ISSN–2277- 8721

EIIRJ Electronic International Interdisciplinary Research Journal

Volume–XIII, Issues – III May – June 2024

OPEN ACCESS Original Research Article

# A DETAILED STUDY ON IMPACT AND PREVENTION OF CARBON EMISSIONS THROUGH TAXATION POLICY

**Dr. Sanchita Datta**
**Ronak Pravin Sisodia**
**Hussain Ali Shirazi**
**Krishna Kumar Kanojia**
*Royal College of Arts, Science and Commerce*
*Mira Road, Thane*

**Abstract:**

*This research investigates the multifaceted impact of carbon emissions on the environment, climate, and human health. We analyze the current state of carbon emissions and their contribution to climate change. Additionally, we assess the repercussions on ecosystems, biodiversity, and vulnerable communities. The study explores a range of preventive measures, including, policy interventions, and behavioral changes, aiming to provide comprehensive insights into effective strategies for mitigating carbon emissions. Through a synthesis of scientific data and policy analysis, this research contributes to the ongoing dialogue on sustainable practices, offering practical solutions to address the urgent challenge of climate change.*

**Keywords:** *Impact And Prevention, Carbon Emission, Carbon Footprints, Climate Change*



## Introduction:

In the face of escalating climate change concerns, governments worldwide are increasingly turning to taxation policies as a tool to curb carbon emissions. The taxation of carbon emissions has emerged as a prominent strategy to internalize the environmental costs associated with greenhouse gas emissions and incentivize the transition towards low-carbon alternatives. This research endeavors to conduct a thorough examination of the impact and effectiveness of taxation policies in mitigating carbon emissions, with a focus on their design, implementation, and socio-economic implications.[1]

The imposition of taxes on carbon emissions represents a fundamental shift towards incorporating environmental externalities into economic decision-making processes. By assigning a price to carbon, taxation policies aim to create financial incentives for businesses and individuals to reduce their carbon footprint, thereby fostering a more sustainable economy. However, the design of these taxation schemes is critical, as their effectiveness hinges on factors such as the level of taxation, coverage of sectors, and the presence of complementary policies.

This study seeks to explore the multifaceted impacts of carbon taxation, spanning environmental, economic, and social dimensions. On one hand, carbon taxation has the potential to drive innovation and investment in clean technologies, leading to long-term emissions reductions and environmental benefits. On the other hand, concerns regarding the regressive nature of carbon taxes and their potential to disproportionately

ISSN–2277- 8721

EIIRJ Electronic International Interdisciplinary Research Journal

Volume–XIII, Issues – III May – June 2024

OPEN ACCESS Original Research Article

burden low-income households and vulnerable communities warrant careful consideration.

Moreover, the effectiveness of carbon taxation policies hinges on their ability to induce behavioral changes and incentivize emission reductions across various sectors. By examining case studies and empirical evidence from jurisdictions that have implemented carbon taxes, this research aims to identify best practices and lessons learned for policymakers seeking to design and implement effective taxation policies.

Furthermore, this study will investigate the role of carbon pricing mechanisms within broader climate policy frameworks, such as emissions trading schemes and regulatory measures. Understanding the interplay between different policy instruments and their synergies is essential for maximizing the effectiveness of carbon mitigation efforts and achieving emission reduction targets in a cost-effective manner.

**Materials and methods:**

Google Forms are a popular tool for conducting research due to their ease of use, versatility, and accessibility. Customized surveys were prepared using Google Forms to collect data from respondents. The survey included various question types such as multiple-choice, open-ended, Likert scale, and more. Questionnaires were framed for gathering structured data and for assessing attitudes, behaviors, preferences, or demographic information.

Data was collected through forms and it was exported to spreadsheets for further analysis. Google Forms was a versatile and user-friendly platform for conducting the research.

Social media applications are increasingly being utilized by researchers for data collection due to their widespread use and the large amounts of data generated on these platforms. Social Media Applications like WhatsApp, Instagram and Snapchat were used to send forms to the respondents and collect the data from the target audience.

A structured questionnaire was used in this study as an instrument for data collection from respondents in a systematic and standardized manner. Unlike open-ended questions, which allow for free-form responses, structured questionnaires consist of closed-ended questions with predefined response options.

The chi-square test was used as a statistical technique to determine whether there is a significant association between the two categorical variables mentioned in the hypothesis of the study. Chi - Square is commonly used in research to test hypotheses about the independence of variables or to compare observed frequencies with expected frequencies. The chi-square test is considered as a powerful tool for analyzing categorical data and testing hypotheses. This test helped the formulated hypothesis of this study to be justified and relevant.

Universe of the study: The Universe of the study includes all the individuals from different age groups, specially focusing on the younger generations, as the future is dependent on the young crowd.

Sample: The sample had a combination of Individuals from different social and cultural backgrounds to represent a true sample.

**Sample Size:** The sample size of the data is 122.

**Sample Area:** The target audience were majorly from Mira Bhayandar area.

**Sampling Technique:**

Simple random sampling was used for sampling so that each member of the population has an equal chance of being selected to be part of the sample. The selection process was entirely random, with every individual or element in the population having an equal probability of being chosen.

The main purpose of the survey is to find whether the policy of taxation on individual carbon footprints will help to reduce carbon emission or not and how people will react to the policy if applied/ implemented. The imposition of tax on individual carbon footprint will force people to stop using their personal or private

ISSN–2277- 8721

EIIRJ Electronic International Interdisciplinary Research Journal

Volume–XIII, Issues – III May – June 2024

OPEN ACCESS Original Research Article

vehicle unnecessarily and to choose alternate options such as public transport like buses, trains or metro which will reduce the carbon footprint of individuals and will reduce the carbon emissions. Also increase in usage of public vehicles and tax on carbon footprint generates revenue to the government which can be used for infrastructural development like roads and bridges or means of transport such as buses.

**Results and Discussions:**

**Hypothesis:**

**H0: The preference of public and private transport is independent of the gender of the taxpayer.**

The null hypothesis tests the independence of gender preference of tax payer over the usage of public and private transportation for day-to-day use.

**H1: There is an influence of gender on the preference of public and private transportation on tax policy.**

The alternate hypothesis represents the preference of public and private transportation is not influenced by the gender of the taxpayer, the ideology is considered that says, women are not conscious regarding the taxation system as women are either homemakers and also they choose public transportation over private transportation.

A google form was rolled out to get the primary data, as the study is gender specific the primary data was analyzed on the number of males and females answering the survey. Out of 122 respondents, 81 were female that makes it a 66.4% of females and in total 41 males responded to the survey which makes it a 33.6% of male respondents.

The study focuses on reduction of carbon emissions in the environment by introducing taxation on the carbon emitted by individuals from their private vehicles. Two major questions were analyzed from the respondents, the first question interacted with the opinion of the individuals on whether carbon emissions have a significant impact on the environment and the majority of 98.4% of the respondents agreed with the fact that it has a significant impact and hence it proved that the respondents are aware. The second question considers the situation that the majority of individuals owning a private vehicle may increase the carbon emissions adversely and even for this question, the majority of respondents agreed that it may affect adversely.

The different aspect of the study includes analysis of two questions from the primary data. The first question understands the choice of the respondents on whether they use private vehicles to cover short distance destinations. Out of 122 respondents, 53 respondents used their private vehicles for covering a short distance to reach their destination, this covers 43.4% of the respondents. The second question gives the respondents a choice to choose an alternative to cover the short distance travel to reach their destination. The majority of the respondents agree to walk to the destination for a short distance. The respondents also agreed to use a cycle or to use a public transport facility available.

The study is about the impact and prevention of carbon emission through taxation policy for which a survey is conducted through google form consisting of various questions to collect the information and to know the point of view of participants.

Major findings of the survey are:

1. **Extent of awareness about carbon emission and its impact of carbon emission on environment:** The very first question was about to know if participants are aware about carbon emission or not and out of 122 participants 119 participants which is 97.5% of total participants are aware about the concept of carbon emission and 120 participants or 98.4% are agreed that carbon emission have an impact on environment.
2. **Purpose of using personal or private vehicle:** We asked our participants why they use their vehicles in day-to-day life and the responses are shown in table

ISSN–2277- 8721

EIIRJ Electronic International Interdisciplinary Research Journal

Volume–XIII, Issues – III May – June 2024

OPEN ACCESS Original Research Article

below:

| Particular | No of participants | Percentage |
|---|---|---|
| Travel to workplace | 50 | 41 |
| Travel to college | 30 | 24.6 |
| For household purpose | 58 | 47.5 |
| Others | 34 | 27.9 |

As per the responses the major purpose of using vehicles is household work responded by 58 participants followed by to travel to work place by 50 participants and then to travel to college. We can understand the main purpose of using a personal vehicle to do household chores and to reach college or office on time.

3. **Alternate option participants choose to reduce the usage of vehicle:**

Where vehicles became a vital part of day-to-day life of people, we asked them if they can choose some other or alternate option such as walking to the destination or using a cycle or using public transport when distance is short instead of using their personal vehicle. Major respondent says walking to the distance is the best alternate option to choose instead of using a personal vehicle followed by using the public transport facilities. This can be seen in table below:

| **Particular** | **No of participants** | **Percentage** |
|---|---|---|
| Walk to the destination | 86 | 70.5 |
| Use of cycle | 21 | 17.2 |
| Use of a public transport facility available | 72 | 59 |

4. Imposing tax on individuals' carbon footprints will help to reduce carbon emissions or not.

**Testing of hypothesis:**

The hypothesis of the study was tested by the Chi Square method that is the statistical technique of testing hypothesis. Chi Square under 5% level of significance and Degree of freedom (1), Chi Square tabulated is 3.841 but on the contrary the Chi Square Calculated is 0.861, hence Chi Square tabulated is greater than the Chi Square Calculated, therefore Null Hypothesis was proved. The Chi Square test concludes that the preference of public and private transport is independent of the gender of the taxpayer.

**Limitations:** "The carbon tax on fuel aims to restructure economies by raising the cost of a critical resource- the juice that makes them run. But restructuring takes time as people, capital and other resources do not flow seamlessly into new sectors."

**Suggestions:**

1. It is suggested to improve the efficiency of the public transport and the introduction to private companies in public transportation will be effective (Ex. Metro and cityflo).
2. It may also be suggested to provide cycle parking space near railway stations and a cycling lane for convenient travel & avoid accidents.

**Conclusion:**

After conducting a comprehensive study on the impact and prevention of carbon emissions, it is evident that urgent action is required to mitigate the adverse effects of climate change. Carbon emissions, primarily from the combustion of fossil fuels, significantly contribute to global warming and its associated environmental, social, and economic consequences.

However, one of the most impactful measures that emerged from our analysis is the implementation of a carbon tax. By imposing a tax on carbon emissions, we can internalize the external costs associated with greenhouse gas pollution, incentivize businesses and individuals to reduce their carbon footprint, and stimulate innovation in clean energy technologies.

Therefore, we strongly advocate for the introduction of a carbon tax as a crucial policy tool in combating climate change. Such a measure not only addresses the

ISSN–2277- 8721

EIIRJ Electronic International Interdisciplinary Research Journal

Volume–XIII, Issues – III May – June 2024

OPEN ACCESS Original Research Article

root cause of carbon emissions but also generates revenue that can be reinvested in further environmental initiatives and support vulnerable communities affected by climate-related disasters.

Carbon taxes are a practical way to have consumers and producers take account of the social cost of pollution that increases greenhouse gases. The amount of CO2 associated with burning a ton of coal or a gallon of gasoline, or producing a term of energy from natural gas, is a physical constant. Carbon taxes can therefore be accurately assessed in terms of how the reduction in the use of coal, gasoline or natural gas leads to a reduction in the emission of carbon dioxide. Some evidence has started to emerge pointing to a reduction in greenhouse emissions in some of the countries where carbon taxes have been enacted. By increasing the cost of the goods associated with CO2 emissions, a carbon tax reduces demand for those "dirty" goods. With carbon taxes in place, people would be expected to drive less, purchase more energy efficient vehicles and appliances, and switch to more efficient sources of energy. These shifts in demand reduce greenhouse emissions. it has been found that emissions have declined in Finland, Denmark, Sweden and the Netherlands relative to those in other 13 European countries in which carbon taxes are not in place.[3]

In conclusion, the adoption of a carbon tax represents a vital step towards achieving a sustainable and resilient future for our planet. It is imperative for policymakers to take bold and decisive action in implementing this policy measure to safeguard the health of our environment and ensure the well-being of current and future generations.

**References:**

*Javier Cuervo and Ved.P.Gandhi, distributed by Vito Tanzi (2009). Carban Taxes: Their Macroeconomices effects and propects for Global adoption - A survey of the literature, Page no. 1 https://www.imf.org/external/pubs/ft/wp/wp9873.pdf*

*By Gilbert Metcalf· Tufts University, Co writter - Beatriz Yemail (May 3, 2019). Carbon Taxes: What Can We Learn From International Experience? Page no. 1 https://econofact.org/carbon-taxes-what-can-we-learn-from-international-experience*

*Roumeen Islam, Economic Advisor, Infrastructure Practice Group, World Bank (2022). "What a carbon tax can do and why it cannot do it all Page no. 1 https://blogs.worldbank.org/en/energy/what-carbon-tax-can-do-and-why-it-cannot-do-it-all*

***Cite This Article:***

**Dr. Datta S. , Sisodia R.P., Shirazi H.A. & Kanojia K.K. (2024).** *A Detailed Study on Impact And Prevention of Carbon Emissions through Taxation Policy*. In Electronic International Interdisciplinary Research Journal: Vol. XIII (Number III, pp. 29–33). **DOI.** ***https://doi.org/10.5281/zenodo.11311283***