal framework suitable for the

21 Burnama, *Lessons from Singapore's Successful Carbon Tax*.

22 Greensourcing, *Lesson 6: Trends in Carbon Tax Application and Lessons for Vietnam*. https://greensourcing.vn/bai-6-xu-huong-ap-dung-thue-carbon-va-bai-hoc-cho-viet-nam/. [accessed: 28.8.2025].

23 World Bank, "Carbon Pricing Aids Vietnam's Efforts Towards Decarbonization".

24 Chih, "Singapore's Carbon Regulations: Paving the Way for the Green Plan 2030."

25 Ta D Thi, "Carbon Market Development: International Experiences and Opportunities, Challenges, and Prospects for Vietnam" *National Assembly of Vietnam*, 2024.

26 Le Thi Ngan Ha, Nguyen Van Duong, "Carbon tax in relationship with economic and legal instruments on environmental protection" *Vietnam Journal of Legal Science*, No. 10 (2024): 50-60.

socio-economic context, ensuring transparency, feasibility, and fairness. Policy interventions such as developing MRV systems, designing offsetting programmes, and integrating carbon taxes into green economy strategies are needed to ensure that carbon taxes both reduce emissions and support sustainable economic growth.

3 Data and research methodology

3.1. Research methods

This study uses a qualitative approach to analyse carbon tax regulations in Singapore and draws lessons learned for the development of a carbon tax legal framework in Vietnam. The qualitative methodology was chosen to ensure an in-depth analysis of legal, economic, and social factors, and to assess the feasibility of lessons learned from Singapore in the context of Vietnam. Specific methods include:

Firstly, the method of studying the literature. This methodology is applied to collect and analyse secondary data sources related to carbon tax in Singapore and the environmental policy context in Vietnam. The steps include:

a. Document collection: Search for and select reliable sources, including legal documents, official reports, academic research, and documents from international organizations. This process is carried out through online databases (such as Google Scholar, JSTOR), websites of regulatory agencies (National Environment Agency – NEA of Singapore, Ministry of Natural Resources and Environment of Vietnam), and international reports from the World Bank, IMF and OECD.
b. Document analysis: Documents are analyzed to clarify the core elements of Singapore's carbon tax system, including the legal basis (Carbon Pricing Act 2018), taxable objects, tax rates, carbon offset mechanisms, and how revenues are used. At the same time, documents on Vietnam's environmental policy and climate commitments (such as the Law on Environmental Protection 2020 and commitments at COP26) are considered to assess the feasibility of applying a carbon tax.

c. Information synthesis: The data is organized by key themes, including policy design, socio-economic impacts, and lessons learned, to provide a basis for proposing a legal framework in Vietnam.

Second, is the comparative experience analysis. This method is used to evaluate the implementation of carbon tax in Singapore and compare it with other carbon pricing models, especially from the European Union (EU), to draw relevant lessons for Vietnam. The steps include:

a. Singapore case analysis: A detailed study of the Carbon Pricing Act 2018, focusing on aspects such as the tax collection mechanism, taxable entities (emission base >25,000 tCO2e/year), tax increase roadmap (from S$5/tonne CO2e to S$50–80/tonne by 2030), and the international carbon credit mechanism (ICC Framework). The effectiveness of emission reductions (3–4% in taxable sectors) and socio-economic impact are assessed based on official reports.[27]
b. Comparison with the EU: Refer to the EU's Emissions Trading System (ETS) to identify distinctive features, such as a wider scope of application and a flexible market mechanism, to complement the lessons learned from Singapore. This comparison helps clarify the legal elements needed to ensure transparency and effectiveness in Vietnam's legal framework[28].
c. Lessons learned: Lessons learned are synthesized, focusing on the design of transparent legal frameworks, mechanisms to support social justice such as Singapore's Climate Friendly Households Programme and how to use revenue to promote green technology.

Thirdly, qualitative analysis methods. Data collected from literature research and empirical analysis are processed through qualitative analysis to:

a. Identify the key features of Singapore's carbon tax regulatory framework, including the legal basis, tax collection process, and oversight mechanisms.

27 Chih, "Singapore's Carbon Regulations: Paving the Way for the Green Plan 2030."
28 Burnama, *Lessons from Singapore's Successful Carbon Tax*.

b. Assess the impact of carbon taxes on greenhouse gas emissions, the economy, and social groups in Singapore, thereby drawing lessons that are relevant to the Vietnamese context.
c. Propose specific legal recommendations, such as developing a carbon tax roadmap, designing a measurement, reporting, and verification (MRV) system, and measures to support low-income businesses and households.

3.2. Data sources

The research is based on secondary data sources from official and academic sources, selected based on reliability and relevance. Data sources include:

Firstly, legal documents. For Singapore, the Carbon Pricing Act 2018 and related regulations from the National Environment Agency of Singapore (NEA), provide detailed information on the legal basis, taxable objects, tax rates, carbon offsetting mechanisms and revenue management. For Vietnam, including the Environmental Protection Law 2020, relevant decrees and circulars, along with Vietnam's international commitments at COP26, provide the legal and policy context for climate change response.

Secondly, the official reports of Singapore and Vietnam. In particular, reports from the NEA and Singapore's Ministry of Environment and Water Resources aim to provide data on the effectiveness of carbon taxes (reducing GHG emissions by 3–4%) and socio-economic impacts. In Vietnam, the study will be based on reports from the Ministry of Natural Resources and Environment, the Ministry of Finance, and relevant agencies, including assessments of greenhouse gas emissions and carbon market development plans.

Thirdly, documents from international organizations such as reports from the World Bank (State and Trends of Carbon Pricing 2024), the International Monetary Fund (IMF), and the Organization for Economic Cooperation and Development (OECD), provide global data on carbon pricing trends, economic impact analysis, etc. and recommendations for developing countries;[29] the World Bank's report on supporting the development

29 World Bank, *State and Trends of Carbon Pricing 2024* (Washington, DC: World Bank, 2024), https://openknowledge.worldbank.org/server/api/core/bitstreams/253e6cdd-9631-4db2-8cc5-1d013956de15/content.

of carbon markets in Vietnam, highlighting the potential for learning from models such as Singapore.[30]

Fourth, academic studies and specialized articles. Academic articles from international journals, such as Do and Burke's study on carbon pricing options in Vietnam;[31] Alonso and Kilpatrick's analysis of the distributive impact of carbon tax in Asia-Pacific.[32] Domestic studies, such as those by Phan Thi Thanh Duong, Le Thi Ngan Ha, and Ta Dinh Thi, focus on international experience and the applicability of carbon taxes in Vietnam[33], [34], [35].

3.3. Scope and limitations of the study

The study focuses on the analysis of Singapore's carbon tax regulatory framework from 2019 to the present, with a focus on legal regulations, enforcement mechanisms, and impacts on greenhouse gas emissions. At the same time, the study considers the legal and socio-economic context of Vietnam to propose appropriate recommendations.

Due to its secondary data base, research may be limited by the availability and up-to-date of information, particularly on the long-term impact of carbon taxes in Singapore. Differences in economic, social, and governance capacities between Singapore and Vietnam also require adjustment when applying lessons learned. In addition, the lack of empirical data on carbon tax in Vietnam (due to its lack of implementation) limits the ability to assess the actual impact.

30 World Bank, "Carbon Pricing Aids Vietnam's Efforts Towards Decarbonization."

31 Do Thang, Burke, "Carbon pricing in Vietnam: Options for adoption."

32 Alonso, Kilpatrick, "The Distributional Impact of a Carbon Tax in Asia and the Pacific."

33 Duong, Hien, "Carbon Tax – International Experiences and Recommendations for Policy Improvement in Vietnam".

34 Ha, Duong, "Carbon tax in relationship with economic and legal instruments on environmental protection", 50-60.

35 Ta D Thi, "Carbon Market Development: International Experiences and Opportunities, Challenges and Prospects for Vietnam."

4 Research results

4.1. Carbon tax regulations in Singapore

4.1.1. Overview

In 2018, Singapore enacted the Carbon Pricing Act 2018, which came into effect on January 1, 2019, which is one of the pioneering carbon pricing mechanisms in Southeast Asia. Specifically, facilities with emissions of 25,000 tons of CO2 equivalent (tCO2e) or more per year.[36] Taxable industries include power generation, petrochemicals, chemicals, and other heavy industries, which account for about 80% of Singapore's total greenhouse gas emissions. The main objective of this policy is to encourage businesses to reduce emissions through measures to improve energy efficiency and transition[37] to low-carbon technologies, and to contribute to Singapore's goal of achieving net zero emissions by 2050, in accordance with the Paris Agreement.[38]

The carbon tax comes as Singapore has developed a comprehensive climate strategy, specifically the Green Plan 2030, to promote sustainable development and respond to climate change.[39] The carbon tax policy is not only an economic tool but also part of the national strategy to position Singapore as a green economic hub in the region.[40] Carbon tax revenues are reinvested in environmental initiatives[41] including funding for clean technology research and development, supporting businesses to transform, and public awareness programs.[42]

---

36 Section 16 Carbon Pricing Act 2018 of Singapore.

37 Reinhilde Veugelers, Which policy instruments to induce clean innovating?" https://doi.org/10.1016/j.respol.2012.06.012.

38 National Climate Change Secretariat, "Singapore's Climate Action Plan: A Climate-Resilient Singapore for a Sustainable Future."

39 Chih, "Singapore's Carbon Regulations: Paving the Way for the Green Plan 2030."

40 Li Yingzhu, Bin Su, "The Impacts of Carbon Pricing on Coastal Megacities: A CGE Analysis of Singapore" *Journal of Cleaner Production*, Vol. CLXVI (2017): 1239–1248.

41 Tseng Sean, "Appraising Singapore's Carbon Tax Through the Lens of Sustainability (January 11, 2022)" *NUS Law Working Paper*, No. 2 (2022).

42 Burnama, *Lessons from Singapore's Successful Carbon Tax.*

4.1.2. Key features of carbon tax in Singapore

Singapore's carbon tax system is designed with core characteristics in mind to ensure efficiency, transparency, and feasibility in implementation. Key features include:

First, the tax rate and roadmap to increase the carbon tax. The carbon tax is applied with a starting level of SGD 5/ton CO2e[43] in the period 2019–2023, to facilitate businesses to adapt to the carbon pricing mechanism.[44], [45] From 2024, the tariff has increased to S$25/tonne CO2e, and is expected to reach S$45/tonne in 2026–2027, with a long-term target of S$50–80/tonne by 2030.[46] This tax increase roadmap is built on economic and environmental analyses to ensure that the tax rate is high enough to encourage emission reductions[47] but does not have an undue impact on the competitiveness of industries.[48] In addition, the introduction of this roadmap is also partly grounded when research by Best, Burke and Jotzo (2020) shows that an increase of one Euro per ton of CO2/eq is associated with a 0.3% reduction in greenhouse gas emissions growth from fossil fuels.[49]

Second, carbon tax payers. The carbon tax applies to large emitter bases, specifically those with annual emissions of 25,000 tCO2e or more. In 2022, there are about 30–40 large industrial facilities in Singapore, mainly in the energy, petrochemical, and manufacturing sectors, covered by the carbon tax.[50] These facilities must report their annual emissions through

---

43 Part 1 in Third Schedule of Carbon Pricing Act 2018.

44 The National Climate Change Secretaria of Singapore, *Carbon Tax*. https://www.nccs.gov.sg/singapores-climate-action/mitigation-efforts/carbontax/#:~:text=Carbon%20Tax%20in%20Singapore%20from,period%20for%20emitters%20to%20adjust.

45 Jeroen van den Bergh, Stefan Drews, "A review of carbon-pricing studies for developing countries" *Climate and Development*, May (2025).

46 Carbon Pricing (Amendment) Act 2022 of Singapore.

47 Kenny Chng, Ken Wei Ong, "The Singapore Green Plan 2030: Analysing its implications on law and the legal industry in Singapore" *Environmental Law Review*, No. 4 (2021): 336-343.

48 Ralf Martin, Laure B. de Preux, Ulrich J. Wagner, "The impact of a carbon tax on manufacturing: Evidence from microdata" *Journal of Public Economics*, Vol. CXVII (2014): 1-14.

49 Rohan Best, Paul J. Burke, Frank Jotzo, "Carbon Pricing Efficacy: Cross-Country Evidence" *Environmental and Resource Economics*, No. 1 (2002): 69-94.

50 National Environment Agency, *Annual Report 2022: Singapore's Progress on Climate Action* (Singapore: NEA, 2023), 20. https://www.nea.gov.sg/docs/default-source/our-services/nea-annual-report-2022.pdf.

the measurement, reporting, and verification (MRV) system administered by the National Environment Agency (NEA).[51] The focus on major emission sources simplifies management and monitoring, and optimizes the environmental impact of the policy.

Third, the carbon credit offset mechanism. To increase business flexibility, Singapore allows taxable entities to use International Carbon Credits (ICC) to offset up to 5% of taxable emissions.[52] It can be seen that, in addition to increasing the carbon tax rate, this mechanism, when applied, not only encourages businesses to invest in global emission reduction projects but also supports Singapore's integration into the international carbon market, thereby enhancing its position in global climate initiatives.

Fourth, regulations on the management and use of carbon tax revenues. Carbon tax revenues are managed by Singapore's Ministry of Finance and allocated to environmental initiatives within the framework of the Singapore Green Plan 2030. Specifically, the revenue is used to:

- Financing renewable energy projects, such as solar energy development and energy storage systems.[53]
- Supporting businesses in transitioning to low-carbon technology through tax incentives and subsidy programs.[54]
- Implement social assistance programs, such as the Climate Friendly Households Programme, which provide vouchers for energy-efficient appliances to reduce the cost burden on low-income households.[55]

51 Ibidem.

52 The ICC Framework was promulgated by Singapore in November 2022. This ICC framework is built in line with Article 6 of the Paris Agreement, which allows Singapore to work with many other countries to support their respective climate goals in the fight against climate change. Under the ICC Framework, carbon taxable establishments are allowed to use eligible ICCs to offset no more than 5% of their total taxable emissions from January 1, 2024 to offset the amount of taxable CO2 emissions they generate. World Bank, "State and Trends of Carbon Pricing 2024," 33. https://openknowledge.worldbank.org/server/api/core/bitstreams/253e6cdd--9631-4db2-8cc5-1d013956de15/content.

53 Ministry of Sustainability and the Environment of Singapore, *Singapore Green Plan 2030*. https://www.greenplan.gov.sg.

54 Indrajaya Burnama, *Lessons from Singapore's Successful Carbon Tax*.

55 Ibidem.

According to the Climate Action Tracker, in the period 2019–2024, carbon tax revenues of about S$1 billion will be used by Singapore to finance the Productivity (Energy Efficiency) Grant and the Energy Efficiency Fund.[56]

4.1.3. Pros and Cons of Singapore's Carbon Tax

In general, Singapore's carbon tax system has achieved many remarkable achievements, including:

First, create a motivation to reduce emissions. By imposing financial costs directly on GHG emissions, carbon taxes have created an economic incentive for businesses to optimize their production processes, transition to low-carbon technologies[57],[58] and adopt more sustainable solutions. According to the NEA report, in the period 2019–2022, Singapore reduced about 5 million tonnes of CO2e from taxable industries, equivalent to 3–4% of total national greenhouse gas emissions.[59]

Second, encouraging the transition to green technology: Incentives from carbon tax revenues, such as subsidies for renewable energy and clean technology, have prompted businesses in the petrochemical and manufacturing industries to transition to environmentally friendly production processes.[60]

Third, transparency and effective governance in carbon tax management activities. The MRV system managed by the NEA ensures the accuracy of emission measurement and reporting, creating confidence in businesses and the international community.

---

56 Audrey Tan, "Singapore Budget 2018: Carbon tax will affect mainly large polluters" *The Straintimes*, 20 February 2018.

57 Sazib Hossan, "Singapore Role in Advancing Global Low-Carbon Economy: A Joint Effort for Sustainability and Climate Commitments" *American Journal of Bussines Science Philosophy*, No. 1 (2025): 36-47.

58 Benjin En Cheng Lau, "Impact of carbon tax on energy generation transitioning technology". Final Year Project (FYP), Singapore: Nanyang Technological University, 2016.

59 EDB, *Singapore releases new emissions targets for 2035, on track to reaching net zero by 2050*. https://www.edb.gov.sg/en/business-insights/insights/singapore-releases-new-emissions-targets-for-2035-on-track-to-reaching-net-zero-by-2050.html.

60 Chih, "Singapore's Carbon Regulations: Paving the Way for the Green Plan 2030."

Fourth, carbon taxes have a positive impact on society. Programs such as the Climate Friendly Households Programme have mitigated the negative impact of carbon taxes on low-income households, ensuring social justice.[61]

Besides its successes, Singapore's carbon tax also has certain limitations:

- First, the initial tax rate is still quite low. The tax rate of SGD/ton of CO2e in the period 2019–2023 is considered not high enough to create significant behavior change in some businesses, especially those with high technology transformation costs.
- Second, the scope of application of the carbon tax is still limited. Singapore's carbon tax only applies to large emitters (>25,000 tCO2e/year), ignoring smaller sources of emissions from small and medium-sized enterprises or the transport and construction industries. This can reduce the overall effectiveness of the policy in covering the entire economy.
- Third, the initial conversion cost is still quite high. Some businesses, particularly in the petrochemical industry, have reported high initial investment costs to meet emission reduction requirements, although government support programs have mitigated this burden somewhat.

4.2. Proposals for Vietnam

Based on the experience of successfully implementing a carbon tax in Singapore through the Carbon Pricing Act 2018, Vietnam can draw important lessons to build a carbon tax legal framework that is suitable for the socio-economic context and national climate commitments, especially the goal of achieving net zero emissions by 2050 under the Paris[62] Agreement. With the economy heavily dependent on fossil energy, especially coal, and greenhouse gas emissions reaching about 372.95 million tons of CO2 by 2023,[63] Vietnam is facing great pressure to design effective climate

61 Burnama, *Lessons from Singapore's Successful Carbon Tax*.

62 Government of Vietnam, *Updated Nationally Determined Contribution (NDC)*.

63 EDGAR (Emissions Database for Global Atmospheric Research), *GHG emissions of all world countries 2024 report*, https://edgar.jrc.ec.europa.eu/report_2024?vis=co2tot#emissions_table.

policies. Therefore, the authors make recommendations that are built on Singapore's experience and adapted to the reality of Vietnam.

4.2.1. Develop a roadmap for applying carbon tax

Vietnam should implement a carbon tax with a gradual roadmap, starting with a low tax rate, around US$5–10 per tonne of CO2e equivalent (CO2e), to facilitate businesses and people to adapt, before gradually increasing the tax rate to achieve a significant environmental impact. This low starting tax is in line with Vietnam's current economic capacity, where heavy industries such as coal, cement, and steel contribute largely to greenhouse gas emissions but have limited financial capacity to transform the technology immediately.[64] Research by Do and Burke (2021) has proposed that an initial tariff of about $1.85 per tonne of CO2e, an annual increase of 10%, could generate potential revenues of up to $10.9 billion by 2030, while minimizing the negative impact on economic growth.[65] A gradual tariff hike roadmap, similar to Singapore's (from S$5/tonne in 2019 to S$25/tonne in 2024 and S$50–80/tonne in 2030) is likely to help Vietnam balance environmental objectives and economic stability.

This roadmap needs to be designed with specific timelines and based on socio-economic analyses. Specifically, in the first 3–5 years, low tariffs can be applied to major emitting industries such as energy and heavy industry, then gradually increase to 20–30 USD/ton in the period 2030–2035 to promote the green technology transition.[66] The adoption of a gradual tariff increase roadmap also helps mitigate the risk of economic shocks, especially in the context that Vietnam faces pressure from the European Union's CBAM, which takes effect from 2026, which will impose tariffs on high-carbon export products such as cement and steel.[67]

64 Do Thang, Burke, "Carbon pricing in Vietnam: Options for adoption."
65 Ibidem.
66 World Bank, "Carbon Pricing Aids Vietnam's Efforts Towards Decarbonization."
67 European Commission, *Carbon Border Adjustment Mechanism*.

4.2.2. Transparent policy design

To ensure efficiency and fairness, Vietnam's carbon tax legal framework needs to be designed transparently, with clear regulations on who is taxable, how to collect taxes, and how revenues are used. Singapore's experience shows that a transparent legal framework, such as the Carbon Pricing Act 2018, has made it easier for businesses to comply and build trust in the policy.[68] Therefore, Vietnam needs to:

a. It is necessary to clearly identify the taxpayer of the carbon tax. Accordingly, when developing a carbon tax, Vietnam should focus on major emission sources such as coal-fired power plants, cement factories and steel producers. Because according to research by Rana Ghoneim, Gökçe Mete and Anthony Hobley, greenhouse gas emissions from these industries account for about 14% of the total global greenhouse gas emissions.[69] A minimum emission threshold, possibly 25,000 tCO2e/year like Singapore, to simplify management and monitoring.

b. Regulating tax collection methods: Vietnam needs to establish clear tax collection processes, including requiring businesses to report emissions through a measurement, reporting, and verification (MRV) system. These processes should be standardized, using electronic reporting templates and modern monitoring tools to ensure accuracy and transparency[70].

c. How to use revenues: Carbon tax revenues should be made public and allocated to specific goals, such as financing renewable energy projects, subsidizing businesses that transform technology, and supporting low-income households to mitigate socio-economic impacts. Singapore has used carbon tax revenues to finance its Green Plan 2030, which includes solar projects and social assistance programs such as the Climate Friendly Households Programme, a model that Vietnam can learn from. However, to implement this solution, Vietnam needs to change more regulations on state budget management.

---

68 Chih, "Singapore's Carbon Regulations: Paving the Way for the Green Plan 2030."

69 Rana Ghoneim, Mete, Gökçe, Anthony Hobley, *Steel and cement can drive the decade of action on climate change. This is how.* https://iap.unido.org/articles/steel-and-cement-can-drive-decade-action-climate-change-how.

70 World Bank, "State and Trends of Carbon Pricing 2024", 35.

Accordingly, it is necessary to separate revenue and the purpose of using revenue sources to ensure the above goal.

A transparent legal framework not only ensures business compliance, but also strengthens public acceptance, especially in the context of Vietnam, where carbon tax awareness is limited. Studies show that publicizing how carbon tax revenues are used can minimize negative reactions from people and businesses, especially vulnerable groups such as low-income households.[71]

4.2.3. Strengthening management capacity

The implementation of a carbon tax in Vietnam requires a robust management and monitoring system, especially the measurement, reporting, and verification (MRV) system. Singapore has succeeded thanks to its MRV system managed by the National Environment Agency (NEA), which ensures accuracy and transparency in monitoring emissions.[72] However, Vietnam currently lacks a comprehensive MRV system and specialized agencies with sufficient capacity to manage carbon taxes.[73]

To address this issue, Vietnam needs to:

a. First, build an MRV system. Vietnam needs to quickly establish a standardized MRV system, based on international standards such as the IPCC guidelines for measuring and reporting emissions from taxable industries. The system should use state-of-the-art technologies, such as emissions sensors and data management software, to ensure accuracy.

b. Second, establish a full-time management agency. According to the author, this agency can be under the Ministry of Natural Resources and Environment or the Ministry of Finance to supervise the collection of carbon tax, verify emission reports and propose competent agencies to handle violations or can conduct sanctions within its

71 Alonso, Kilpatrick, "The Distributional Impact of a Carbon Tax in Asia and the Pacific."

72 National Climate Change Secretariat, "Singapore's Climate Action Plan: A Climate-Resilient Singapore for a Sustainable Future."

73 Ta D Thi, "Carbon Market Development: International Experiences and Opportunities, Challenges, and Prospects for Vietnam".

competence. The agency needs to be adequately trained and equipped to carry out the complex tasks associated with carbon pricing.

c. Third, promote human resource training activities. Vietnam needs to invest in training human resources in emission management and low-carbon technologies, learning from Singapore's training programs organized by the NEA. These programs have helped businesses and regulators in Singapore understand the requirements of the carbon tax and apply it effectively.

It can be seen that strengthening regulatory capacity not only ensures the success of the carbon tax, but also helps Vietnam meet international standards, especially when participating in the global carbon market or facing requirements from the EU's CBAM.

4.2.4. Promoting the green economy

Carbon tax revenues should be used to promote a green economy, through financing renewable energy projects, improving energy efficiency, and supporting industries to transition to low-carbon technologies. Singapore has used carbon tax revenues, estimated at S$1 billion in 2019–2023, to fund initiatives such as solar energy development, energy storage systems, and technology transition business subsidy programs.[74] Vietnam can learn from this model to achieve sustainable development goals, especially in the context of Vietnam's rapidly growing renewable energy sector, with Vietnam's total renewable energy production capacity reaching 21.6 GW.[75]

Specifically, Vietnam should: (1) finance renewable energy: Use revenues to invest in solar, wind, and biomass projects, in order to reduce dependence on coal, which accounts for more than 40% of Vietnam's electricity generation; (2) improving energy efficiency: Supporting businesses, especially SMEs, to invest in energy-efficient equipment, such as LED lighting systems and high-performance machinery, through subsidies or concessional loans;[76] and (3) supporting technology transformation: Provide financial support packages for heavy industries, such as cement and steel,

74 Tan, "Singapore Budget 2018: Carbon tax will affect mainly large polluters".

75 Le Nguyen D.A., "Renewable energy development towards green economic growth in Vietnam" *Finance Journal*, No. 1 (2024).

76 Alonso, Kilpatrick, "The Distributional Impact of a Carbon Tax in Asia and the Pacific".

to transition to lower-carbon manufacturing technologies, such as using arc electric furnaces instead of traditional blast[77] furnaces.

These measures not only help reduce greenhouse gas emissions, but also promote green economic growth, create new jobs in the renewable energy and clean technology industries, and improve Vietnam's competitiveness in the international market.

5 Discussion/Limitations and Future Research

5.1. Discussion

Singapore's carbon tax system, implemented through the Carbon Pricing Act 2018 has proven effective in reducing greenhouse gas emissions and promoting the transition to green technologies,[78] with an estimated reduction of approximately 5 million tonnes of CO2e equivalent (tCO2e) between 2019–2022, corresponding to 3–4% of total national emissions.[79] This success is mainly due to a transparent policy design, a clear roadmap for tax increases (from S$5/tonne CO2e in 2019 to S$25/tonne in 2024 and expected S$50–80/tonne by 2030), and an efficient measurement, reporting, and verification (MRV) system managed by the National Environment Agency (NEA).[80] Social assistance programmes such as the Climate Friendly Households Programme also contribute to ensuring social justice by reducing the cost burden on low-income households.[81] These factors bring important lessons for Vietnam, especially in the context of the country's commitment to achieve net zero emissions by 2050 under the Paris Agreement.

---

77 Greensourcing, *Lesson 6: Trends in Carbon Tax Application and Lessons for Vietnam.*

78 Xu Lan, Jun Yang, "Carbon pricing policies and renewable energy development: Analysis based on cross-country panel data" *Journal of Environmental Management*, Vol. CCCLXVI (2024): 121784.

79 EDB, *Singapore releases new emissions targets for 2035, on track to reaching net zero by 2050.*

80 Chih, "Singapore's Carbon Regulations: Paving the Way for the Green Plan 2030."

81 Burnama, *Lessons from Singapore's Successful Carbon Tax.*

However, when compared to Vietnam, the socio-economic context and dependence on fossil energy create significant challenges. Vietnam currently has greenhouse gas emissions of about 372.95 million tons of CO2 in 2023,[82] with the energy industry (mainly coal-fired power) and heavy industry accounting for a large proportion (about 50%). The dependence on coal, which accounts for more than 40% of electricity generation, along with the fledgling carbon market infrastructure, makes the adoption of a carbon tax in Vietnam more complicated than in Singapore, where the economy relies heavily on modern industries and services with lower emission levels. In Singapore, the carbon tax only applies to large emission bases (>25,000 tCO2e/year), while Vietnam has a large number of smaller emission sources from industries such as transportation, construction, and agriculture, which requires a more comprehensive approach.

Singapore's experience also shows that a transparent regulatory framework and a robust MRV system are core elements to ensure the effectiveness of carbon taxes. In Vietnam, the lack of a standardized MRV system and limited regulatory capacity are major barriers, especially when small and medium-sized enterprises (SMEs) make up the majority of the economy but often lack the resources to comply with emission monitoring requirements.[83] Moreover, pressure from international mechanisms, such as the European Union's (EU) CBAM, which takes effect in 2026, requires Vietnam to quickly build a carbon tax legal framework to avoid trade barriers for export products such as cement and steel. The application of the domestic carbon tax not only helps Vietnam meet international standards, but also creates an opportunity to attract foreign direct investment (FDI) in low-carbon technology sectors, such as renewable energy and green production.[84]

Although Singapore's carbon tax has achieved remarkable success, the initial tax rate of S$5/tonne (about US$3.7/tonne) is not considered high enough to produce significant behavioural change in the early stages (2019–2023). Vietnam can learn from this lesson by designing a starting tax that is high enough to encourage emission reductions, such as $5–10 per tonne of CO2e but still low enough to avoid economic shocks, especially for heavy

82 EDGAR (Emissions Database for Global Atmospheric Research), *GHG emissions of all world countries 2024 report.*

83 World Bank, "Carbon Pricing Aids Vietnam's Efforts Towards Decarbonization."

84 World Bank, "State and Trends of Carbon Pricing 2024", 35.

industries.[85] Research by Do and Burke (2021) indicates that an initial tariff of $1.85 per tonne of CO2e, an annual increase of 10%, could generate potential revenue of $10.9 billion by 2030, while minimizing the negative impact on economic growth.[86] combined with supportive policies such as subsidies and tax incentives, to reduce the burden on businesses and people.

5.2. Limitations of the study

This study, while providing in-depth analysis of Singapore's carbon tax regulatory framework and lessons for Vietnam, still has certain limitations.

Firstly, research is mainly based on secondary data from official reports and academic documents, and is therefore limited by the availability and up-to-date of information. Accordingly, data on the long-term impact of carbon tax in Singapore (after 2023) is limited, making it difficult to comprehensively assess the effectiveness of the policy.

Secondly, the differences in socio-economic context and governance capacity between Singapore and Vietnam require adjustment of lessons learned, but the study has not been able to provide specific empirical analyses of the impact of carbon tax in Vietnam because this policy has not been implemented.

Thirdly, the study has not fully assessed the readiness of the carbon market in Vietnam, including the ability of businesses to measure and report emissions as well as the capacity of regulators to monitor and enforce. According to a World Bank report, Vietnam lacks a comprehensive MRV system and specific regulations on the carbon market, which could slow down the implementation of the carbon tax.

Finally, the study does not take an in-depth look at the distributive impacts of carbon taxes on different social groups in Vietnam, such as rural households or small businesses, which can be greatly affected by the rising cost of production and living.[87]

85 Do Thang, Burke, "*Carbon Pricing in Vietnam: Options for Adoption*", 100058.
86 Ibidem.
87 Alonso, Kilpatrick, "The Distributional Impact of a Carbon Tax in Asia and the Pacific".

5.3. Future research orientation

To overcome the above limitations and support Vietnam in building an effective carbon tax legal framework, future research needs to focus on the following directions. First, empirical studies need to be conducted to assess the potential impact of carbon taxes on specific industries in Vietnam, such as energy, cement, and steel. These studies should use econometric models to predict the effects of different tariffs (e.g., $5/tonne, $10/tonne, or $20/tonne) on output, production costs, and employment in these industries. Second, it is necessary to explore the possibility of developing a carbon credit trading market in Vietnam, learning from Singapore's international carbon credit mechanism (ICC Framework), which allows offsetting 5% of taxable emissions. Studies should assess the feasibility of integrating Vietnam into the global carbon market, including opportunities for international cooperation under Article 6 of the Paris Agreement, to support projects to reduce emissions and attract green investment. Third, further research is needed on measures to support social justice, such as subsidy or tax relief programs for low-income households and SMEs, to mitigate the negative impact of carbon taxes. The experience from Singapore's Climate-Friendly Households Programme can be adapted to suit Vietnam's rural and urban context. Finally, future studies should focus on building governance capacity, including the development of MRV systems and human resource training, to ensure that Vietnam can implement carbon taxes effectively and transparently.

6 Conclusion

6.1. Summary of results

Singapore's carbon tax system, which was implemented through the Carbon Pricing Act 2018 and came into effect in 2019, has proven effective in reducing greenhouse gas (GHG) emissions and promoting sustainable development. With a starting tariff of S$5/tonne CO2e equivalent (tCO2e) in 2019–2023, rising to S$25/tonne in 2024 and expected to reach S$50–80/tonne by 2030, the policy has reduced approximately 5 million tonnes of CO2e in 2019–2022, or 3–4% of total national emissions. Success

factors include a transparent regulatory framework, a robust measurement, reporting, and verification (MRV) system administered by the National Environment Agency (NEA), along with an international carbon credit mechanism (ICC Framework) that allows for offsetting 5% of taxable emissions. Carbon tax revenues, estimated at S$1 billion over 2019–2024, have been reinvested in environmental initiatives, such as developing renewable energy and supporting low-income households through the Climate Friendly Households Programme. These achievements not only strengthen Singapore's position as a green economy hub in Southeast Asia, but also provide a valuable reference model for developing countries, including Vietnam.

Vietnam, with GHG emissions of about 314 million tons of CO2 in 2020 and a heavy reliance on coal in the energy sector, is facing great pressure to meet its commitment to achieve net zero emissions by 2050 under the Paris Agreement. Vietnam still does not have a specific legal framework for a carbon tax or a full carbon market. Singapore's experience, with its clear tax growth roadmap, carbon credit offset mechanism, and measures to support social justice, provides important lessons for Vietnam to design an effective carbon tax system, in line with the socio-economic context and domestic governance capacity.

6.2. Recommendations and orientations

To concretize the lessons from Singapore and meet national climate commitments, Vietnam needs to take concrete steps in developing a carbon tax legal framework. The following recommendations are made based on comparative analysis and implementation practices in Singapore:

First, develop a carbon tax legal framework: Vietnam should enact a specialized law on carbon pricing, similar to Singapore's Carbon Pricing Act 2018, with clear regulations on taxable objects, tax rates, and enforcement mechanisms. Taxpayers should initially focus on major emission sources, such as coal, cement, and steel thermal power plants, which account for about 50% of Vietnam's total GHG emissions. The starting tariff should be low, around $5–10 per tonne of CO2e, and gradually increased by 10% annually to reach $20–30 per tonne by 2030, in order to balance environmental goals and economic competitiveness. The regulatory framework needs to be built transparently, with tax collection and emission reporting processes

standardized through the MRV system, learning from the NEA's effective management experience in Singapore.

Second, strengthen international cooperation: Vietnam should learn from international models, not only from Singapore but also from the European Union's Emissions Trading System (ETS), to design a carbon tax system that integrates with the global carbon market. Participation in initiatives such as Article 6 of the Paris Agreement, through an international carbon credit mechanism similar to Singapore's ICC Framework, will help Vietnam attract investment in emission reduction and green technology projects. Cooperation with international organizations such as the World Bank and the International Monetary Fund (IMF) is also needed to access funding and technical assistance in building MRV systems and training human resources.

Third, integrate carbon taxes into green economy strategies: Carbon tax revenues need to be used strategically to promote sustainable development, including financing renewable energy projects (such as solar and wind power, which will already reach a capacity of more than 20 GW by 2023), improve energy efficiency, and support small and medium-sized enterprises (SMEs) in transitioning to low-carbon technologies. Social assistance programs, such as providing subsidies or vouchers for energy-efficient equipment, should be implemented to mitigate the impact of carbon taxes on low-income households, learning from Singapore's Climate Friendly Households Programme model. These measures not only help reduce GHG emissions but also promote green economic growth, create new jobs, and improve Vietnam's competitiveness in the international market, especially in the context of pressure from the EU's Carbon Border Adjustment Mechanism (CBAM) from 2026.

Fourth, invest in governance capacity: Vietnam needs to prioritize building a standardized MRV system, based on international standards such as IPCC guidelines, to ensure accuracy and transparency in emissions measurement and reporting. The establishment of a dedicated agency, for example under the Ministry of Natural Resources and Environment or the Ministry of Finance, to administer the carbon tax is necessary to oversee tax collection and handle violations. Human resource training in emission management and low-carbon technologies is also a key factor to ensure effective implementation.

6.3. Final conclusion

Singapore's carbon tax is a successful model that exemplifies the role of economic tools in reducing GHG emissions and promoting sustainable development. With a transparent regulatory framework, a clear roadmap for tax increases, and measures to support social justice, Singapore has achieved remarkable results, while positioning itself as a green economy hub in the region. For Vietnam, the introduction of a carbon tax is a necessary step to meet international climate commitments and avoid trade barriers, but needs to be adjusted to suit the socio-economic context and domestic governance capacity. By building a transparent legal framework, investing in regulatory capacity, and using carbon tax revenues to promote a green economy, Vietnam can both achieve its environmental goals and ensure sustainable economic growth, contributing to a net-zero future by 2050.

Bibliography

Alonso Cristian, Joey Kilpatrick, "The Distributional Impact of a Carbon Tax in Asia and the Pacific" *IMF Working Paper* WP/22/116 (2022). https://www.imf.org/en/Publications/WP/Issues/2022/06/09/The-Distributional-Impact-of-a-Carbon-Tax-in-Asia-and-the-Pacific-519111.

Angela Köppl, Margit Schratzenstaller, "Carbon taxation: A review of the empirical literature" *Journal of Economic Surveys*, nr 4 (20023): 1353–1388. https://doi.org/10.1111/joes.12531.

Best Rohan, Paul J. Burke, Frank Jotzo, "Carbon Pricing Efficacy: Cross-Country Evidence", *Environmental and Resource Economics*, No. 1 (2002): 69-94, https://doi.org/10.1007/s10640-020-00436-x.

Burnama Indrajaya, *Lessons from Singapore's Successful Carbon Tax*. https://www.pajak.go.id/index.php/en/artikel/lessons-singapores-successful-carbon-tax.

Chih Jennifer, "Singapore's Carbon Regulations: Paving the Way for the Green Plan 2030" *Mayer Brown*, 6 February 6 2024. https://www.mayerbrown.com/en/insights/publications/2024/02/singapores-carbon-regulations-paving-the-way-for-the-green-plan-2030.

Duong Phan T.D., Hien Nguyen T.T., "Carbon tax – international experience and recommendations for policy improvement in Vietnam" *Democracy and Law*, 2 December 2022. https://danchuphapluat.vn/thue-carbon-kinh-nghiem-quoc-te-va-kien-nghi-hoan-thien-phap-luat-o-viet-nam.

Ghoneim Rana, Gökçe Mete, Anthony Hobley, *Steel and Cement Can Drive the Decade of Action on Climate Change. This Is How,* United Nations Industrial Development Organization, https://iap.unido.org/articles/steel-and-cement-can-drive-decade-action-climate-change-how.

Ha Le Thi Ngan, Nguyen Van Duong, "Carbon tax in relationship with economic and legal instruments on environmental protection" *Vietnam Journal of Legal Science*, No. 10 (2024): 50-60. https://khoahocphaplyvietnam.edu.vn/vjls/article/download/135/102/216.

I Gusti Putu Eka Rustiana Dewi, Ni Made Sintya Surya Dewi, "Analysis the effectiveness of implementation carbon tax in Indonesia" *Journal Economina*, No. 4 (2022). https://www.google.com/url?sa=i&url=https%3A%2F%2Fejournal.45mataram.ac.id%2Findex.php%2Feconomina%2Farticle%2Fdownload%2F194%2F159&psig=AOvVaw3g7fs359T5dvNivHRuCwoI&ust=1747904615425000&source=images&cd=vfe&opi=89978449&ved=0CAQQn5wMahcKEwiQsdOemrSNAxUAAAAAHQAAAAAQBw.

Kenny Chng, Ken Wei Ong, "The Singapore Green Plan 2030: Analysing its implications on law and the legal industry in Singapore" *Environmental Law Review*, No. 4 (2021): 336-343. https://doi.org/10.1177/14614529211052597.

Lan Xu, Jun Yang, "Carbon pricing policies and renewable energy development: Analysis based on cross-country panel data" *Journal of Environmental Management*, Vol. 366 (2024): 121784. https://doi.org/10.1016/j.jenvman.2024.121784.

Lau Benjin En Cheng, "Impact of carbon tax on energy generation transitioning technology". Final Year Project (FYP), Singapore: Nanyang Technological University, 2016. https://hdl.handle.net/10356/149739.

Le Nguyen D.A. "Renewable energy development towards green economic growth in Vietnam" *Finance Journal*, No. 1 (2024). https://tapchitaichinh.vn/phat-trien-nang-luong-tai-tao-huong-toi-tang-truong-kinh-te-xanh-o-viet-nam.html.

Martin Ralf, Laure B. de Preux, Ulrich J. Wagner, "The impact of a carbon tax on manufacturing: Evidence from microdata" *Journal of Public Economics*, Vol. CXVII (2014): 1-14.

Nam Do T., Paul J. Burke, "Carbon Pricing in Vietnam: Options for Adoption" *Energy and Climate Change*, 2 (2021): 100058. https://doi.org/10.1016/j.egycc.2021.100058.

Reinhilde Veugelers, *Which policy instruments to induce clean innovating?*. https://doi.org/10.1016/j.respol.2012.06.012.

Savin Ivan, Stefan Drews, Sara Maestre-Andrés, Jeroen van den Bergh, "Public views on carbon taxation and its fairness: a computational-linguistics analysis" *Climatic Change*, Vol. CLVI (2020): 2107–2138. https://doi.org/10.1007/s10584-020-02842-y.

Sazib Hossan, "Singapore Role in Advancing Global Low-Carbon Economy: A Joint Effort for Sustainability and Climate Commitments" *American Journal of Bussines Science Philosophy*, No. 1 (2025): 36-47. Doi: https://doi.org/10.70122/ajbsp.v2i1.25.

Tan Audrey, "Singapore Budget 2018: Carbon tax will affect mainly large polluters" *The Straintimes*, 20 February 2018. https://www.straitstimes.com/politics/carbon-tax-will-affect-mainly-large-polluters.

Thi Ta D, "Carbon Market Development: International Experiences and Opportunities, Challenges, and Prospects for Vietnam" *National Assembly of Vietnam*, 2024. https://quochoi.vn/tintuc/Pages/goc-nhin.aspx? ItemID=89625.

Tseng Sean, "Appraising Singapore's Carbon Tax Through the Lens of Sustainability (January 11, 2022)" *NUS Law Working Paper*, No. 2 (2022). https://ssrn.com/abstract=4005891; http://dx.doi.org/10.2139/ssrn.4005891.

van den Bergh Jeroen, Stefan Drews, "A review of carbon-pricing studies for developing countries" *Climate and Development*, May (2025). https://doi.org/10.1080/17565529.2025.2506758.

Yingzhu Li, Bin Su, "The Impacts of Carbon Pricing on Coastal Megacities: A CGE Analysis of Singapore" *Journal of Cleaner Production*, Vol. CLXVI (2017): 1239–1248. Doi: 10.1016/j.jclepro.2017.07.206.