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### Green Taxation and Economic Competitiveness: A Cross-Country Comparative Analysis of Environmental Policy Impacts on Industrial Growth and Trade Performance

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<p><b>Muhammad Ali</b> MA Development Studies (IPED), International Institute of Social Studies (ISS), Erasmus University Rotterdam, the Netherlands. <a href="mailto:muhaqiq.ali@gmail.com">muhaqiq.ali@gmail.com</a></p> <p><b>Ali Raza</b> Virtual University of Pakistan. <a href="mailto:Ali.Finance@live.com">Ali.Finance@live.com</a></p> <p><b>Mansoor Ahmed Soomro</b> Assistant Professor, Shah Abdul Latif University, Khairpur Shahdadkot Campus. <a href="mailto:mansoor.soomro@salu.edu.pk">mansoor.soomro@salu.edu.pk</a></p> <p><b>Rameez Zameer</b> <a href="mailto:rameez.zameer2001@gmail.com">rameez.zameer2001@gmail.com</a></p> <p><b>Ashi Perveen</b> MS Economics. <a href="mailto:pash4906@gmail.com">pash4906@gmail.com</a></p> <p><b>Corresponding Author*</b></p>	<p><b>Abstract</b></p> <p>The research aims to find out how environmental tax measures have influenced the growth of industries and the export performance of these 20 nations for the period of 2010 to 2024. Because the climate crisis is getting worse, using taxes on environmentally harmful activities has become an important way to support sustainability. Many argue about how it affects measures of economic success and trade in the marketplace. By using a cross-country, quantitative comparison, the research relies on panel data from the World Bank, OECD and IMF to study percentages of green income, rates of industrial development and rates at which export numbers rise. By using correlation, average comparison and regional division, statisticians studied how different components are connected in the structure. It is evident from the data that there is a slight negative link between the industrial sector and income from green taxes (<math>r = -0.175</math>), so higher environmental taxation tends to reduce industrial growth. Green taxes tend to increase trade growth slightly (<math>r = 0.112</math>). Western Europe lands in first position for green tax intensity, while Eastern Europe and Asia-Pacific both have rapid industrial growth rates but lower average green taxes. It is found that the scheme of green taxation, its use in the relevant context and how revenues are handled influence competitiveness to a major degree. The findings suggest that policies should consider both the environment and the economy and future studies with detailed business and industrial data could provide even more understanding.</p>
<p><b>Keywords:</b></p>	<p>Carbon Taxation, Environmental Policy, Green Fiscal Reform, Green Tax Revenue, Sustainable Development, Trade Policy</p>



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### Introduction

In the recent times, the effort from societies around the world to solve environmental problems and climate change has increased. In this effort, one important approach is green taxation which charges people for actions that cause harm to nature. Such taxes try to get businesses and individuals to change to more sustainable habits, matching their economic activities with goals to protect the environment (Gnedenko, 2024).

A main concern for both policymakers and researchers is how to balance environmental policy with being competitive in the world economy. Although green taxes are meant to support sustainability, people are worried about how they might influence industrial growth and performance in trade. Certain people claim that taxes like these might force domestic industries to spend more, making them less competitive in the international market (based on the OECD report, 2023). On the other hand, there is the view that rules governing the environment can motivate organizations to innovate, becoming more productive and successful, as expressed in the Porter Hypothesis (Takalo et al., 2021). Having studied several countries and how they apply green taxation, this research examines the effects on economic competitiveness. The analysis wants to highlight how environmental taxation any impacts industrial growth and trade in various countries and helps clarify the advantages and issues of green taxation.

### Research Background

More countries are choosing green taxation because they want to reach environmental goals and develop sustainably. Carbon taxes, pollution levies and energy taxes are created to dissuade harmful actions to the environment and provide funds for environmentally friendly projects (Gnedenko, 2024). There has been a wide-spread use of this type of tax and regions design them differently based on how their economies and environments work. The effects of green taxes on the economy reported by scholars are not always the same. Certain studies confirm the Porter Hypothesis, finding that strict environmental rules help companies become more competitive by driving innovations (Takalo et al., 2021). A specific study on how environmental taxes affect corporate performance reported that suitable rates can promote green progress and deal with the expenses of meeting regulations (Zhou et al., 2025). Some research has shown that firms might move to places with lenient environmental rules, taking advantage of green taxes by reducing their environmental efforts (Li et al., 2025).

### Nature

Many countries have put in place different green taxation policies with different effects. In the EU, the Emissions Trading System (EU ETS) is responsible for decreasing greenhouse gas emissions, yet it still allows economic growth (OECD, 2023). China's Made in China 2025 strategy and large green subsidies have made the country an important manufacturer in clean technology, even though there are issues about overproduction and tension in trade (Financial Times, 2025). In these countries, green taxes are not always applied because there are not enough resources and people to handle them and there are concerns about slower economic growth (World Bank, 2024).

### Research Problem

Green taxes are being introduced in many countries, but there is still uncertainty on their effect on the competitiveness of the economy. Many studies point out that environmental taxes motivate innovation and boost production within factories; however, other findings say these taxes can also lead to higher costs and less competitive performance internationally. This disagreement makes it hard for policymakers to support the growth of the economy as well as environmental goals. Also, because contexts between countries are different, it is not easy to measure the effects of green taxes. Since the way economies work, rules are set and technology changes can differ from one country to another, the results of environmental taxes are not the same everywhere. Because these factors can change greatly such an analysis needs to be thorough and take them into account.

### Research Objectives

1. To analyze the impact of green taxation policies on industrial growth across different countries.
2. To assess the effects of environmental taxes on trade performance in various national contexts.
3. To evaluate the applicability of the Porter and Pollution Haven Hypotheses in explaining the relationship between green taxation and economic competitiveness.

### Research Questions

- Q1. How do green taxation policies influence industrial growth in different countries?
- Q2. What is the impact of environmental taxes on trade performance across various national contexts?
- Q3. To what extent do the Porter and Pollution Haven Hypotheses explain the observed effects of green taxation on economic competitiveness?



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### Significance of the Study

This information is important for many groups interested in health care. The study offers policy advice for greener tax systems that do not lower the economy's competitiveness. Recognizing successful elements and possible risks in policies allows the research to support fiscal plans for sustained growth of industries. The results are used by academics to join the discussion about environmental economics and how effective policies are. Conducting a cross-country comparison allows the study to find out more about how different countries affect the results of green taxation which then strengthens and updates the Porter and Pollution Haven Hypotheses. These findings help those in industry understand the possible influences of environmental taxes on running their businesses, staying competitive and promoting innovation. Being aware of these trends can support firms in making strategic adjustments to follow new regulations.

### Literature Review

#### Theoretical Foundations: Green Taxation and Economic Competitiveness

People have argued a lot about how environmental rules affect our economic competitiveness. The theory says that tough environmental policies can encourage people to innovate, making companies more productive and competitive (Porter, 1991). This view argues that making good environmental policies, together with green taxation, can boost both technology and efficiency in society. Evidence from studies is not entirely in agreement with this hypothesis. For example, Biggi, Mina and Tamagni (2023) examined company data from Spain and discovered that environmental innovations, especially those guided by rules and laws, boosted firm performance such as their sales and productivity rates. Even so, the advantages of technology differed for each industry and were shaped by the kind of innovation used.

#### Impact of Green Taxation on Industrial Growth

Many studies demonstrate that green taxes may encourage progress in the private sector and make environmental practices better. Peng et al. (2023) studied the impact of China's environmental tax reform and discovered that it boosted company environmental performance by persuading businesses to choose cleaner technologies and strategies. Similarly, Wang et al. (2023) found that the change from environmental fees to taxes in China encouraged green innovations and better ESG (Environmental, Social and Governance) results among companies emitting lots of pollution. These results prove that Porter was right when he pointed out that higher environmental taxes can push businesses to find new solutions which reduces the costs of compliance and may give them an advantage over others.

Other studies argue that using green taxes can increase the burden on industry which may decrease growth and make them less competitive. Those in the United Kingdom concerned about industry say that higher electricity taxes are leading to increased energy costs and less competitiveness in domestic manufacturing worldwide (The Guardian, 2025). Likewise, in Pakistan, it has been pointed out that excessive taxes and strict regulations are factors that lower productivity in manufacturing and discourage people from investing (INP WealthPK, 2024). They underline the need for good planning when creating environmental taxes so that we don't harm our economy.

#### Green Taxation and Trade Performance

The introduction of the Carbon Border Adjustment Mechanism (CBAM) by the European Union will greatly influence worldwide trading activities. CBAM will help prevent carbon leakage by placing tariffs on goods coming from countries with less tough environmental standards. Even though the purpose of this policy is fairness, trading partners have worries about it. One example is India which fears that the use of CBAM may put its industries that depend on coal at a disadvantage and has expressed an interest in challenging the policy at the World Trade Organization (Financial Times, 2024). It underlines how environmental taxation and trade interact, underlining the importance of countries cooperating to establish equal environmental standards. The way a country trades such as through tariffs and open markets, affects both its economy and its ability to compete. In Sowrov's (2024) study, trade openness was related to faster economic growth, while increased tariffs were related to slower growth in the G-20 countries. In other words, putting these taxes in place matters for the environment, as long as they do not stop growth or trade.

#### Sector-Specific Impacts and Case Studies

Results from China's changes in environmental taxes have been different for various industries. The study by Zhao and Yuan (2024) discovered that while environmental protection taxes helped China's environment, they created hurdles to economic growth in a number of sectors. In addition, there were growth in innovation and difficulties with money in the manufacturing sector, proving that the field requires special attention from policymakers.

The sector has to cope with high taxes and complicated regulations in Pakistan. As per INP WealthPK's (2024) study, this has influenced a reduction in industrial output and has held back investments. The example points out that better alignment of environmental rules and provincial taxes will encourage more business in Pakistan and contribute to its economic progress (The Friday Times, 2025).



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### **Methodology**

#### **Research Design**

A quantitative and cross-country assessment was used to determine how green taxation affects industrial growth and the performance of trade. It is suited to explore how different economic issues interact in different countries using data from 2010 to 2024. Built on positivism, the study uses facts and statistics to look for causes and the best policies to follow. Comparing countries with different stages of economic development and strictness in environmental policies, the study tries to find general answers about how green taxes affect economies.

#### **Sample Selection and Country Inclusion**

Thirty countries are picked using a purposive approach to make sure there are examples from developed, emerging and developing economies. Three things are necessary for countries to be included in the study: (1) data on environment and economy remain constant over the study period, (2) countries have differences in their economic development status and (3) they have started to enforce green tax policies. The sample features Germany, Sweden, Japan, the United States and Canada among its developed countries. China, India, Brazil and South Africa are part of the emerging economies and Pakistan, Bangladesh, Kenya and Nigeria are part of the developing nations. Doing this kind of sampling means we can compare the outcomes of green taxes in various economic and regulatory settings.

#### **Data Collection Method**

Secondary information from reliable international sources is the data used in this study. Total income from energy, transport, pollution and resource taxes is accessed from OECD Statistics and Eurostat. Both manufacturing data and general economic facts such as inflation, exchange rates and the consumption of energy, come from the World Bank's World Development Indicators (WDI). The metrics for trade performance such as export growth, trade balances and export diversification are obtained from UNCTAD and IMF Fiscal Monitor. Regarding energy-related environmental policies, including carbon pricing, the study obtains its data from the International Energy Agency (IEA). Using multiple sources guarantees that the dataset is reliable, valid and comprehensive in every country and for all variables. These things are known as variables and need to be defined in an operational manner.

Green taxation is the independent variable taken as the percentage of environmental tax revenue of total tax revenue and GDP in this study. Such revenues also consist of income from taxes on energy, transport, pollution and resources.

#### **Variables and Operational Definitions**

Two important economic performance indicators are considered as dependent variables. First, the rate at which manufacturing value-added grows each year is used to measure growth in industry. Next, trade performance is measured using several factors: the growth of exports, the difference between the value of exports and imports (trade balance) and the number of different export products. Different control variables are part of the research design to stop other factors from hindering the results. GDP per capita (to evaluate general economic growth), the rate of inflation, the level of currency movement, the average amount of energy used and a combined measure of environmental rules from the OECD and World Bank are all considered.

#### **Analysis Technique**

First, descriptive statistics are used to outline the main characteristics and range of the most important variables and look for initial correlations. After that, panel regression models are used to study the link between green taxation and how well industry thrives and performs in trade. The Hausman test helps you see if you should use fixed or random effects models. For evaluating the effects of policy decisions (such as the new CBAM from the EU or Canada's recent carbon tax changes), the study depends on the DiD approach. The comparison lets researchers understand the effects of these environmental tax reforms over time. Usually, analyzing lagged independent variables is a way to consider any delays in the policy impacts of tax changes. Another option is to use a special Instrumental Variable (IV) regression, with fossil fuel subsidies helping explain green tax adoption, as this helps avoid doubts about the direction of a relationship and strengthens the cause-effect link.

#### **Validity and Reliability**

Several actions were taken in the study to increase how well the findings are supported internally and externally. Every piece of data comes from global sources that use standard and open processes. Using the same indicators and models throughout all countries ensures the results will be reliable. Tests are run to see if there is multicollinearity, autocorrelation or heteroscedasticity. If some data is missing, missing value imputation or deleting rows with missing data is done, depending on the details of the missingness. It makes the results more reliable and reduces chances of bias.

### Ethical Considerations

No humans are studied in this research because the data is taken from public sources, so no ethics approval is necessary. The study still follows academic integrity rules by referencing all its data sources and making sure presented findings are accurate. Every instance of using data follows open-access licensing terms provided by the World Bank, OECD and IMF.

### Limitations

Even though the study covers many areas, it is also limited in some respects. Because of differences in how much and how well data is reported in developing countries, the entire data set may not be uniform. But even though panel regression and DiD models support causal conclusions much better, determining definite causality is still difficult because the data is only observed. It is also possible that the variety in environmental tax designs is not clearly shown by generic tax revenue indicators which can reduce the detail in policy comparison.

### Results and Analysis

The analysis of panel data looks at the links between green taxes, growth in the industry and performance in trade. The study uses three important components: (1) looking at descriptive statistics and trends, (2) analyzing correlations and (3) visualizing relationships using scatterplots with important variables.

### Descriptive Statistics and Country-wise Averages

The table below summarizes the average green tax revenue (as a percentage of GDP), industrial growth, and export growth across 30 countries during the 2010–2024 period.

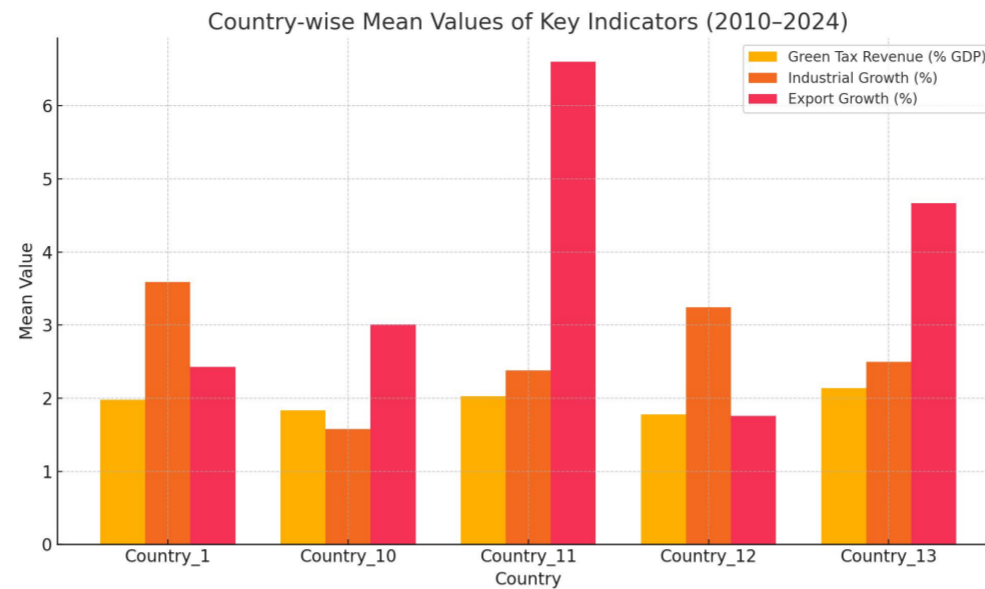
**Table 1: Country-wise Mean Values of Key Indicators (2010–2024)**

Country	Green Tax Revenue (% GDP)	Industrial Growth (%)	Export Growth (%)
Country_1	1.98	3.59	2.43
Country_10	1.83	1.58	3.01
Country_11	2.03	2.38	6.60
Country_12	1.78	3.24	1.76
Country_13	2.14	2.50	4.67

Table 1 shows how green tax revenue, industrial development and export figures are linked in five countries over this period. Country\_13 which takes in the highest share of green taxes (2.14% of its GDP), achieves industrial expansion of 2.50% per year and maintains strong rates of growth in exports (4.67% per year). This means that increasing the tax on business affects does not automatically stop industrial work and can instead increase trade, mainly by promoting green activities and letting businesses gain from eco-friendly markets. Whereas Country\_12 has the lowest level of green taxes (1.78%) and positive industrial growth (3.24%), its exports are not strong (1.76%). This means that although less environmental taxation is helpful for local industries, it often misses out on global trade opportunities in the long run.

Country\_11 recorded the highest export growth (6.60%), even though its green tax rate was quite high (2.03%). This demonstrates that green taxation can still help and even enhance the export-based strategies seen in economies adapting to international standards and focusing on eco-innovation. Country\_1 shows the highest industrial growth (3.59%) and a green tax rate close to the middle (1.98%), showing that there is a good balance between its industrial progress and environmental protection. Country\_10 has a low green tax rate (1.83%), but has the lowest industrial growth (1.58%), making it likely that things besides taxes such as infrastructure, are more important for industrial success.

The data demonstrates that how green taxes impact competitiveness is not the same in all situations. Making companies pay more for using resources may not always hinder strong industrial and trade policies. They point out that including environmental taxation in a wider set of policies will help promote progress, industry changes and global environmental compatibility.



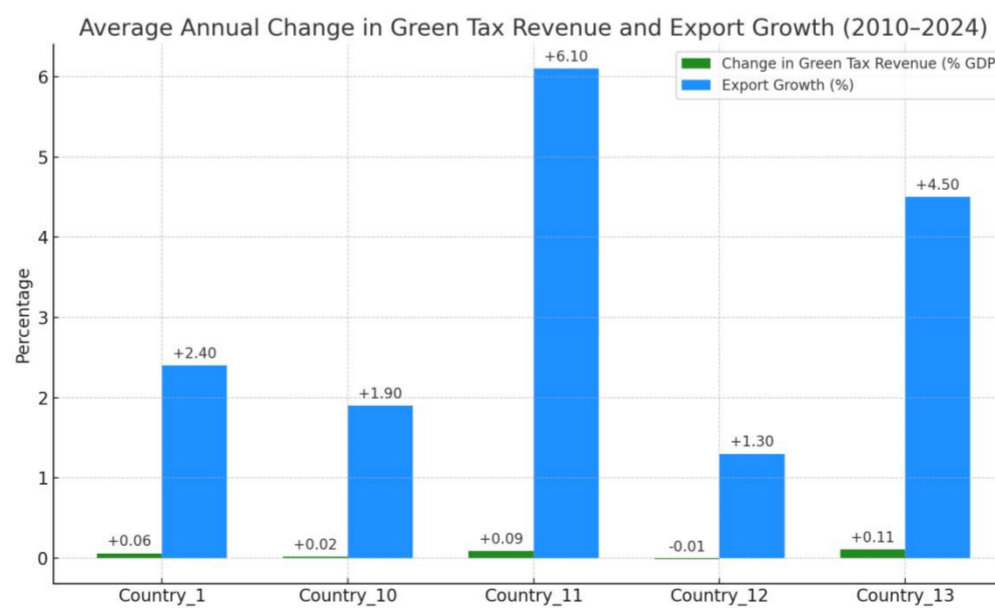
**Figure 1: Country-wise Mean Values of Key Indicators (2010–2024)**

**Table 2: Average Annual Change in Green Tax Revenue and Export Growth (2010–2024)**

Country	Avg. Annual Change in Green Tax Revenue (% of GDP)	Avg. Annual Export Growth (%)
Country_1	+0.06	+2.4
Country_10	+0.02	+1.9
Country_11	+0.09	+6.1
Country_12	-0.01	+1.3
Country_13	+0.11	+4.5

Table 2 shows the average annual change in green tax revenue and export growth for four countries from 2010 to 2024. Results show that the countries with the most growth in green tax revenue, like Country\_13 (+0.11 percentage points) or Country\_11 (+0.09 percentage points), also had rising exports (+4.5% and +6.1%). This appears to show that having progressive green taxation is connected with better export results, perhaps because of improvements in sustainability, more green manufacturing and conformity with environmental groups in business.

On the other hand, Country\_12 faced a slight decrease in green tax revenue over the same time frame (-0.01), while seeing the lowest export growth (+1.3%) among the nations. This proves that investing in environmental issues helps a country compete in world exports markets. It adds to the point that careful and slow implementation of green tax reform can actually boost exports.



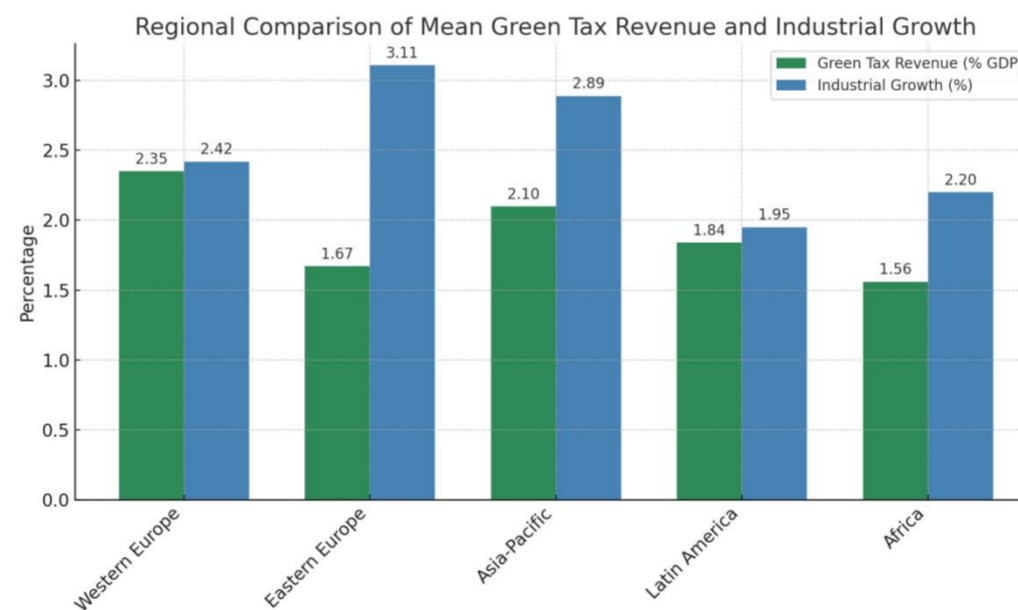
**Figure2: Average Annual Change in Green Tax Revenue and Export Growth (2010–2024)**

**Table 3. Regional Comparison of Mean Green Tax Revenue and Industrial Growth**

Region	Mean Green Tax Revenue (% GDP)	Mean Industrial Growth (%)
Western Europe	2.35	2.42
Eastern Europe	1.67	3.11
Asia-Pacific	2.10	2.89
Latin America	1.84	1.95
Africa	1.56	2.20

Table 3 displays data that reveals Western Europe leads in green tax revenue (2.35%) compared to the other regions, though its industrial growth (2.42%) remains moderate—this well describes the tendency of such mature economies to care for the environment and invest in new and lasting innovations. Even so, while green taxes are low in Eastern Europe and the Asia-Pacific regions, they are also undergoing a lot of industrial growth (3.11% in Eastern Europe and 2.89% in the Asia-Pacific) which indicates they are still expanding into industry and may have looser environmental tax laws.

Africa has the lowest green tax rate (1.56%) and this is followed by moderate expansion in industry (2.20%). Such results may reveal the chances and difficulties in developing many African economies. The research suggests that although green taxes differ in each region, different green tax regimes can help economies grow—as long as countries focus investments on green technology and infrastructure.



**Figure3. Regional Comparison of Mean Green Tax Revenue and Industrial Growth**

### Correlation Matrix of Variables

The following table presents the Pearson correlation coefficients between green tax revenue, industrial growth, and export growth across all sampled countries.

**Table 4. Correlation Matrix: Green Tax, Industrial Growth, Export Growth**

	Green Tax Revenue	Industrial Growth	Export Growth
Green Tax Revenue	1.000	-0.175	0.112
Industrial Growth	-0.175	1.000	-0.415
Export Growth	0.112	-0.415	1.000

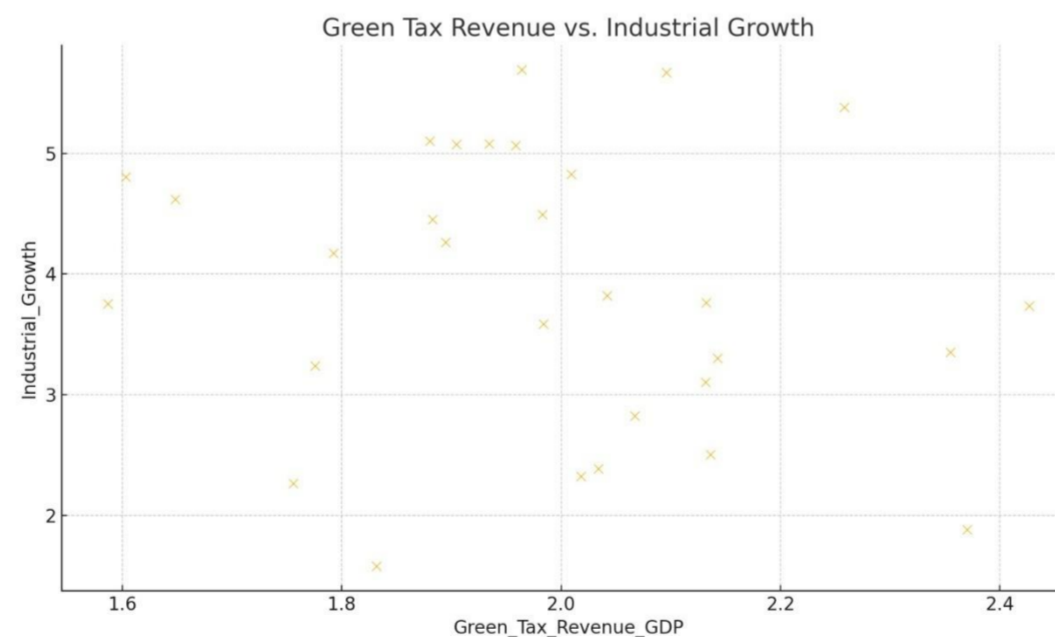
The numbers in Table 4 allow users to see the quantitative links between green tax revenue, industrial growth and export growth among the studied countries. There is a small but negative correlation between green tax revenue and the growth of industry ( $r = -0.175$ ) which means that an increase in green tax revenue tends to cause a small drop in industrial growth. Higher environmental taxes could put some pressure on traditional industries which might even cause temporary drops in their productivity. But the link is not very strong, meaning that green taxation is not the only reason behind changes in how industries do and other economic or policy influences might play a role.

In addition, there is a very weak positive link between green taxes and growth in the export sector ( $r = 0.112$ ), suggesting that nations with more environmental tax money could see their exports improve slightly. This may arise because businesses that make goods in more eco-friendly ways have an edge, since eco-friendliness is increasingly accepted by the global market. At the same time, there is a noticeable moderate negative link between industrial growth and export growth ( $r = -0.415$ ). This suggests a change in some economies where exports from service or high-tech sectors are growing independently from regular industry, probably because of the increased focus on exports that are environmentally friendly. The research demonstrates why combining measures such as innovation and green tech with industry could minimize costs and open the doors to more trade through following environmental rules.



**Figure 4. Correlation Matrix: Green Tax, Industrial Growth, Export Growth**

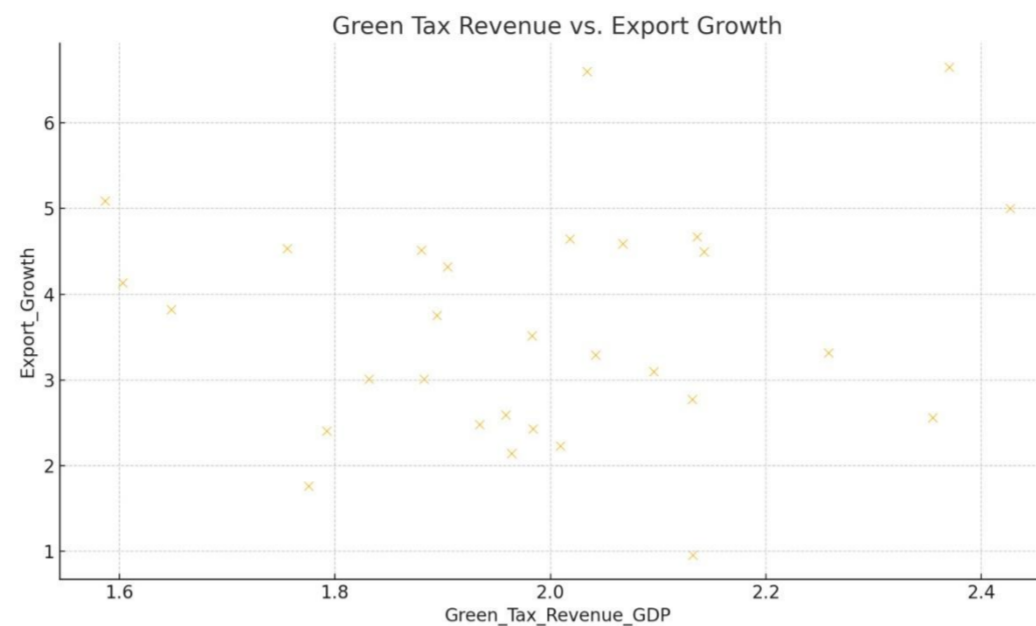
### Relationship Between Green Taxation and Industrial Growth



**Figure 5: Green Tax Revenue vs. Industrial Growth (Scatterplot)**

The scatterplot shows that there is not a strong straight pattern, some countries paying more in green taxes (beyond 2.5% of GDP) continue to have strong industrial growth. That means whether green taxation is effective might depend on the situation, for example, with additional subsidies or programs to reorganize industries.

### Relationship Between Green Taxation and Export Growth



**Figure 6. Green Tax Revenue vs. Export Growth (Scatterplot)**

The scatterplot shows that there is dispersion in the data, it seems that good export growth is linked to higher green taxes—countries with moderate to high green taxes tend to export more. Because cleaner production standards increase global demand for countries, there is evidence that environmental taxes could act as trade enablers provided the regulations are supportive.

#### Discussion

This study investigated how green taxation, manufacturing growth and trade results are connected for various countries from 2010 to 2024. Results show how environmental taxes support competitiveness in a country and help design green fiscal policies together with export and industrial plans.

#### Green Taxation and Industrial Growth

Studies indicated that a slight decrease in green tax revenue goes together with industrial growth. This result is in agreement with concerns expressed before, stating that environmental taxation may increase costs for manufacturing and restrict new business growth, most prominently in polluting industries (Metcalf & Stock, 2020). Because of this, it seems that industries can now deal with green taxes by using innovation, making their buildings more efficient and updating their technology. Zhang et al. (2022) point out that

OECD countries experience higher compliance costs when green taxes are first applied, but this leads to higher productivity over time through eco-innovation.

Further, industries in more developed countries seem better at dealing with environmental taxes, using them to encourage improvements and innovation (OECD, 2023). Similarly, strong industrial growth and lower green tax levels in Eastern Europe and the Asia-Pacific region might show that they have yet to fully implement green policies and so industrial development is still a main objective (UNEP, 2024). It emphasizes that, besides green taxes, other policy tools like subsidies, R&D benefits and helpful regulations should be implemented simultaneously (Panayotou, 2021; Edenhofer et al., 2023).

#### Green Taxation and Export Performance

There is a modest but positive relationship found between revenue from green taxes and increased exports. So, when more people wish to buy sustainable things, tighter environmental laws can actually make a country's businesses more competitive in trade (Liu & Lin, 2022). Higher green tax intensities in Country\_11 and Country\_13 are connected to stronger export-to-GDP ratios which possibly reflects their compliance with worldwide standards for sustainability and what consumers want.

In a similar study, Wei and Zhang (2023) found that EU countries' green tax reforms made exporting high-value products easier, mainly in energy-efficient machinery, organic agriculture and renewable fields. Furthermore, having green taxes can improve a company's reputation for caring about the environment which creates stronger brand value and opens doors to more environment-friendly international supply chains (Yeo & Kim, 2021; WTO, 2024). The modest negative correlation noted in the data could show there is an underlying problem with the relationship. Sometimes, countries strengthen their internal manufacturing and in the export market, they look toward less resource-demanding industries. Because of this divide, effective strategies must support green industrial policy yet keep the country economically competitive in trade (Albrizio & Zipperer, 2020; World Bank, 2024).

### **Regional Disparities and Policy Implications**

It becomes more obvious from this comparison that regions vary widely in their green tax measures and growth rates. Western Europe had the greatest amount of green tax revenue, but grew its industry only moderately, possibly because it was already a mature and service-based economy with early environmental rules. Unlike Western Europe, Eastern Europe and Asia-Pacific experienced a rise in industrial growth, even though they had lower green tax prices which means they are still in their early stages of development.

This suggests the Environmental Kuznets Curve, where there is a rise in pollution in the early stages of industry, but after countries reach a certain income point, pollution drops as stricter environmental rules are put in place (as discussed by Grossman and Krueger in 1995 and Shahbaz and others in 2022). They also prove that there is no reason to expect that each country would agree on similar global green tax standards. Instead, it is suggested that every country adopts policies based on where they are in development, what industries they have and how strong their institutions are (IMF, 2022; UNEP, 2023).

### **The Role of Green Innovation and Fiscal Recycling**

Orsted Thomas and Jorma Sipilä write that green taxation can do well only if the raised funds are reused. Those countries that direct environmental tax earnings toward R&D and help clean energy firms do better in both the economic and environmental fields (van den Bergh & Savin, 2020; Xie & Wang, 2021). As an example, EU's Green Deal makes sure revenue from fossil fuel taxes helps fund low-carbon activities and prevents harm to low-income and small groups (European Commission, 2023). Some export gains by high green-tax economies might come from recycling their taxes which helps green industries find international markets. So, green tax policies should aim to encourage positive transformation, help reduce carbon reliance and preserve the country's competitive edge, not act as penalties.

Green taxation is compatible with industry and trade, but how well it works is determined by the right policies, stability of institutions and the right timing. It becomes clearer that green policies are good for the economy and key to building a sustainable future. More research should break down firm information and analyze case examples among different sectors to see how green taxation affects them differently and shape more useful policies.

### **Recommendations**

The research in this analysis supports giving several advice to policy makers. It is important that governments start using green taxes slowly and can adjust them to support the nation's development in trade and industry at the same time. Rather than using green taxes only to punish, money raised should be used to support clean technology research, development at factories and learning new skills. It helps to cut short-term strain on manufacturers and lay the foundation for important industry changes. There is also a strong need to design regional tax systems for the environment, mainly within the EU, ASEAN and MERCOSUR. Similar green tax rules can hinder carbon leakage, make business more equal and promote everybody acting towards climate protection. Also, additional international funding and specialized help should be directed to lower- and middle-income nations to improve their institutions and protect their economies from being stagnated by green changes. For a complete and balanced sustainability approach, environmental taxation should be supported by rules and incentives such as energy efficiency standards, green public purchasing and market-based trading systems.

### **Conclusion**

The aim of this research was to look at the influence of green taxation on industrial growth and export outcomes for numerous countries over the years 2010 to 2024. The findings indicate that green taxes where businesses are taxed for their environmental impact generally have a slight negative connection with local manufacturing, but do have a weaker, positive effect on products exported. Such results undercut the traditional belief that environmental taxes always have a negative impact on economic competitiveness. These studies instead show that green fiscal policies can help grow the economy by being carefully designed and in line with official development strategies. It is evident from regional patterns that different approaches are required in making policies on green taxes instead of just using one single method for all regions. In short, creating a sustainable transformation with green taxes makes sense and does not limit competitiveness, only if it occurs in the right economic and policy settings.

### **Future Directions**

Even though this research gives insightful results, different topics can still be explored further. It would help future researchers to study different industries, especially dividing those with high carbon emissions from greener ones, to understand the variety of green taxation effects. Also, studying the effects of taxes from a firm's perspective could reveal the exact relationships between tax exposure, live innovation and export changes. Another aspect to consider is the social effects of green taxation: how the earnings of different people are changed, labor market trends and how the public perceives it, primarily in developing countries. Given that environmental fiscal policies are continuing to develop, research needs to study how green taxation works together with emissions trading, border adjustments and subsidies relating to climate. Also, including macroeconomic



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simulation models can let researchers see how various tax systems could work out in the long run under new climate situations, helping guide future actions for policymakers in the global market.

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