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# REGULATE OR REGRESS? THE LEGAL–ECONOMIC DICHOTOMY IN CARBON TAX POLICY

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## ABSTRACT

As climate change accelerates, carbon taxation has become a pivotal tool in the global decarbonization strategy. However, its implementation reveals a persistent dichotomy between legal mandates aimed at environmental regulation and economic concerns surrounding growth, competitiveness, and financial equity. This paper investigates this legal–economic tension by examining the theoretical, practical, and jurisdictional dimensions of carbon tax policy. Beginning with an overview of its economic rationale grounded in Pigouvian theory, the analysis assesses the policy’s real-world impacts—both beneficial and adverse. While empirical evidence supports its efficacy in reducing carbon emissions, trade-offs such as carbon leakage, sectoral imbalances, and inflationary pressures raise concerns about long-term economic sustainability. The paper further explores legal frameworks at international and domestic levels, including instruments like the Paris Agreement and India’s nascent carbon market, to highlight how divergent regulatory structures influence economic outcomes. Cross-jurisdictional case studies from Sweden, Canada, and France demonstrate how success or failure often hinges on a jurisdiction’s ability to balance environmental obligations with economic realities. Ultimately, the study argues that the future of carbon taxation lies not in isolated regulation but in reconciling legal imperatives with economic pragmatism—through calibrated design, equitable burden-sharing, and responsive governance mechanisms that enable sustainable growth alongside climate responsibility.

**Keywords:** Carbon Taxation, Legal–Economic Dichotomy, Climate Policy, Pigouvian Tax, Carbon Leakage, Environmental Regulation, Sustainable Growth.

## I. INTRODUCTION

### 1.1 VITAL NECESSITY FOR DECARBONIZATION

Environmental degradation is among the most important concerns confronting mankind today. The prevailing scientific opinion is that heating patterns over the last decades are most likely caused by human behaviours that have raised climatic carbon dioxide (CO<sub>2</sub>) along with other greenhouse gas ("GHG") releases.<sup>1</sup> The use of fossil-fuels such as petroleum, natural gas, and coal in conveyance, energy production, commercial operations, agricultural activities, and other applications contributes significantly to these outputs. As the globe proceeds to generate GHGs at an escalating pace, their build-up in the environment raises heat waves, drastically disrupts our weather sequences, and poses cataclysmic dangers to ecological systems, economic growth, and societies worldwide.<sup>2</sup>

### 1.2 POTENTIAL SOLUTION: CARBON TAXATION

At its most basic, a carbon tax simply and precisely prices carbon emissions produced by the combustion of fossil fuels. This approach to pricing seeks to include the costs of pollutants and environmental harm into market prices, incentivizing lower emissions and pushing the implementation of sustainable energy substitutes across each industry. This piece will cover key characteristics of carbon taxes, such as their intended use, structure, efficacy, adoption, and execution in various nations. With increasing climate change consequences and acknowledgment that carbon tariffs are critical to achieving global decarbonisation, impetus is rising for the universal implementation of carbon tax systems in different nations throughout the next decade. Their significance in keeping the planet's temperature stable and allowing an egalitarian, long-term prospect will also be highlighted.<sup>3</sup>

## II. POLICY BACKGROUND & RATIONALE

Carbon taxes is generally termed as a kind of "pollution tax."<sup>4</sup> *David G. Wilson* coined it for

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<sup>1</sup> William Nordhaus, Revisiting the Social Cost of Carbon, 114 PROC. NAT'L ACAD. SCI. 1518 (2017).

<sup>2</sup> David Weisbach & Gilbert E. Metcalf, The Design of a Carbon Tax, 33 HARV. ENV'T L. REV. 499 (2009).

<sup>3</sup> Arik Levinson, How Much Energy Do Building Energy Codes Really Save? Evidence from California, 131 AM. ECON. REV. 131 (2016).

<sup>4</sup> Emeritus: "David Wilson Was an Early Proponent of the Concept of Energy-Use Fees" Phys.org (Nov. 5, 2013).

implementation in 1972. It is based on traditional command & administer rules, that expressly restrict and ban outputs by separate entity polluters<sup>5</sup> as a carbon-tax seeks to enable stakeholders to decide an efficacious approach to minimize pollution.<sup>6</sup> A carbon based tax is an indirect type of taxation, which means it taxes an activity rather than income. Carbon taxes result in being pricing devices, as it imposes a cost instead of an output limitation.<sup>7</sup> This carbon pricing doesn't only promote energy savings, but additionally labels alternative energy avenues like wind, solar, and geo-thermal energy systems viable options.

## 2.1 ECONOMIC THEORY & PIGOUVIAN TAXATION

Pollution is classified as a detrimental externality, or a negative impact on an entity which is not immediately engaged within a sort of market failure. To address the problem, economist *Arthur Cecil P.* recommended charging the items responsible for the externality (CO<sub>2</sub>), such as hydrocarbon fuels, to appropriately represent the cost to society. This would internalize manufacturing charges known as a Pigouvian tax.

Pigou's theory assumes that the changes are substandard, and that the externality is sufficiently adequate to not affect the nation's finances.<sup>8</sup> Environmental degradation is said to cause catastrophic (non-marginal) changes.<sup>9</sup> The term "non-marginal" indicates that the influence might considerably limit the pace of increase in revenue and wellbeing. The quantity of capital that can be allocated to climate change prevention is debatable.<sup>10</sup> Policies aimed at reducing the release of carbon may be having a non-marginal effect, but are not expected to be disastrous.

## 2.2 POLICY SKELETON & INTENDED USE-CASE

A carbon tax is designed with 2 key things in mind: (i) *the tax rate* and; (ii) *income usages*. The earlier model is founded on the doctrine of "*social burden of carbon*" (SCC) that seeks to assess the numerical value of carbon pollution's externalities. The exact figure is a source of contention among environmentalist and policy-making communities. A greater SCC correlates

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<sup>5</sup> Allan Greenbaum, ELP in the Canadian Context 240–41 (Captus Press 2010).

<sup>6</sup> C. Hepburn, "Regulation by Prices, Quantities or Both: An Update and an Overview," 22 Oxford Rev. Econ. Pol'y 226 (2006).

<sup>7</sup> Dieter Helm, Economic Instruments and Environmental Policy, 36 Econ. & Soc. Rev. 205 (2005).

<sup>8</sup> N. Stern, Stern Review on the Economics of Climate Change (Cambridge Univ. Press 2007).

<sup>9</sup> Dieter Helm, Climate-Change Policy - Why Has So Little Been Achieved?, 24 Oxford Rev. Econ. Pol'y 211 (2008).

<sup>10</sup> P. Forster et al., Concept of Radiative-Forcing, in Climate-Change 2007: The-Physical-Science-Basis (S.D. Solomon et al. eds., Cambridge Univ. Press 2007).

to a deeper assessment of the social costs of carbon emissions. According to Stanford Research the social value of carbon is more than \$220 / tonnes. Alternatively, cautious predictions put the expense at about merely \$70 per tonne.<sup>11</sup>

The intended application that the proceeds is a further bone of contention in carbon tax ideas.<sup>12</sup> The governing body may utilize money to expand arbitrary expenditure or tackle deficits. Nevertheless, such ideas frequently face the danger of being discriminatory and inciting public outrage owing to the increasing price appraisals of energy-sources connected with this kind of taxation.<sup>13</sup> In order to prevent it & boost reception of carbon-taxes, an administration could declare this "revenue neutral".<sup>14</sup> The following may be accomplished by lowering income taxes relative to the amount of carbon-tax collected and releasing the collected money to residents as a dividends.

A carbon tax is an expense imposed on carbon output from the production of products & services. This method of taxation designed to highlight undetected societal implications of emission of carbon dioxide. These aim to lower GHG emissions by effectively raising the cost of fossil energy sources. This reduces consumption of high-emission products and services while also incentivizing their reduction in carbon intensity. Whenever a fossil fuel like gasoline, hydrocarbons, or petroleum-based gas is burnt, the majority proportion of remnants is transformed into CO<sub>2</sub>. Emitted GHGs contribute to global warming. It's undesirable impact may be mitigated via charging carbon-content during certain stages of the product lifetime.<sup>15</sup>

Through a kaleidoscopic lens, this taxation targets simply CO<sub>2</sub>-emissions. This may include several GHGs, for instance methane or nitrous-oxides, by charging them centered around their CO<sub>2</sub>-equivalent climate change prospective. According to *Econofact* investigation, carbon taxes frequently cut pollution.<sup>16</sup> Numerous analysts believe that carbon fees are deemed as greatest effective (minimal-investment) strategy which combats climate upheaval with good

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<sup>11</sup> World Bank Group, "State & Trends Of Carbon Pricing 2019" at 21 (2019), <https://hdl.handle.net/10986/31755>.

<sup>12</sup> Stanford University, "Estimated Social Cost of Climate Change Not Accurate", Stanford Scientists Say (Jan. 12, 2015).

<sup>13</sup> Leyland Cecco, "How to Make a Carbon Tax Popular? Give the Proceeds to the People", *GUARDIAN*, Dec. 4, 2018.

<sup>14</sup> Robinson Meyer, "How to Cut U.S. Carbon Pollution by Nearly 40 Percent in 10 Years", *ATLANTIC*, Nov. 13, 2019.

<sup>15</sup> Congressional Budget Office, "Effects of a Carbon Tax On The Economy And The Environment" (May 22, 2013).

<sup>16</sup> Econofact, Carbon Taxes: What Can We Learn From Intl. Experience? (May 3, 2019).

efficiency.<sup>17</sup> By the end of 2018, 25 nations had enacted or planned to impose carbon taxes. 40-plus nations have implemented a kind of carbon pricing, whether via carbon taxation or carbon emission exchange programs.<sup>18</sup>

Some scholars argue that a carbon tax has a detrimental impact on society as a whole, disproportionately affecting families with limited incomes and increasing the cost of essentials (for example, the tax may raise costs for gasoline and power.<sup>19</sup> Alternatively, the tax may be excessively cautious, causing "comparatively small dents in overall emissions."<sup>20</sup> The revenue from carbon taxes more equitable, authorities might aim to transfer the money earned by carbon taxes to the least fortunate economic groups using different fiscal mechanisms.<sup>21</sup> Instead of just taxing, such a legislative effort becomes a carbon price and rebate or dividends.<sup>22</sup> The carbon pricing idea incorporates both a taxation system and trading mechanism. Two popular fiscal equivalents to carbon taxes include convertible permits including carbon offsets & reimbursements.

### III. IMPACT ASSESSMENT

#### 3.1 POSITIVE CHANGES & EFFICACY

Carbon taxes are efficient in reducing GHG emissions, according to research.<sup>23</sup> Most economists believe that emissions taxes are a highly effective and productive strategy to combat global warming, with the fewest negative economic consequences.<sup>24</sup>

##### 3.1.1 Carbon Output Reduction

A single investigation portrayed that Swedish carbon-price effectively decreased CO<sub>2</sub> output from transportation by 12%.<sup>25</sup> A Canadian (B.C.) research deduced; levies lowered the output

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<sup>17</sup> Economists' Statement on Carbon Dividends, Climate Leadership Council (2019).

<sup>18</sup> World Bank Group, State And Trends Of Carbon Pricing 2019, at 21 (2019), <https://hdl.handle.net/10986/31755>.

<sup>19</sup> Stanley Reed, Here's What's Beside EU's Rising Energy Costs, N.Y. TIMES, Sept. 22, 2021

<sup>20</sup> What Is A Carbon Tax?, World Economic Forum.

<sup>21</sup> INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE (IPCC), Climate Change 2001: Synthesis Report, GRID-Arendal.

<sup>22</sup> "What a Carbon Tax Can Do and Why It Cannot Do It All", WORLD BANK BLOGS (Jan. 19, 2022).

<sup>23</sup> Andersson, Julius J. (November 2019). "Carbon Taxes and CO<sub>2</sub> Emissions: Sweden as a Case Study". American Economic Journal: Economic Policy. 11 (4): 1–30. doi:10.1257/pol.20170144. ISSN 1945-7731.

<sup>24</sup> Kun Zhang, Qian Wang, Qiao-Mei Liang & Hao Chen, "A Bibliometric Analysis of Research on Carbon Tax from 1989 to 2014", 58 Renewable & Sustainable Energy Reviews 297 (2016).

<sup>25</sup> Murray, Brian & Nicholas Rivers, "British Columbia's Revenue-Neutral Carbon Tax: A Review of the Latest Grand Experiment in Environmental Policy", 86 Energy Pol'y 674 (2015).

of greenhouse gases by 10-18% while showing zero net financial impact. According to a 2017 British Columbia research, the tax benefited most businesses and resulted in *"small but statistically significant 0.74 percent annual increases in jobs"* although carbon-intensive & sensitive sectors suffered. A 2020 analysis of carbon levies in rich countries found that they did not restrict GDP growth.<sup>26</sup> Taxes on carbon do not seem to have an unfavourable effect on employment-rates or GDP expansion in EU. Its fiscal effect varies from net-zero to somewhat beneficial under normal circumstances.<sup>27</sup>

### 3.2 NEGATIVE EFFECTS AND TRADE-OFFS

According to an abundance of investigations, if societal advantages and tax credits are not increased, a carbon price would disproportionately affect low-income households.<sup>28</sup> Metcalf argued that carbon prices would be disproportionate in the United States.<sup>29</sup> Carbon taxation leads to uprise in power bills due to higher production costs and coal-energy plant expense consumptions leading to heavy consumer-ended utility costs.<sup>30</sup>

Additionally, there is some dispute concerning the relationship among carbon pricing (such as carbon emissions trading and carbon taxes) and sustainable development. Carbon price may be tailored to certain ideals of climate justice, such as polluters pay. Many environmental justice advocates oppose taxing carbon. To bridge the gap among both of these ideas, carbon pricing may limit emissions, eliminate pollutants from neglected places, and fairly distribute income.<sup>31</sup>

#### 3.2.1 Carbon Leakage

Carbon leakage occurs when pollutants are regulated within a single country/sector and then pushed to territories with fewer constraints. Leakage impacts may be both detrimental and good. Unfavourable leakages, which are beneficial, are known as "spill-over."

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<sup>26</sup> Akio Yamazaki, "Jobs and Climate Policy: Evidence from British Columbia's Revenue-Neutral Carbon Tax", 83 J. ENV'T ECON. & MGMT. 197 (2017).

<sup>27</sup> Gilbert E. Metcalf & James H. Stock, The Macroeconomic Impact of Europe's Carbon Taxes, 15 AM. ECON. J.: MACROECONOMICS 265 (2023).

<sup>28</sup> Aparna Mathur & Adele C. Morris, Causes of Carbon Taxation in Broader U.S. Financial Reforms, 66 ENERGY POL'Y 326 (2014).

<sup>29</sup> Gilbert E. Metcalf, The Distributional Impacts of U.S. Energy Policy, 129 ENERGY POL'Y 926 (2019).

<sup>30</sup> Alexandre Gajevic Sayegh, Climate Justice & Carbon-pricing, UCL Dep't Phil. (Mar. 13, 2024).

<sup>31</sup> James K. Boyce, Michael Ash & Brent Ranalli, "Environmental Justice and Carbon Pricing: Can They Be Reconciled," 7 GLOBAL CHALLENGES 0204 (2023).

Short-term leakage impacts must be weighed versus the long-term implications. A strategy, requires solely applies carbon taxes to rich nations may cause emissions to leak to underdeveloped countries. Nevertheless, a desired negative leakage might occur owing to decreased interest in petroleum, natural gas, and coal in industrialized nations, resulting in cheaper pricing. This might enable underdeveloped nations to exchange oil/gas against coal, reducing GHG outputs. As time progresses, nonetheless if less hazardous technologies are pushed back, this swap may provide no lengthy-term advantage.<sup>32</sup>

Carbon leaking has been deemed crucial in climate-change policies, as shown by *"2030 Energy and Climate Framework"* as well as the revision of the EU third carbon leakage list.<sup>33</sup>

### 3.2.1.1 Implementation of Carbon-Tariffs & CBAM

Carbon-tariffs, also known as carbon-border-adjustment-mechanisms (CBAM), are ecological tariffs on embodied carbon. Before 2025, US stated rejected that as a carbon-tax stating that WTO is inefficient and hence unlikely to either concur or dissent. One goal is to limit the emissions of carbon from countries without a carbon pricing. Some of the high-carbon shipments that could end up attracting such tariffs include energy produced by coal-based energy plants, steel and iron sourced via blast-furnace & potash from the Haber-procedure. Several nations have implemented or are proposing carbon levies.<sup>34</sup>

## 3.3 COMMUNITY OPPOSITION VIS-A-VIS ADOPTIO

When carbon taxes was initially suggested, different scholars emphasized its benefits via measure of decreasing CO<sub>2</sub> emissions. Such fee is described as *"a far better way to control pollution than the present method of specific regulation."*<sup>35</sup> This is praised for its markets-oriented minimalism. It consists of an assertion that it's *"the most efficient way to guide the decisions of producers and consumers"* particularly since *"carbon emissions have a 'unpriced'*

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<sup>32</sup> Intergovernmental Panel on Climate Change (IPCC), Glossary A-D, in CC 2007: Mitigation. "Contribution of WG III to the IV Report IPCC" (B. Metz et al. eds., Cambridge Univ. Press 2007).

<sup>33</sup> Goldemberg, J., et al., "Introduction: Scope of the Assessment, in CC 1995: Economic and Social Dimensions of Climate Change. Contribution of WG III to the II Assessment Report of IPCC" (J.P. Bruce et al. eds., Cambridge Univ. Press 1996).

<sup>34</sup> Ben Adler, James Hansen's New Climatic Studies are Terrifying, but He Still Has Hope, GRIST (July 23, 2015).

<sup>35</sup> Matto Mildenerberger et al., "Limited Impacts of Carbon Tax Rebate Programmes on Public Support for Carbon Pricing", 12 NATURE CLIMATE CHANGE 141 (2022).

*social expense owing to of their hazardous impacts on the planet's atmosphere.*"<sup>36</sup>

Yet, a large section of the people is hostile to carbon pricing. They were additionally defeated in numerous elections, and they were in some instances overturned when revolts gained traction. In order to establish consensus, a solution is promulgated ensuring repayment amounts to people. Citizens' Climate Coalition is a worldwide organization with more than 400 branches. It supports carbon price laws in the manner of a tiered charge and dividend system. NASA scientist J. Hansen has also argued for the establishment of a revenue-neutral emissions price.<sup>37</sup>

Since 2019, nearly 3000 US financial analysts have signed *"The Economists' Statement on Carbon Dividends."*<sup>38</sup> The document discusses the advantages of carbon taxation as in the US, as well as proposals for how to implement it. One idea is to refund tax funds to the general people. The declaration was initially endorsed with Nobel Prize winning analysts, previous Federal Reserve Chairs, past CEA Chairs, and senior Treasury Ministry Officials. It was once considered as a historical exemplar of economists' unanimity.<sup>39</sup> According to Ben Ho, a leading economist *"while carbon taxes are part of the optimal portfolio of policies to fight climate change, they are not the most important part."*<sup>40</sup>

### 3.3.1 Consumer Perception

In certain cases, understanding how carbon tax money are utilized might influence the public's backing. Revenue allocation to climate initiatives and compensation for housing for low-income individuals have been identified as prominent income uses.<sup>41</sup> Nevertheless, giving details on particular taxation treasury usage in nations that introduced taxes on carbon is deemed to be ineffective in improving popular favour.<sup>42</sup>

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<sup>36</sup> Laura Tyson, "The Myriad positives of Carbon Taxation," New York Times (June 28, 2013).

<sup>37</sup> Which Is Better: "Carbon Tax or Cap-and-Trade?" GRAN. RSCH. INST. CLIMATE CHANGE & ENV'T (Mar. 21, 2014).

<sup>38</sup> Official Signatories, "Economists' Statements on Carbon Dividends" (Mar. 2, 2023).

<sup>39</sup> Sara Maestre-Andrés et al., Carbon Tax Acceptability with Information Provision and Mixed Revenue Uses, 12 NATURE COMM'NS 7017 (2021).

<sup>40</sup> EU Emissions Trading System), Int'l CA P'ship (Oct. 10, 2017).

<sup>41</sup> James K. Boyce, Michael Ash & Brent Ranalli, "Environmental Justice and Carbon Pricing: Can They Be Reconciled?", 7 Global Challenges 0204 (2023).

<sup>42</sup> Matto Mildemberger et al., "Limited Impacts of Carbon Tax Rebate Programmes on Public Support for Carbon Pricing" 12 Nature Climate Change 141 (2022).



A 2021 *GlobeScan* survey of 31 nations and territories indicated that 60% favour a carbon tax, whilst just 31% reject it. In 29 of the overall 31 countries and regions polled, nearly every member of the public supports a carbon price.<sup>43</sup>

## IV. OVERVIEW OF LEGAL FRAMEWORK

### 4.1 INTERNATIONAL FRAMEWORK

Several international instruments create a basis for market-based carbon tax implementation and emissions trading system development though there is no direct global requirement for carbon taxation. The main purpose behind these frameworks stands to decrease GHG emissions without compromising economic sustainability.

#### 4.1.1 Paris Agreement Law (2015) & Commonwealth Carbon Tax Model

The **Paris Agreement** was adopted as per the UNFCCC.<sup>44</sup> Although it does not impose a direct obligation on states to implement a carbon tax, it provides for the market-based mechanisms to accomplish GHG output elimination thresholds. **Article 6** of this agreement explicitly looks into the character of international carbon markets that shall allow countries to trade emissions reductions through collaborative swapping & trading mechanisms. Moreover, mechanisms such as **Internationally Transferred Mitigation Outcomes (“ITMO”)** assist jurisdictions with flexible measures to meet their **Nationally Determined Contributions (“NDC”)** even while maintaining carbon optimal carbon pricing strategies.

The **Carbon Pricing Leadership Coalition (“CPLC”)** established together by the World Bank and International Monetary Fund backs the usage of carbon taxation as a viable public-policy tool.<sup>45</sup>

#### 4.1.2 Kyoto Protocol (1997) And Its Market-Based Mechanisms

Preceding the Paris Agreement, **Kyoto Protocol (1997)** substantiated on legally-binding

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<sup>43</sup> Robin Miller, New Global Poll Shows Growing Public Support for a Carbon Tax, GLOBESCAN (Nov. 5, 2021).

<sup>44</sup> Paris Agreement to the United Nations Framework Convention on Climate Change, Dec. 12, 2015, T.I.A.S. No. 16-1104.

<sup>45</sup> World Bank, “State and Trends of Carbon Pricing”, at 5 (2023).

output depletion goals for advanced nations.<sup>46</sup> It introduced 3 market-based mechanisms that affect the structure of current carbon taxation policies:

1. **Clean Development Mechanism** – It allows developed nations to invest in GHG output limitation projects in developing nations & earn certified-emission-reduction credits (CER) which are tradable in nature. (Art. 12)
2. **Joint Implementation** – It facilitates the similar credit-based transactions between developed countries. (Art. 6)
3. **Emissions Trading System (“ETS”)** – Provides for the cap-&-trade model which influences carbon trading markets aiding the carbon taxation systems. (Art. 17)

Kyoto Protocol focuses more on emissions trading rather than direct taxation but it laid the foundation which led to the adoption of national and regional carbon pricing policies.

#### 4.1.3 European Union Emissions Trading System (“EU ETS”)

The EU ETS stands as the largest & particularly well-developed cap-&-trade structure. It takes in its ambit almost **40% of the Unions’ total GHG outputs**. This mechanism is based as per the principle of allocating emission allowances to industries which are to be traded in a regulated market.<sup>47</sup>

EU ETS is not a direct carbon tax. Although, it continues to influence the adoption of carbon taxes in several EU countries. Sweden, Denmark, and Finland have implemented carbon taxes parallelly to the ETS. The **European Green Deal** was announced in 2019 to provide straightjacket formulas which proposed a **Carbon Border Adjustment Mechanism (“CBAM”)** to eradicate carbon leaking by imposition of tariffs on imports from nations having irregular climatic laws.<sup>48</sup>

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<sup>46</sup> Kyoto Protocol to the United Nations Framework Convention on Climate Change, Dec. 11, 1997, 2303 U.N.T.S. 148.

<sup>47</sup> Directive 2003/87/EC of European Parliament & of the Council of 13 Oct 2003 “Establishing a Scheme for Greenhouse Gas Emission Allowance Trading Within the Community”, 2003 O.J. (L 275) 32.

<sup>48</sup> COC, European Green Deal, COM (2019) 640 final (Dec. 11, 2019).

#### 4.1.4 OECD Guidelines And Carbon Pricing Trends

The **OECD Guidelines on Carbon Pricing** tends to focus on creating a balance between the adoption of carbon taxation while balancing its economic impacts on the regional financial conditions of sectoral markets. Their research indicates that carbon taxes when coupled with optimal structure and implementation shall lead to drive emissions reduction without significantly impacting economic growth.

According to OECD reports approximately **46 national and 37 subnational jurisdictions** have implemented carbon pricing policies which takes into the ambit either the direct carbon taxes or emissions trading schemes. Countries like **Sweden (USD 137 per ton of CO<sub>2</sub>)**, **Switzerland, & Canada** have introduced high carbon tax rates.<sup>49</sup>

#### 4.1.5 World Bank And IMF Initiatives

**World Bank's CPLC** follows and analyses the adoption and efficacy of carbon pricing mechanisms on regional economies and sub-continental trends. The **IMF** in light of the same has also proposed a **global carbon price floor** as a means to ensure consistent carbon pricing across jurisdictions to prevent anti-competitive conduct between states and introduce a level-playing field for such adjustments.<sup>50</sup>

#### 4.1.6 Country-Specific Carbon Tax Implementations

- *Sweden (1991): One of the earliest adopters, with a tax rate of USD 137 per ton of CO<sub>2</sub>, the highest in the world. The implemented policy reduced emissions by 27% without causing setbacks to economic growth.*<sup>51</sup>
- *Canada (2019): implemented its national carbon pricing mechanism commencing from CAD 20/ton before it rose to CAD 65 by 2023 amidst supplying the carbon tax revenue to households.*<sup>52</sup>

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<sup>49</sup> Organisation for Economic Co-operation and Development (OECD), Effective Carbon Rates 2021: Pricing Carbon Emissions Through Taxes and Emissions Trading, <https://www.oecd.org/tax/tax-policy/effective-carbon-rates-2021.pdf>.

<sup>50</sup> International Monetary Fund, “**Proposal for an International Carbon Price Floor Among Large Emitters**”, IMF Staff Climate Notes No. 2021/001 (2021).

<sup>51</sup> Lag om skatt på koldioxidutsläpp (1990:582) (Swed.) [Swedish Carbon Tax Act of 1991].

<sup>52</sup> Greenhouse Gas Pollution Pricing Act, S.C. 2018, c. 12, s. 186 (Can.).

- *Singapore (2019) became the first nation from Southeast Asia to establish a carbon tax system at SGD 5 per ton and aims to increase it to SGD 50-80 by 2030.*<sup>53</sup>
- *Japan (2012): Levied a Carbon Tax on Global Warming, currently at JPY 289 per ton of CO<sub>2</sub>, alongside participation in the Joint Crediting Mechanism (JCM).*<sup>54</sup>

## 4.2 INDIAN FRAMEWORK

### 4.2.1 Absence Of Direct Carbon Tax Policy

India has not yet implemented a direct carbon tax on industries or consumers. Certain countries have imposed a fixed price on carbon emissions but on the contrary, India has continued to specifically rely on other mechanisms. This includes energy efficiency programs, pollution control regulations and merely indirect taxation on fossil fuels. Factors such as developing SME-based economy, energy affordability and red-tape in policy making are the major challenges for its enforcement.

The idea of a carbon tax was first introduced in India through the Clean Energy Cess as per the Finance Act (2010).<sup>55</sup> It led to the levying of this specialized tax on coal production and imports. GST Coal Compensation Cess (2017)<sup>56</sup> further increased the cost of coal-based energy in an indirect fashion. It still does not function as a dedicated carbon pricing mechanism. Unlike a traditional carbon tax structures, hereby, the revenue generated is not explicitly allocated for environmental initiatives.

### 4.2.2 GST Compensation Cess On Coal: An Indirect Carbon Tax

The GST Compensation Cess on Coal is the closest to an existing policy to a carbon tax in India. Initially, it was introduced as the Clean Energy Cess at a rate of ₹50 *per metric ton* of coal in 2010 which was gradually increased to ₹400 *per metric ton* before being subsumed under GST. This cess was originally intended to fund renewable energy projects but now its proceeds are merely used to compensate states for revenue losses post-GST implementation.

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<sup>53</sup> Carbon Pricing Act 2018, No. 23 of 2018 (Sing.).

<sup>54</sup> Global Warming Tax Act (2012), Ministry of Environment, Japan.

<sup>55</sup> Finance Act, No. 14 of 2010 (India).

<sup>56</sup> GST (Compensation to States) Act, No. 15 of 2017 (India).

Although boosting the price of coal acts similarly to a carbon tax, this method lacks a defined carbon pricing mechanism that would incentivize industry to cut emissions or migrate to more environmentally friendly energy sources. This cess does not punish firms or entities based on their emission levels which in turn poses the question of its efficacy in mitigating carbon emissions.

#### 4.2.3 Emerging Carbon Market: Energy Conservation (Amendment) Act, 2022

Introduction of a carbon credit trading system under the Energy Conservation (Amendment) Act, 2022<sup>57</sup> is a quintessential legislation towards carbon pricing. It calls for a national carbon market which shall eventually allow industries to trade carbon credits based on emission reductions.

*Additionally, it provides that:*

- *Establish a Carbon Credit Trading Scheme under the Bureau of Energy Efficiency (“BEE”).<sup>58</sup>*
- *Allow industries to generate carbon credits by reducing emissions below prescribed limits.*
- *Enable companies that exceed their emission limits to buy credits from low-emission industries.*

This legislation is parallel to the *cap-and-trade* model adopted in international frameworks. India had previously implemented the *Perform, Achieve, and Trade (“PAT”)* Scheme under the Energy Conservation Act (2001)<sup>59</sup> but this new carbon market framework is expected to go beyond energy efficiency and shall also include GHG emissions in its ambit. Its rightful implementation shall also include a formal carbon tax by establishing a *market-determined carbon price*.

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<sup>57</sup> Energy Conservation (Amendment) Act, No. 24 of 2022 (India).

<sup>58</sup> Bureau of Energy Efficiency, Carbon Credit Trading Framework. <https://beeindia.gov.in/>.

<sup>59</sup> Energy Conservation Act, No. 52 of 2001 (India).

## V. CROSS-BORDER POLICY IMPLEMENTATION & OUTCOMES

### 5.1 SUCCESSFUL CARBON TAXATION MODELS: SWEDEN & CANADA

Carbon Taxation policies have often been viewed as modern development in environmental law. However, countries like Sweden and Canada have been implementing carbon taxation for decades.

Sweden began taxing potential pollutants as early as 1991. Similarly, Canada adopted carbon pricing as a strategy to potentially reduce carbon emission while maintaining a stable economy in 2008. The longevity and success of environment conscious taxation policies in Sweden and Canada provide useful insights for India to develop similar policies in tandem with the goal to reach net zero by 2070.

#### 5.1.1 Sweden - Energy Taxation Act (1994:1776)

Sweden's carbon tax policy is hailed for its success and has been at the forefront of environmental policy. The practice of carbon pricing in Sweden can be traced back to the early 18<sup>th</sup> century where policies were devised to tax pollutants like petrol, diesel, coal oil and electricity under a single regime of *energiskatt* (energy tax). These policies however were implemented with the objective of raising revenue rather than addressing environmental issues.

The environment implications of these taxes become more prominent 1991 which led to the introduction carbon tax as of a major tax reform which was primarily aimed to address environment issues. The mechanism is instrumental in depleting GHG outputs and simultaneously fostering fiscal growth. This taxation is majorly levied on fossil derived crude oils essentially sourced for warming and vehicular fuels. It was initially taxed at SEK 250 / ton of CO<sub>2</sub> currently is SEK 1,190 (approximately US \$126) / metric ton CO<sub>2</sub>.<sup>60</sup> This high tax rate is deemed to be the key contributing factor to Sweden's success in the gradual increase in carbon tax rate over time. This increase in tax rate has fostered conditions for reduction of use of high-carbon products by households and businesses.

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<sup>60</sup> Samuel Jonsson, Anders Ydstedt & Elke Asen, Looking Back on 30 Years of Carbon Taxes in Sweden, Tax Found. (Sept. 23, 2020). <https://taxfoundation.org/research/all/eu/sweden-carbon-tax-revenue-greenhouse-gas-emissions/>.

## **Implementation and collection of Swedish Carbon tax**

The Swedish tax predominately targets fossils like oil, coal and petrol and is deliberated on basis of amounts of carbon dioxide emission released by power commodities after consumption.<sup>61</sup> The collection of this tax is done after the consumption or delivery of carbon products to non-registered taxpayers like importers, distributors and large scale consumers. However, this carbon taxation policy has several exemptions for the industrial and Agricultural sector.

## **Impact on Emissions and Economy**

Sweden produced the lowest carbon emissions among developed countries despite its high energy consumption. This is a direct effect of its carbon tax policy. Further, Data suggests that after execution of carbon taxation been 1990s & 2019, Sweden's Gross Domestic Product per capita has had an upright growth by approximately 50% meanwhile simultaneously reducing carbon outputs.

Further, between 1990 and 2018, Sweden has achieved a substantial reduction in the emission produced by greenhouse gas with a decrease of 27%. This decline was particularly noticeable from the first decade of 21<sup>st</sup> century. The SEPA has attributed the biggest emission depletions to the household sector which includes home heating and the industrial sector. More recently, significant decrease has been observed in domestic transportation. The key factors contributing to these reductions include the enforcement of carbon taxation and a shift to CO<sub>2</sub>-free electricity production through renewable sources of energy like hydropower and nuclear energy.

In a study published in 2019, economist Gilbert Metcalf found that the adoption of carbon taxation in Canadian B.C. Province did not have any adverse impact on the region's economy during the period from 1990 to 2016. For the European Union countries, the economist's results imply that carbon-taxation might've had marginally beneficial effect on economy. The author indicates that this marginally positive influence could be partly because the carbon tax income

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<sup>61</sup> Susanne Akerfeldt, "CO<sub>2</sub> Taxation in Swede Experiences of the Past and Future Challenges." [https://www.un.org/esa/ffd/wp-content/uploads/2016/12/13STM\\_Article\\_CO2-tax\\_AkerfeldtHammar.pdf](https://www.un.org/esa/ffd/wp-content/uploads/2016/12/13STM_Article_CO2-tax_AkerfeldtHammar.pdf).

is spent on the reduction of other taxes, just like it has happened in Sweden.<sup>62</sup>

Thus, Sweden's carbon tax has been an effective measure for decreasing carbon emissions and for fostering economic growth. Its tax rate is high and is applied to various sectors which have made it possible to fund low carbon projects.

### **5.1.2 Canada (B.C.) - Carbon Tax Act, S.B.C. 2008**

Canada, following the footsteps of Sweden has been at the forefront of carbon taxing since 2008 to 2018, where carbon taxing was introduced in the province of British Columbia. Further, in 2019 the Canadian government crafted policies to ensure that pollutant are taxed. This led to the establishing of a nation minimum tax on carbon emitting products at a minimum rate of \$20 *per ton* in 2019 which was raised by CAD 10 every year and reached CAD 50 in 2022.<sup>63</sup> The provinces have the authority to use their identified carbon pricing systems but should meet the prescribed standard set by the federal as a minimum standard.

### **Implementation and collection**

The Canadian tax policy, much like it's Swedish counterpart predominately targets fossils like oil, coal and petrol and is deliberated upon carbon dioxide output released by power commodities after consumption. Further, this tax is applied on purchasing or using of fuels alongside revenues used to reduced other taxes which ensures that the policy does not burden the economy. This policy design is instrumental for maintaining public support.

### **Impact on Emissions and Economy**

The GDP *per capita* of British Columbia from 2008 to 2018 did merely performed better than other provinces of Canada as the tax was introduced.<sup>64</sup> The revenue-neutral design of the tax, which offsets carbon tax revenues with reductions in other taxes, has contributed to this positive economic performance. By lowering personal and corporate income taxes, the

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<sup>62</sup> Samuel Jonsson, Anders Ydstedt & Elke Asen, Looking Back on 30 Years of Carbon Taxes in Sweden, Tax Found. (Sept. 23, 2020), <https://taxfoundation.org/research/all/eu/sweden-carbon-tax-revenue-greenhouse-gas-emissions/>.

<sup>63</sup> Komanoff, C., & Gordon, M. (2015). "British Columbia's Carbon Tax: By the Numbers (Publication)". NYC: Carbon Tax Center.

<sup>64</sup> Environmental and Climate Change Canada. (2019). Canada's Greenhouse Gas Emissions Projections <https://open.canada.ca/data/en/dataset/7ba5acf6-ebae-45b6-bb14-84ab56ad2055>.



province has become one of the most tax-competitive regions in Canada.

Further, there is a stark decrease in the per capita carbon emissions produced by British Columbia when benchmarked to other provinces collectively starting 2008 till 2018.

## 5.2 FAILURE OF THE FRENCH CARBON TAXATION MODEL

The implementation of carbon taxes for environmental purposes meets practical resistance after their adoption in various jurisdictions. Complicated social and economic factors prevent these environmental pricing tools from reaching successful implementation. These taxes negatively affect weak income groups and average citizens who mainly reside in regions that heavily depend on fossil fuels.

During times of economic hardship, citizens see these new levies as unnecessary burdens placed upon them. The burden of taxation becomes worse for people with limited means to pay but the government proceeds with tax increases, which generates strong social unrest and political opposition.

The carbon taxes policies in France has demonstrated the complexities and challenges of implementing environmental taxation. Both these countries faced significant difficulties while attempting to introduce carbon taxation, revealing broader systemic obstacles to climate policy implementation.

### 5.2.1 France - Contribution Climat-Énergie (CCE) And Energy Code

Carbon Taxation was first introduced in France as segment of the *Draft Finance Act* (2010) under an umbrella policy of “*Climate & Energy Taxation*.” The French carbon-tax was levied at a rate of €7 / *tonne* which was gradually increased to €44.60 by 2018. The policy was however, withdraw after a social protest in 2019.

The implementation was the French Carbon tax, unlike Sweden and Canada was imposed as an additional tax, as opposed to an interacted policy which, according to Stephanie James’s OECF study “*overhauled the French taxation system*”<sup>65</sup>

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<sup>65</sup> Jamet S (2011) “Enhancing the cost-effectiveness of climate change mitigation policies in Sweden. OECD Economics Department”, Working paper, n 841, Février.

Therefore, apart from political and social factors, several complex factors played a role in the failure of carbon tax in France. The following are enumerated as:

- (i) Harm to competitiveness of French Firms: The introduction of additional taxes on carbon based products, as the French policy did not provide the benefit of a lower tax rate or a rebate on the CO<sub>2</sub> tax for transportation purposes.<sup>66</sup> Further, the French carbon tax increased the costs of production, predominately the heavy energy dependent sectors. This made French companies fall behind as compared to other European companies that did not face an additional tax.<sup>67</sup>
- (ii) Complexity of the French energy tax regime: The French policy was complex and expansive rather than equitable and simple, which inevitably affected its efficacy. The policy involved a multiple of layers of taxation and exemption that made it difficult to navigate at the time of implementation. Further, the policy was inequitable as it disproportionately affected low income households and rural populations that heavily relied on fossil fuels and did not have access to the more expensive but climate friendly sources of energy.
- (iii) Low oil prices: The low oil prices in the early years of the carbon tax in France, significantly diminished its impact. This is because when the oil prices were low, the additional cost of carbon tax became less noticeable to consumers and eventually reduced its effectiveness in changing consumer behaviour. As a result, the tax had little to no effect in curbing emissions in the transport sector, as consumers failed to feel the full weight of the tax.

### **Impact on Economy**

The French carbon policy had negatively impacted its economy. Firstly, carbon tax had a detrimental effect on energy intensive sectors like refined petroleum, aviation and transport due to its high rates leading to declines in outputs. A study showed that a carbon tax at the rate of

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<sup>66</sup> Speck S et al (2006) "The Use of Economic Instruments in Nordic and Baltic Environmental Policy 2001-2005." Nordic Council of Ministers, Copenhagen.

<sup>67</sup> Andersen MS, Enevoldsen MK, Ryelund MK (2009) "The impact of energy taxes on competitiveness: a panel regression study of 56 European industry sectors. in Andersen M.S., Ekins P., Carbon Energy Taxation: Lessons from Europe," Oxford University Press.

\$100 per metric ton led to a 29% contraction in the petroleum sector.<sup>68</sup> Secondly, the net effect on employment has been relatively small and even slightly positive, with an increase of about 0.8% in the manufacturing sector.<sup>69</sup>

Thus, the failure of the French carbon tax is attributed to these key factors which not only hindered its effectiveness but also created confusion among stakeholders. Additionally, the reduction in competitiveness of French firms, particularly undermined the tax's ability to incentivize emissions reductions across all industries.

## VI. CONCLUSION

The implementation of economic environment policy is paramount in the global fight against greenhouse gas emissions and climate change. Sweden's hailing success in reducing carbon emissions is a product of its trailblazing carbon tax policy. The analysis of statistics shows that during the last thirty years Sweden proved that properly designed carbon tax systems cut emissions without hindering economic development. A similar effect has been analyzed in Canada as well. The policies have not only led to a reduction in carbon emissions but also fostered innovation for adoption of renewable biofuels in all sectors. However, a contrast is seen in the case of France, which demonstrates the complex nature of economic policies and the need for a simplified, equitable and efficient taxation policy. Taxation policies are bound to fail if they are regressive and have an adverse effect on the low-income groups and rural population. Thus, carbon pricing policies need to maintain equalitarian principles and serve the requirements of all stakeholder to be effective.

The rapid industrialization in India coupled with its substantial impact on environment owing to its large population and economy demands for economic measures like a Carbon tax policy. The implementation must be systematic and simple much like Sweden. Further, a gradual and calculable increase of carbon tax rates should be implemented. This increase should be proportionate to the per capita GDP growth which will allow both business operations and household activities to gradually change towards sustainable technology. Additionally, the tax

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<sup>68</sup> Niklas Schoch, "Carbon pricing and its implications in input-output networks: the case of France", French Council of Economics Analysis. Focus No. 96 <https://www.cae-eco.fr/staticfiles/pdf/focus96-carbon-tax-en-230621-web2.pdf>.

<sup>69</sup> Damien Dussaux, "Carbon tax, emissions reduction and employment: Some evidence from France", Ecoscope, February 4<sup>th</sup>, 2020. <https://oecd ecoscope.blog/2020/02/04/carbon-tax-emissions-reduction-and-employment-some-evidence-from-france/>

structure must incorporate protection systems for low-income groups through subsidies and rebates as Sweden and Canada currently demonstrate with their revenue- neutral design.

Lastly, India must focus on long term harmonious development of sustainable environment practices and economic development rather than focusing on short term impact like France. This will gradually encourage all sectors to replace their inputs/ outputs with those that consume less energy and find innovative ways<sup>70</sup> thus eventually having a positive impact on the economy.<sup>71</sup>

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<sup>70</sup> Andersen MS, Ekins P (2009) “Carbon energy taxation: lessons from Europe”, Oxford University Press.

<sup>71</sup> World Bank. (2019). “Report of the High-Level Commission On Carbon Pricing and Competitiveness” (Publication).

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