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Carbon Taxation: A Global Scenario

Prabhuti Rathore[1], Dr. G. Soral[2]

[1]Research Scholar, Department of Accountancy and Business Statistics, Mohanlal Sukhadia University, Udaipur
[2]Former Professor, Department of Accountancy and Business Statistics, Mohanlal Sukhadia University, Udaipur

Abstract
Reducing the amount of fossil fuel combustion is essential to lowering the concentration of greenhouse gases in the earth's atmosphere that trap heat. By discouraging the use of fossil fuels and promoting the switch to cleaner fuels, a carbon tax might reduce emissions of carbon dioxide (CO2), the most common greenhouse gas. Carbon taxes can address climate change by lowering greenhouse gas emissions, but they can also have more immediate positive effects on the environment and human health, especially by lowering the number of fatalities brought on by local air pollution. Additionally, they have the potential to generate large sums of money for governments, which they may employ to offset the negative economic effects of rising fuel costs. The present study focuses on carbon tax policy implantation in different countries. It also studies the share of CO2 emission covered by carbon tax and ETS both globally. ANOVA has been used to test the hypothesis. It was discovered that over time, there was no discernible change in the CO2 emissions that each country's carbon price and ETS covered. This demonstrates that the nations could have comparable goals for reducing emissions or be employing comparable strategies to meet these goals.

Keywords: Carbon Tax, Carbon di oxide emissions (CO2 emissions) , Emission trading Scheme (ETS), Tax Policy, Greenhouse Gas Emissions

Introduction:

Many activities that generate carbon emissions, such as burning fossil fuels for energy and transportation, impose external costs on society. These costs include the adverse effects of climate change, such as extreme weather events, sea-level rise, and health problems. A carbon tax helps internalize these costs by making polluters pay for the damage they cause, encouraging a more accurate reflection of the true environmental impact of their actions. Former UK environment minister Ridley Nicholas made one of the first suggestions for a carbon tax, which was later repeated in the Pearce report of the Department of Environment as a way to value environmental gains and losses. A carbon tax is applied to emissions resulting from the production of goods and services, often referred to as a pollution tax. By making carbon-laden fuels more expensive, it pushes energy conservation, changes in consumer behaviour, and the adoption of energy-efficient equipment and procedures. The purpose of a carbon tax is to slow down global warming, often within the framework of established goals for limiting or lowering greenhouse gas emissions while taking into consideration available scientific data, the potential costs of inactivity, and the possibility of achieving some carbon reduction at no net cost. This levy is imposed on businesses utilizing natural gas, coal, gasoline, fossil fuels, and oil. Governments establish a cost for greenhouse gas emissions,

specifically targeting carbon emissions, obligating emitters to compensate for each metric ton of carbon they release. Theoretically, taxing carbon dioxide at a consistent rate and monitoring all emissions would be the ideal approach. With this strategy, families and emitters would have a constant and all-encompassing incentive to switch to less carbon-intensive consumption and production. Unfortunately, considering the quantity of sources, such monitoring would be unaffordable. This framework anticipates that both companies and consumers will take proactive measures, such as embracing innovative technologies or adopting alternative energy sources, to decrease their carbon emissions and circumvent the necessity of paying the carbon tax.

Objectives of the study:

1. To study the carbon tax policy implementation globally.
2. To study the share of CO2 emissions covered by carbon tax and Emission Trading Scheme.
3. To study the share of CO2 emission covered by both carbon tax and ETS as a share of the country's total CO2 emissions globally.

Research Hypothesis:

Following hypothesis will be tested:

H_{01}: There is no significant difference in the share of CO2 emission covered by a carbon tax and Emission trading system.

H_{02}: There is no significant difference in CO2 Emissions covered by Carbon tax and Emission Trading System of the countries over the years.

Data Collection:

In this study, information has been collected from Secondary Sources. Secondary data is collected from internet, books and research papers published in renowned journals. The Data for the has been collected from the website of UNFCCC majorly.

ANOVA has been used to test the research Hypothesis.

1. Carbon Tax Implementation:

The implementation of carbon taxes varies by nation and area, and political, economic, and environmental reasons may cause changes to the exact years that they are imposed. Table 1.1 below have presented countries list that have introduced carbon taxes:

Table 1.1: Countries that have introduced carbon taxes by the year 2020

Argentina	Iceland	Portugal
Canada*	Ireland	Singapore
Chile	Japan	Slovenia
Columbia	Latvia	South Africa
Denmark	Liechtenstein	Sweden
Estonia	Mexico	Switzerland
Finland	Norway	Ukraine
France	Poland	United Kingdom

*Canada Taxation Policy is implemented at a sub national level

Source: Dolphin and Xiahou (2022), World carbon pricing database

Of all the countries in the world, only twenty-four have national and subnational carbon taxes in place. Countries utilise carbon taxes as a weapon for policy in order to combat climate change and lower emissions of greenhouse gases, especially carbon dioxide (CO2). The necessity and relevance of the carbon tax might differ between countries due to their unique environmental aims and conditions. As a result, the implementation of the tax is influenced by these differences.

Here's some specific country-wise breakdown of the need and significance of carbon taxing:

1. **United States:Need:** The United States is among the top emitters of carbon worldwide. Industry and individual incentives to cut emissions and switch to greener energy sources can be provided via carbon taxes.

Significance: In addition to generating income that can be put back into infrastructure and clean energy initiatives, it can help the nation fulfil its goal to reducing emissions in accordance with global climate accords.

2. **China:**

Need: China is the biggest carbon emitter in the world. Carbon taxation can encourage the switch to greener technology while slowing the rate of increase in emissions.

Significance: It is consistent with China's objective to reach carbon neutrality by 2060 and peak emissions by 2030. Additionally, it can finance expenditures for low-carbon infrastructure and renewable energy.

3. **European Union (EU):**

Need: The EU has set high goals for reducing emissions. By putting a price on emissions outside of the ETS sectors, carbon taxation enhances current programmes like the Emissions Trading System (ETS).

Significance: In addition to generating income for climate action and the green recovery, it aids in maintaining a uniform carbon price system throughout EU members.

4. **Canada:**

Need: Canada is facing difficulties because of its reliance on fossil fuels, despite its commitment to decreasing emissions. Carbon taxes can promote the switch to sustainable energy sources and encourage emission reductions.

Significance: It offers funding for provinces to invest in climate projects and supports their climate policy.

5. **Australia:**

Need: Australia is particularly vulnerable to the effects of climate change, especially extreme weather. Taxing carbon can lower emissions and lessen the threat of climate change.

Significance: It can help Australia meet its carbon reduction objectives and facilitate the country's switch to greener energy sources.

6. **South Africa:**

Need: Carbon taxes can encourage cleaner energy and lower emissions in South Africa, a country that relies heavily on coal.

Significance: It can assist in funding climate adaptation and mitigation initiatives and is consistent with South Africa's climate pledges.

7. **Brazil:**

Need: Brazil is experiencing more frequent droughts and emissions linked to deforestation. Carbon taxes can lower emissions from deforestation and help preserve the nation's forests.

Significance: It can finance initiatives to save forests and back Brazil's adherence to the Paris Agreement.

8. Japan:

Need: Japan is making efforts to lower emissions in the wake of the Fukushima nuclear accident. A move to renewable energy sources and energy efficiency can be encouraged by a carbon price.

Significance: It can help Japan achieve its renewable energy transition goals and meet its emissions reduction ambitions.

9. United Kingdom:

Need: The UK has legally enforceable goals for reducing emissions. Carbon taxes encourage the switch to greener energy sources and assist in lowering emissions from energy use.

Significance: It helps the UK achieve its climate goals and generates income for initiatives pertaining to climate resilience and renewable energy..

10. Ukraine:

Need: Ukraine's economy relies heavily on carbon. Carbon taxes have the potential to promote energy efficiency and lower emissions.

Significance: It is consistent with Ukraine's endeavours to update its energy industry and lessen its carbon emissions.

11. Switzerland:

Need: Switzerland has set high goals for reducing its emissions. Carbon taxes are one way to encourage different industries to reduce their emissions.

Significance: It facilitates Switzerland's shift to sustainable energy and supports its climate policy.

12. Sweden:

Need: By 2045, Sweden wants to be carbon neutral. Transportation and industrial emissions are reduced with the use of carbon fees.

Significance: It supports Sweden's climate goals and generates income for eco-friendly projects.

13. Slovenia:

Need: Slovenia has established goals for reducing emissions. Carbon taxes have the potential to encourage energy efficiency and lower emissions.

Significance: It supports Slovenia's climate goals and generates income for environmentally friendly initiatives.

14. Singapore:

Need: Singapore wants to enhance air quality and lower emissions. Reductions in emissions are encouraged by carbon fees.

Significance: It can provide funding for sustainable energy projects and backs Singapore's environmental objectives.

15. Mexico:

Need: Mexico has problems with transportation and industry pollution. Reductions in emissions are encouraged by carbon fees.

Significance: It can provide funding for sustainable development initiatives and supports Mexico's climate goals.

16. Liechtenstein:

Need: Liechtenstein has set emission reduction targets. Carbon taxes can encourage energy efficiency and emissions reductions.

Significance: It aligns with Liechtenstein's climate objectives and provides revenue for green projects.

17. Colombia, Chile, Canada, Argentina:
Need: These nations have pledged to reduce their emissions. Emissions reductions across a range of industries can be encouraged by carbon prices.
Significance: It helps them achieve their climate objectives and generates income for investments in green projects and climate action.
18. Denmark:
Need: Denmark wants to cut emissions in all areas. Emissions reductions can be encouraged via carbon taxes.
Significance: It supports Denmark's climate goals and generates income for environmentally friendly initiatives.
19. Estonia:
Need: Estonia faces difficulties with emissions due to its energy industry. A move towards greener energy sources may be encouraged by carbon fees.
Significance: It can help reduce emissions and is in line with Estonia's climate goals.
20. France:
Need: France has high standards for climate change. Transport and industrial emissions are reduced with the use of carbon levies.
Significance: It supports French climate legislation and generates income for environmentally friendly initiatives.
21. Finland:
Need: Finland wants its emissions to go down. Carbon taxes contribute to a decrease in emissions caused by energy use.
Significance: It can finance renewable energy projects and is consistent with Finland's climate aims.
22. Ireland:
Need: Ireland has set goals for reducing its emissions. Carbon taxes contribute to a decrease in emissions caused by energy use.
Significance: Ireland has set out to lower its carbon footprint. Carbon taxes help reduce emissions brought on by energy consumption.
23. Iceland:
Need: Iceland produces pollutants even if it uses geothermal energy. Carbon taxes have the potential to encourage energy efficiency and lower emissions.
Significance: It can finance environmentally friendly projects and backs Iceland's climate goals.
24. Latvia:
Need: Latvia has set targets for reducing its emissions. Carbon taxes have the potential to encourage energy efficiency and lower emissions.
Significance: It can finance environmentally friendly projects and backs Latvia's climate aspirations.

2. Carbon Tax or Emissions Trading System Share to Cover World's CO2 Emissions:
The establishment of a worldwide carbon pricing mechanism is necessary if we are to include the environmental effect of fuels and products in their market prices. About 12% of emissions in 2020 came from industries or nations that have implemented a carbon price, whereas only 6% came from trading schemes. This means that 18% of global emissions were covered by carbon pricing schemes taken as a

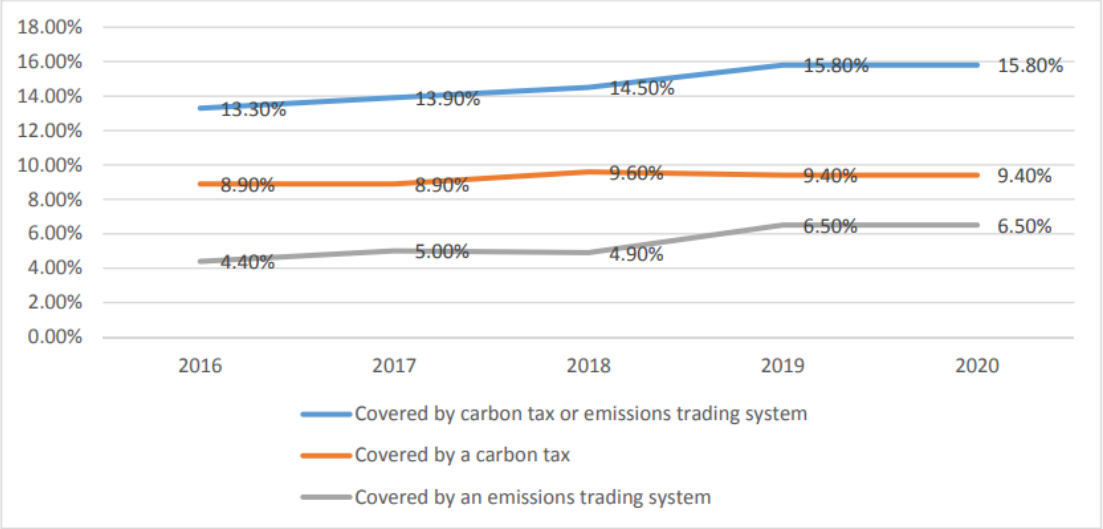
whole. It should be noted that this data is up to date as of 2020. With the implementation of China's national emissions trading scheme in 2021, the coverage greatly increased, covering 25% of global CO2 emissions.

Table 2.1: Share of CO_2 Emissions Covered by a Carbon Price

Carbon Price Components	2016	2017	2018	2019	2020
Covered by carbon tax or emissions trading system	13.3%	13.9%	14.5%	15.8%	15.8%
Covered by a carbon tax	8.9%	8.9%	9.6%	9.4%	9.4%
Covered by an emissions trading system	4.4%	5.0%	4.9%	6.5%	6.5%
Difference %	4.50%	3.90%	4.70%	2.90%	2.90%

Source: UNFCCC, Data Compiled on the Share of CO_2 emissions covered by a carbon Price, World wide

Graph 2.1: Share of CO_2 Emissions Covered by a Carbon Price



Source: Table 2.1

The aforementioned Table and Graph figures, which show the Share of CO2 Emissions Covered by a Carbon Price under several headings, suggest an increased trend in the composite coverage of CO2 emissions in terms of percentage from emission trading systems or carbon taxes. The coverage from the emission trading system or carbon tax was 13.3% in 2016, 13.9% in 2017, 14.5% in 2018, 15.8% in 2019, and 15.8% in 2020. In addition, it can be noticed that between carbon tax and the emission trading system, Carbon tax had the greatest percentage coverage against CO2 emissions. Highest difference was noticed in 2018 (4.70%) in terms of coverage against CO2 emission between carbon Tax and Emission trading scheme. The least difference was noticed in year 2019 and 2020 (2.90%)

In order to statistically measure the significance of the difference in the coverage against to CO2 by Carbon Tax and Emission Trading System over the years (2016-2020) ANOVA test was applied over the dataset presented in above Table. Following hypothesis is under evaluation.

H_{01}: There is no significant difference in the Share of CO_2 Emissions Covered by a Carbon Tax and Emission Trading System.
H_{a1}: There is significant difference in the Share of CO_2 Emissions Covered by a Carbon Tax and Emission Trading System.

Table 2.2: Summary: Share of CO_2 Emissions Covered by a Carbon Tax and Emission Trading System

Groups	Count	Sum	Average	Variance
Covered by a carbon tax	5	0.462	0.0924	0.0000103
Covered by an emissions trading system	5	0.273	0.0546	0.0000953

Source: Primary Data

From the above Table of Summary: Proportion of CO2 Emissions Covered by both an Emission Trading System and a Carbon Tax, it may be interpreted that there is a discernible difference between the average values for the CO2 coverage provided by the Emission Trading System (0.0546) and the Carbon Tax (0.0924), indicating a significant difference in the coverage provided by these two policies.

Table 2.3: ANOVA: Share of CO_2 Emissions Covered by a Carbon Tax and Emission Trading System

Source of Variation	SS	df	MS	F	P-value	F Crit
Between Groups	0.00357	1	0.003572	67.6534091	3.574E-05	5.31765507
Within Groups	0.00042	8	5.28E-05			
Total	0.00399	9				

Source: Primary Data

From the above Table of ANOVA: Share of CO_2 Emissions Covered by a Carbon Tax and Emission Trading System, it could interpret that significant difference in average values were noticed, this confirms that coverage of CO_2 by Carbon Tax and Emission Trading System over the years have significant difference ($F = 67.6534091$, P-Value = 3.574E-05 < 0.05). Hence, Ha7 “There is significant difference in the Share of CO_2 Emissions Covered by a Carbon Tax and Emission Trading System” is accepted.

Table 2.4: Share of CO_2 Emissions Covered by a Carbon Tax and Emission Trading System (2016-2020)

Entity	CO_2 emissions covered by a carbon tax or an ETS as a share of the country's CO_2 emissions (in%)				
	2016	2017	2018	2018	2020
Argentina	-	-	33.16659 (100)	35.45002 (106.8)	35.45002 (106.8)
Austria	29.92792 (100)	30.77487 (102.83)	28.829988 (96.3)	28.82999 (96.3)	28.82999 (96.3)

Belgium	36.48894 (100)	36.46644 (99.9)	37.009724 (101.4)	37.00972 (101.4)	37.00972 (101.4)
Bulgaria	64.77129 (100)	65.93967 (101.8)	62.983025 (97.2)	62.98303 (97.2)	62.98303 (97.2)
Canada	15.37143 (100)	24.58579 (159.9)	43.537918 (283.2)	51.71978 (336.4)	51.55767 (335.4)
Chile	-	53.88345 (100)	52.350693 (97.1)	52.35069 (97.1)	52.35069 (97.1)
China	8.315967 (100)	8.622542 (103.7)	9.136627 (109.8)	9.170012 (110.2)	9.170012 (110.2)
Colombia	-	11.43982 (100)	11.28142 (98.8)	11.28142 (98.6)	11.28142 (98.6)
Croatia	36.19509 (100)	33.982 (93.8)	32.33892 (89.3)	32.33892 (89.3)	32.33892 (89.3)
Cyprus	51.99902 (100)	50.97007 (98.02)	51.80499 (99.6)	51.80499 (99.6)	51.80499 (99.6)
Czechia	59.09021 (100)	58.7934 (99.4)	59.10115 (100.01)	59.10115 (100.01)	59.10115 (100.01)
Denmark	84.65212 (100)	83.38717 (98.5)	85.7004 (101.2)	85.7004 (101.2)	85.7004 (101.2)
Estonia	7.159323 (100)	6.585463 (91.9)	8.7205 (121.8)	8.7205 (121.8)	8.7205 (121.8)
Finland	87.17738 (100)	86.59072 (99.3)	86.48684 (99.2)	86.48684 (99.2)	86.48684 (99.2)
France	84.05624 (100)	84.16992 (100.1)	84.35126 (100.3)	84.35126 (100.3)	84.35126 (100.3)
Germany	48.0869 (100)	46.81163 (97.3)	46.935577 (97.6)	46.93558 (97.6)	46.93558 (97.6)
Greece	55.23409 (100)	57.01924 (103.2)	56.397526 (102.1)	56.39753 (102.1)	56.39753 (102.1)
Hungary	38.81194 (100)	39.00795 (100.505)	38.05648 (98.05)	38.05648 (98.05)	38.05648 (98.05)
Iceland	55.61463 (100)	54.13688 (97.3)	55.918926 (100.5)	55.91893 (100.5)	55.91893 (100.5)
Ireland	90.52383 (100)	89.73709 (99.1)	88.90448 (98.2)	88.90448 (98.2)	88.90448 (98.2)
Italy	38.26034 (100)	38.87921 (101.6)	36.93039 (96.5)	36.93039 (96.5)	36.93039 (96.5)
Japan	70.87209 (100)	70.49796 (99.4)	68.4542 (96.5)	68.4542 (96.5)	68.4542 (96.5)
Kazakhstan	-	-	49.99183	49.99183	49.99183

			(100)	(100)	(100)
Latvia	29.33873 (100)	26.0995 (88.9)	29.564169 (100.7)	29.56417 (100.7)	29.56417 (100.7)
Lithuania	27.4168 (100)	25.07925 (91.4)	24.895344 (90.8)	24.89534 (90.8)	24.89534 (90.8)
Luxembourg	11.40717 (100)	10.80363 (94.7)	10.35229 (90.7)	10.35229 (90.7)	10.35229 (90.7)
Malta	41.86504 (100)	48.45153 (115.7)	46.53851 (111.16)	46.53851 (111.16)	46.53851 (111.16)
Mexico	57.15344 (100)	56.25008 (98.4)	55.606777 (97.2)	55.60678 (97.2)	55.60678 (97.2)
Netherlands	51.31112 (100)	50.26536 (97.9)	49.464703 (96.4)	49.4647 (96.4)	49.4647 (96.4)
New Zealand	79.89143 (100)	80.78652 (101.12)	81.52015 (102.03)	81.52015 (102.03)	81.52015 (102.03)
Norway	44.12539 (100)	45.67646 (103.5)	47.085384 (106.7)	47.08538 (106.7)	47.08538 (106.7)
Poland	51.01736 (100)	49.9269 (97.8)	49.081947 (96.2)	49.08195 (96.2)	49.08195 (96.2)
Portugal	93.81519 (100)	89.5726 (95.4)	89.6654 (95.5)	89.6654 (95.5)	89.6654 (95.5)
Romania	47.43794 (100)	47.29986 (99.7)	45.608555 (96.1)	45.60856 (96.1)	45.60856 (96.1)
Singapore	-	-	-	63.16261 (100)	63.16261 (100)
Slovakia	48.02567 (100)	46.55447 (96.9)	45.370663 (94.4)	45.37066 (94.4)	45.37066 (94.4)
Slovenia	47.25404 (100)	48.00483 (101.5)	48.13871 (101.8)	48.13871 (101.8)	48.13871 (101.8)
South Africa	-	-	-	87.8466 (100)	87.8466 (100)
South Korea	60.90623 (100)	60.71848 (99.6)	63.78445 (104.7)	63.78445 (104.7)	63.78445 (104.7)
Spain	41.66079 (100)	44.14785 (105.9)	42.760197 (102.6)	42.7602 (102.6)	42.7602 (102.6)
Sweden	76.69047 (100)	76.09506 (99.2)	70.85897 (92.3)	70.85897 (92.3)	70.85897 (92.3)
Switzerland	33.67072 (100)	32.88324 (97.6)	31.470793 (93.4)	31.47079 (93.4)	31.47079 (93.4)

Ukraine	-	77.21115 (100)	80.04423 (103.6)	80.04423 (103.6)	80.04423 (103.6)
United Kingdom	35.12775 (100)	33.84581 (96.3)	31.318907 (89.1)	31.31891 (89.1)	31.31891 (89.1)
United States	6.792449 (100)	6.608686 (97.2)	6.910931 (101.7)	6.910931 (101.7)	6.910931 (101.7)

Source: UNFCCC

(Note: Values mentioned in brackets depicts the percentage change in values keeping starting year as base year)

An upward/ increasing trend in the CO_2 Emissions Covered by a Carbon Tax and Emission Trading System indicates following important implications:

1. It showed that current regulations are not strict enough to encourage a decrease in emissions.
2. It can indicate that the trading system's emission limits are excessively lax, permitting businesses to continue polluting without incurring large financial penalties.

A downward/ decreasing trend in the CO_2 Emissions Covered by a Carbon Tax and Emission Trading System indicates following important implications:

1. The broad consensus is that a declining trend in CO2 emissions covered by these regulations is a good thing. It implies that the system of emission trading and the carbon price are influencing the reduction of emissions.
2. A downward trend might suggest that the carbon price is successfully deterring carbon-intensive activities and promoting the use of greener technology.
3. If businesses are able to lower their emissions or buy emissions credits from other parties, it may also mean that the carbon trading mechanism is working well.

Following observations can be drawn from the results presented in the above Table 2.4:

1. A similar trend can be noticed in above table for majority of countries:

- A normal increasing or decreasing trend with very slight increase or decrease was noticed for major countries.
- No sudden high or drop in percentage values was noticed.
- It was observed that the values have remained constant for the years 2018, 2019 & 2020 for most of the countries. No rise or fall in percentage values has been noticed in them in comparison to year 2017.
- Most countries have shown a slight drop in 2017 and then an increase from year 2018.

2. Canada has shown an increasing trend with significant rise in values. The share of CO_2 emissions covered by carbon tax & Emission trading Schemes has rose upto 336.46% in 2019 from the base year i.e. 2016.
3. For Kazakhastan, it was noticed that the percentage coverage is same for all the three years i.e. 2018, 2019 & 2020.
4. For Singapore and South Africa, the data present was only for year 2020 so no trend analysis can be made.

In order to statistically measure the significance of the difference in the CO_2 Emissions Covered by a Carbon Tax and Emission Trading System in between the countries over the years ANOVA test was applied over the dataset presented in above Table. Following hypothesis is under evaluation:

H_{02}: There is no significant difference in the CO_2 Emissions Covered by Carbon Tax and Emission Trading System of the countries over the years.

H_{a2}: There is significant difference in the CO_2 Emissions Covered by Carbon Tax and Emission Trading System of the countries over the years.

Table 2.6: ANOVA: Year and Country Wise CO_2 Emissions Covered by a Carbon Tax and Emission Trading System

Source of Variation	SS	Df	MS	F	P-value	F Crit
Between Groups	102.4886	4	25.62216	0.046505	0.9959	2.414235
Within Groups	116803	212	550.9575			
Total	116905.5	216				

From the above Table of ANOVA: Year and Country Wise CO_2 Emissions Covered by a Carbon Tax and Emission Trading System, it could interpret that insignificant difference in average values were noticed this confirms that country wise CO_2 Emissions Covered by a Carbon Tax and Emission Trading System over the years have insignificant difference ($F = 0.046505$, P-Value $= 0.9959 > 0.05$). Hence, H08 "There is no significant difference in the CO_2 Emissions Covered by Carbon Tax and Emission Trading System of the countries over the years' is accepted.

Conclusion:

One kind of fine that companies face for their excessive greenhouse gas emission is a carbon tax. Typically a tax is imposed on each tonne of greenhouse gas emissions. Business and industries that emit CO2 during their activities are required to pay a carbon tax. The tax is intended to incentivize these companies to cut back on the amount of GHG and carbon di oxide – an odourless, colourless, incombustible gas – that they release into the environment.

These days, carbon taxes are applicable to many different sectors & include innovative characteristics that show how flexible they are to different national contexts and policy objectives. Because carbon taxes are so flexible; decision makers must have a comprehensive understanding of all their alternatives as well as how they align with the goods and circumstances of the relevant jurisdiction.

From the carbon tax implementation status by different countries it was noticed that the overall status of carbon tax implementation has been influenced by various factors, including will, public sentiment, economic consideration, and the urgency to combat climate change. Many countries had implemented carbon taxes, while others were in the process of planning or considering such measures. It came into notice that carbon price components covered by carbon tax or ETS is increasing year by year. The year coverage of CO2 emission from carbon tax was 8.9% in 2016 & 2017, 9.6% in 2018, 9.4% in 2019 & 2020.

Further it was also noticed that there is a significant difference in share of Co2 emissions covered by a carbon tax and ETS. No significant difference in CO2 emissions covered by carbon tax & ETS of the countries over the years was observed which confirms that the countries may have setting similar emission reduction targets or using similar mechanisms to achieve these targets, this can confirm a collective commitment to addressing climate change on a global scale. It can be concluded that an increase in share of carbon tax or ETS coverage can provide stronger economic incentives for reducing CO2 emissions, which can help accelerate global emission reductions. A wider application of carbon pricing can lead to more significant environmental benefits, such as reduced greenhouse gas emissions, cleaner air & a transition to low carbon technologies.

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