

TECHNIQUES FOR ASSESSING AND PERCEIVING ENVIRONMENTAL TAXES AND IMPLEMENTATION POSSIBILITIES NAD THE FINANCIAL IMPACT IN EUROPE

*Elena Lucia Croitoru**,

*Mariana Sorlescu***

Abstract

This article examines the increasing significance of environmental taxes in the context of global environmental protection and climate change mitigation, with a focus on the European Union (EU). By analyzing specialized literature, it develops a framework to understand how environmental taxes promote sustainable economic and social development. The first section defines the importance of these taxes in combating climate change and environmental degradation, while addressing implementation challenges and benefits. The second section focuses on practical aspects of tax administration, including techniques for assessing economic and social impacts, setting and adjusting tax rates, and strategies for public communication to enhance support. The article reviews the current state of environmental tax policies in Europe, noting progress and areas for improvement. Key findings indicate that environmental taxes are effective in generating revenue and encouraging sustainable practices. The data from 2013 to 2022 show a consistent increase in EU environmental tax revenues, despite economic disruptions like the COVID-19 pandemic. This trend reflects the EU's commitment to sustainability. It calls for an integrated approach to optimize these taxes' implementation and adjustment, supporting the EU's long-term sustainability goals.

Keywords: *environmental taxex, fiscal revennues, European Union, sustainability*

JEL Classification: H7, H70, H71, O13. Q580

1. Introduction

In the context of global concerns regarding environmental protection and combating climate change, the implementation of environmental taxes is increasingly important to ensure a balance between economic development and the conservation of natural resources. In recent years, the issue of environmental taxes has become more significant in the context of global environmental protection efforts.

By analyzing the specialized literature, a fundamental conceptual framework emerges for understanding the breadth and role of this topic within the specific context of Europe. Understanding environmental taxes within the

* Author Elena Lucia Croitoru is Lecturer at Romanian American University, Bucharest, lucia.croitoru@rau.ro.

** Author Mariana Sorlescu is Associated Professor at Romanian American University, Bucharest, mariana.sorlescu@rau.ro.

specific context of our country can offer numerous perspectives on how these taxes can contribute to stimulating sustainable economic and social development in Europe.

By analyzing the impact of these taxes on the environment, the economy, and society as a whole, effective strategies can be identified and adopted to use these instruments to ensure a balance between economic progress and the preservation of natural resources. This paper aims to examine the role and impact of environmental taxes. In this regard, environmental taxes have become a fundamental tool in efforts to preserve natural resources and reduce negative environmental impacts.

The first part of the article aims to provide a comprehensive understanding of this fundamental domain. It will explore the general context of environmental taxes, offering concise definitions and highlighting the importance of environmental taxes in the current context of climate change and environmental degradation. Additionally, it will focus on the implications and barriers faced in the implementation of environmental taxes in Europe. Both the advantageous aspects, such as their potential to reduce pollution and promote a sustainable economy, and the challenges and obstacles encountered in their effective application will be analyzed.

Furthermore, the article aims to conduct a thorough analysis of the current state of environmental taxes in Europe, focusing on existing policies and practices, as well as progress and shortcomings in their implementation. The second part of the article, concentrates on the practical aspects of implementing and administering environmental taxes within the specific context of our country. It examines techniques for assessing the economic and social impact of environmental taxes, methods for setting and adjusting them to maximize efficiency and equity, communication and education strategies for gaining public support for environmental taxes, and implementation possibilities in Romania.

The article can contribute to a deeper understanding of environmental policies and practices in Europe providing relevant information and analyses for policymakers, public authorities, and other organizations involved in environmental management. Thus, the results and recommendations of the article can influence the development and implementation of future environmental protection policies and strategies in the country.

2. Environmental taxes in the European current context

Significant research in the field of environmental taxes highlights various perspectives and theories that explore both theoretical aspects and practical implications. The sources consulted for this paper emphasize the necessity of a critical analysis in evaluating environmental taxes, highlighting both their

benefits and limitations in terms of their capacity to reduce environmental impact.

According to experts in the field (Sângeozan, 2011), the economic theory of environmental taxes represents an important branch of economics that explores the impact and effectiveness of using taxes to regulate and reduce negative environmental impacts. This approach aims to internalize environmental costs into economic decisions, thereby encouraging more ecologically responsible behaviors.

Environmental taxes in Europe play a fundamental role in protecting the environment and responsibly managing natural resources, counteracting the negative impact of human activities on ecosystems. These taxes are designed to internalize the costs associated with pollution and to promote sustainable behaviors across various sectors, including industry and daily life. They represent an essential mechanism for applying the "polluter pays" principle, assigning financial responsibility for environmental impact to those who generate pollution or contribute to environmental degradation.

"The purpose of environmental taxes is to discourage the excessive use of natural resources and to promote innovation in clean and sustainable technologies." (Todor, 2011).

However, there are also criticisms of the theory of environmental taxes. Experts argue that "these taxes can negatively affect the competitiveness of firms, especially in a global context, and can lead to the relocation of pollution to regions with lower environmental protection standards." (Sasu, 2011).

Governments and organizations worldwide are increasingly concerned with adopting and modifying fiscal policies, particularly environmental taxes, in the face of growing challenges related to climate change and environmental degradation. Thus, in the current context, we observe the following evolutions:

- Global increase in carbon taxes: Numerous countries have imposed or increased taxes on carbon emissions in recent decades. To reduce greenhouse gas emissions, countries like Canada, Sweden, and Norway have implemented significant CO₂ taxes. The EU's Emissions Trading System (ETS) has been expanded and strengthened. This system functions as a carbon tax, placing a price on carbon emissions and incentivizing their reduction.

- Expansion of taxes on polluting products: To reduce waste and promote the use of reusable items, several nations have introduced taxes on single-use products, such as packaging, bags, and other plastic items.

- Higher taxes on polluting vehicles: To promote electric or hybrid vehicles, many cities and nations have imposed taxes on internal combustion engine cars. For example, London has an Ultra Low Emission Zone (ULEZ) where vehicles not meeting emission standards must pay an additional fee. In Norway, the number of electric vehicles has rapidly increased due to significant fiscal incentives.

- Adoption of environmental taxes in emerging economies: Recognizing the importance of combating pollution and climate change, countries like China and India are beginning to implement environmental fiscal policies, such as pollution taxes and incentives for renewable energy.

Also, the trends in this can be summerized like this:

- Integration of environmental tax systems globally: To prevent financial distortions and provide an adequate framework for reducing greenhouse gas emissions, there is a trend towards harmonizing and integrating environmental tax systems globally.

- Green taxes and the circular economy: The transition to a circular economy, where resources are used more efficiently and waste is minimized, will require the use of environmental taxes. Fiscal policy can lead to a more sustainable economy by encouraging recycling, reuse, and waste reduction.

- Digitalization of environmental tax collection: The collection and management of environmental taxes are becoming more efficient due to technological advancements. Pollution and emissions can now be tracked in real-time using technologies such as IoT and blockchain. These technologies enable stricter compliance and effective tax management.

- Increased public awareness and political support: As the public becomes more aware of environmental issues, politicians are more likely to support the implementation and increase of environmental taxes. Public information and education campaigns have the potential to increase acceptance of these taxes and promote environmentally friendly behaviors.

- Focus on social justice and equity: Future environmental fiscal policies will pay greater attention to the impact on low-income households and aim to avoid regressive effects through compensatory measures. To facilitate the transition to a green economy without adversely affecting vulnerable populations, funds raised from environmental taxes can be redistributed as subsidies and assistance.

The trends in environmental taxes reflect shifts in public perception of environmental protection and the increasing demand for greener policies.

It is essential to recognize that the imposition of environmental taxes is an effective and particularly important way to address environmental issues and promote sustainable development. The establishment and adjustment of these taxes are complex processes that involve careful consideration of several factors, including economic efficiency and social justice.

A key method in implementing environmental taxes is the concept of "internalization of external costs." This principle considers that activities that produce pollution or exploit natural resources should bear the costs associated with the damages caused to the environment and society as a whole. By implementing taxes that equate to these costs, an economic incentive is created to reduce pollution and use resources more efficiently.

An effective approach for evaluating external costs and determining the appropriate level of environmental taxes is the use of cost-benefit analysis. "This process involves a careful assessment of the costs and benefits of an environmental activity or policy to determine the optimal tax level that maximizes net benefits to society" (Bebeșelea, 2013). It is crucial that this assessment is conducted meticulously and takes into account all relevant elements, including the direct and indirect costs of pollution, public health benefits, and the impact on the economy.

Another highly effective method in implementing environmental taxes is the "polluter pays" principle. This principle holds that those responsible for pollution should bear the corresponding costs associated with it. Therefore, it is justified that environmental taxes be adjusted in accordance with the amount of pollution generated by each economic entity. This can be achieved by instituting variable rates based on the level of pollution or the consumption of natural resources.

It is also essential to distinguish between different categories of pollution and their effects on the environment. Certain activities or goods may have a greater impact on the environment than others and, consequently, should be taxed appropriately. For example, air pollution may have more severe consequences on public health compared to noise pollution, which justifies adjusting tax levels to reflect these differences.

Social equity is also a key element in the imposition of environmental taxes. It is fundamental that these taxes do not impose a significant burden on certain segments of the population, such as low-income families or marginalized communities. Therefore, it is useful to consider the financial levels and social impact of environmental taxes to ensure they are applied fairly.

To encourage innovation and efficiency in resource management, environmental taxes should also include incentives for adopting greener and more efficient technologies. This can be done by providing tax exemptions or reductions for investments in green technologies and sustainable practices.

Public involvement and transparency in the process of setting environmental taxes are also fundamental elements. "Decisions regarding the level and implementation of environmental taxes should be made transparently and be subject to public debate" (Bebeșelea, 2013). This active participation helps build public trust and acceptance and can generate greater compliance and support for environmental policies.

In parallel with societal progress and technological advancement, it is also useful to periodically review environmental taxes and adjust them in accordance with changes in the economic, social, and environmental spheres. Continuous evaluation of the effectiveness and relevance of environmental taxes and their adjustment to respond to new challenges and opportunities is fundamental.

To optimize efficiency and equity in the establishment and adjustment of environmental taxes, it is essential to adopt an integrated perspective that examines the interactions between economic, social, and environmental factors. "By implementing coherent environmental policies and applying fair and effective environmental taxes, we can play a significant role in conserving the environment and promoting sustainable development for future generations" (Bebeșelea, 2013).

In conclusion, optimizing the methods of establishing and adapting environmental taxes to ensure maximum efficiency and equity is a fundamental and complex process in addressing environmental issues and promoting sustainable development.

Techniques for collecting environmental taxes focus on the specific processes used to apply and collect these taxes. These techniques are essential to ensure the efficiency and equity of environmental taxes, which aim to promote sustainable practices and reduce harmful effects on the environment.

The main techniques for collecting environmental taxes are presented in the following table:

Table no.1 Techniques for collecting environmental taxes in Europe

Name of the technique	Description
Direct Taxation	Taxes on carbon emissions: A direct tax on CO ₂ emissions from industrial, transportation, and other sectors. For example, companies must pay a certain amount for each ton of carbon dioxide produced. Taxes on polluting substances: A tax applied to goods that cause pollution, such as fossil fuels, plastics, etc.
Emissions Trading Systems	Emission permits: Companies receive or purchase permits allowing them to release specific amounts of pollutants. A company can sell its surplus to other entities if it emits less than its permit allows. Emissions market: Creating a market for trading emission permits, thus stimulating market mechanisms to reduce total emissions.
Resource Use Taxes	Water usage taxes: A tax applied to the amount of water used in households and businesses to promote more efficient use and reduce consumption. Taxes on minerals and natural resources: A tax on the extraction and use of natural resources, such as minerals, oil, and natural gas.
Waste Management Taxes	Landfill fees: A tax on the amount of waste deposited to promote recycling and waste reduction. Packaging fees: Taxing producers and importers of packaging to promote recycling and reduce unnecessary packaging.
Transportation and Vehicle Taxes	Vehicle emissions taxes: Taxes based on the level of CO ₂ and other pollutants emitted by vehicles. For example, vehicles with

	larger engines and higher emissions must pay higher taxes. Congestion charges: A tax imposed in densely populated urban areas to reduce traffic and pollution. The London congestion charge is a notable example.
Subsidies and Incentives	Eliminating subsidies for fossil fuels: Removing subsidies that support the use of fossil fuels and other polluting practices. Incentives for green technology: Tax reductions and financial incentives for businesses and individuals who implement green technologies and sustainable practices, such as solar and wind energy and electric vehicles.
Return Systems	Deposit-return schemes for packaging: Implementing a deposit on packaging that is refunded to customers when they return the packaging for recycling.
Creating Efficient Administrative Structures for Collecting and Monitoring Environmental Taxes	These structures require the creation of specialized institutions equipped with adequate resources, such as environmental administrations or environmental tax collection agencies.
Monitoring Compliance and Enforcing Penalties for Violations	Authorities have the capacity to monitor and control the activities of organizations and identify any deviations or irregularities quickly and accurately.
Utilizing Technology to Facilitate Reporting and Collection of Taxes	Authorities can simplify and digitize the reporting and collection processes using advanced technology, such as complex information systems and dedicated online platforms.

Source: own resource

In conclusion, strategies for collecting environmental taxes are fundamental to the implementation of environmental policies. These include various techniques and processes designed to promote pollution reduction, sustainable resource use, and the adoption of green practices. To achieve environmental goals and create a sustainable future, it is essential to appropriately apply and effectively manage these taxes.

3. Financial dimensions of environmental taxes on a European level

To promote sustainability, the European Union (EU) employs a variety of fiscal instruments. The primary mechanism for reducing greenhouse gas emissions in the EU is the Emissions Trading System (ETS). ETS revenues amounted to approximately 30 billion euros in 2021. Numerous energy efficiency and renewable energy projects are funded through these revenues. Since 2021, the EU has imposed a tax of 0.80 euros per kilogram on unrecycled

plastic waste. The revenues generated are allocated to the EU budget to finance environmental projects.

Green infrastructure, such as electric transport networks and renewable energy grids, is financed from the funds raised through the EU's environmental taxes. For example, the Just Transition Fund has 17.5 billion euros available to assist regions affected by the transition to a greener economy.

Taxes are assessed based on the amount of carbon dioxide emitted into the atmosphere by various industries and transportation sectors.

Regarding the level of total environmental taxes collected at the level of the European Union, we analyzed their total annual evolution but also by components and a continuous increase is observed both in total and by components (table no.2)

Table no. 2 Evolution of total environmental tax revenues, transport taxes and pollution/resource taxes in Europe, annually, in millions of euros

Taxes		Total environmental revenues	Fiscal							
Year	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
EU	285,120.45	291,985.16	300,019.96	311,234.91	317,643.75	325,790.48	331,207.19	301,734.32	329,721.01	320,823.83
Taxes		Shipping taxes								
EU	53,622.4	54,668.85	56,740.08	58,429.41	59,936.27	61,954.09	62,543.49	57,419	59,231.81	60,104.29
Taxes		Pollution taxes/resource								
EU	10,020.85	10,422.43	10,949.37	10,936.37	11,080.71	11,052.36	11,092.44	11,060.2	11,818.56	12,333.38

Source: own research based on Eurostat,

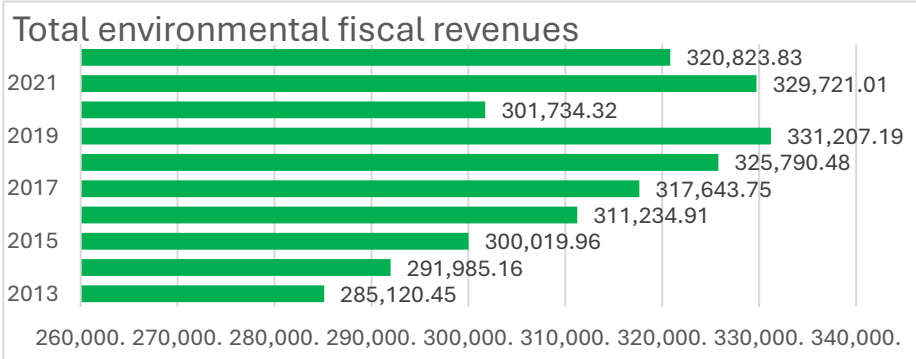
https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Environmental_tax_statistics_-_detailed_analysis

The Graph no 1. demonstrates a general upward trend in environmental tax revenues over the given period. Starting from 285,120.45 million euros in 2013, the revenues have shown fluctuations but have generally increased to 320,823.83 million euros in 2022. A noticeable decline occurs in 2020, with revenues dropping to 301,734.32 million euros. This decline could potentially be attributed to the economic impacts of the COVID-19 pandemic, which might have affected economic activities and thus tax revenues. The overall increase in environmental tax revenues reflects the EU's commitment to implementing fiscal measures aimed at promoting sustainability and environmental protection.

The fluctuations, especially the decline in 2020, highlight the sensitivity of tax revenues to broader economic conditions. The sharp recovery in 2021 suggests resilience and possibly an increased emphasis on environmental taxes post-pandemic.

The decrease in 2022, though minor, could indicate adjustments or the stabilization of tax revenues after the significant rebound in 2021.

Graph no. 1 The evolution of total environmental fiscal revenues in the EU, annually, in millions of euros

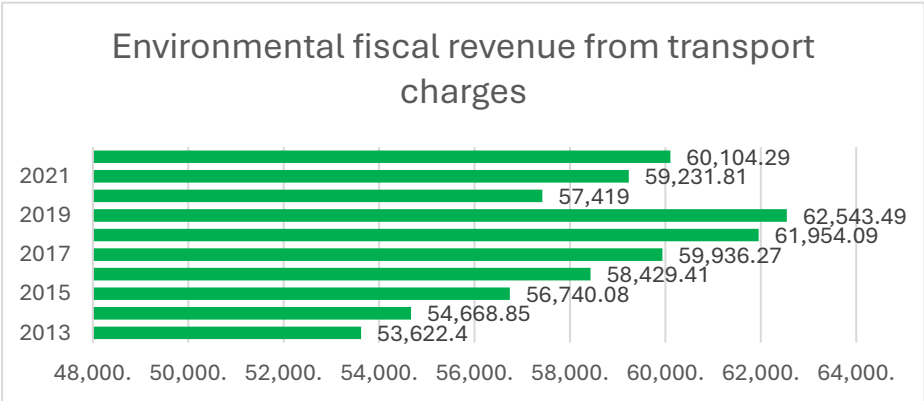


Source: Eurostat 2024,
https://ec.europa.eu/eurostat/databrowser/view/env_ac_tax/default/table?lang=en

The graph no 2 shows a general upward trend in revenue from transport charges over the given period, though there are fluctuations in certain years. Starting at 53,622.4 million euros in 2013, the revenue peaks at 62,543.49 million euros in 2019 before slightly declining and stabilizing around 60,104.29 million euros by 2022.

The highest value in the period is recorded in 2019 at 62,543.49 million euros. A noticeable decline occurs in 2020, with revenues dropping to 57,419 million euros, which may be linked to the economic impacts of the COVID-19 pandemic affecting transport activity and related charges. A recovery is observed in 2021, with revenues increasing to 59,231.81 million euros.

Graph no. 2 The evolution of environmental fiscal revenues from transport taxes in the EU, annually, in millions of euros



Source: Eurostat 2024,
https://ec.europa.eu/eurostat/databrowser/view/env_ac_tax/default/table?lang=en

The sharp decline in 2020 aligns with the broader economic downturn due to the pandemic, which significantly reduced transportation activities and, consequently, the related charges.

The recovery in 2021 and 2022 indicates a return to pre-pandemic levels of transport activity and fiscal revenue from these charges.

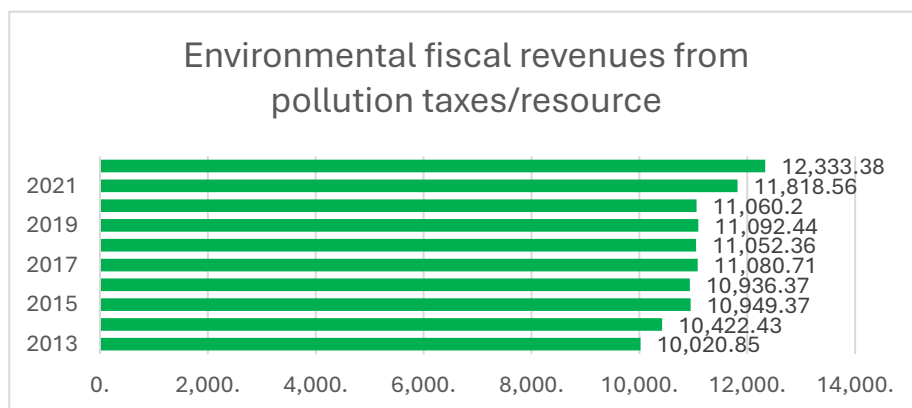
The graph no. 2 presents a generally positive trajectory for environmental fiscal revenue from transport charges in the EU, despite a notable dip in 2020 due to the pandemic. The recovery in subsequent years underscores the robustness of these fiscal measures. Continuous adaptation and enhancement of transport charges will be crucial for maintaining their effectiveness in reducing emissions and promoting sustainable transportation.

The graph no. 3 demonstrates a consistent upward trend in revenues from pollution taxes and resource charges over the given period. Starting at 10,020.85 million euros in 2013, the revenues steadily increased, reaching 12,333.38 million euros by 2022.

The steady increase in revenues from pollution taxes and resource charges reflects the EU's strengthening of fiscal measures to address environmental pollution and resource exploitation.

The consistent rise in these revenues suggests a growing commitment to internalizing the environmental costs associated with pollution and resource use, thus promoting more sustainable practices.

Graph no 3. The evolution of environmental fiscal revenues from pollution/resource taxes in the EU, in millions of euros



Source: Eurostat 2024,
https://ec.europa.eu/eurostat/databrowser/view/env_ac_tax/default/table?lang=en

The graph no. 3 presents a clear upward trajectory in environmental fiscal revenues from pollution taxes and resource charges in the EU from 2013 to 2022. This trend underscores the effectiveness and growing importance of these

fiscal instruments in achieving environmental and economic goals. Continuous enhancement and strategic implementation of these taxes will be crucial in maintaining their impact and supporting the EU's long-term sustainability objectives.

4. Conclusion

This article explores the critical role of environmental taxes in the European Union (EU) within the broader context of global environmental protection and climate change mitigation. It underscores the necessity of balancing economic development with the conservation of natural resources through strategic fiscal measures. The findings reveal that environmental taxes are instrumental in generating revenue while promoting sustainable practices and reducing environmental impacts.

The comprehensive analysis indicates that the implementation and adjustment of environmental taxes are complex processes that require careful consideration of economic efficiency and social equity. The consistent increase in environmental tax revenues from 2013 to 2022, despite economic disruptions like the COVID-19 pandemic, reflects the EU's robust commitment to sustainability. The effectiveness of these taxes in reducing pollution and encouraging resource efficiency is evident.

Key techniques for implementing environmental taxes, such as internalizing external costs and adhering to the "polluter pays" principle, are highlighted as essential strategies. The article emphasizes the importance of cost-benefit analysis in setting appropriate tax levels and the need for social equity to ensure that taxes do not disproportionately burden low-income populations.

Additionally, the study identifies global trends such as the harmonization of environmental tax systems, the transition to a circular economy, and the digitalization of tax collection as pivotal to the future of environmental fiscal policies. Increased public awareness and political support are also crucial for the successful implementation of these taxes.

In conclusion, the optimization of environmental tax policies requires an integrated approach that considers economic, social, and environmental factors. Continuous evaluation and strategic enhancements are necessary to maintain the effectiveness of these taxes in achieving long-term sustainability goals. The findings and recommendations of this study provide valuable insights for policymakers and stakeholders involved in environmental management, supporting the development and implementation of future environmental protection strategies in the EU.

References

1. Bădescu Valentin Stelian, *Dreptul mediului*. Sisteme de management de mediu, Editura C.H. Beck, București, 2011
2. Bebeșelea Adriana, *Politici de mediu*, Editura Fundației pentru cultură și învățământ "Ioan Slavici", , Timișoara, 2013
3. Adel Ben Youssef, Mounir Dahmani, Mohamed Mabrouki, The impact of environmentally related taxes and productive capacities on climate change: Insights from european economic area countries, *Environmental Science and Pollution Research*, 2023, 30 (44), pp.99900 - 99912
4. Piciu Gabriela, Carmen Lenuța Trică, *Assessing the Impact and Effectiveness of Environmental Taxes*
5. Procedia Economics and Finance 3, 2012, pp 728 – 733
6. Relicovschi Adina, *Politici în managementul mediului*, Editura Institutul European din România, București, 2000
7. Singeorzan Daciana Elena, *Taxe și impozite. Dobânzi și penalități în materie fiscală*, Editura Hamangiu, București, 2011
8. Sasu Horațiu, *Impozite, taxe, contribuții*, Editura C.H.Beck, București, 2011
9. Todor Arpad, *Analiza taxelor de mediu în România*, Editura Ecopolis, București, 2011
10. Regulament 691/2011, <https://eur-lex.europa.eu/>
11. Strategia Națională privind Educația pentru mediu și schimbări climatice 2023-2030, Ministerul educației, <https://www.edu.ro>
12. <https://eur-lex.europa.eu/>
13. https://ec.europa.eu/eurostat/databrowser/view/env_ac_tax/default/table?lang=en
14. https://static.anaf.ro/static/10/Anaf/legislatie/Cod_Fiscal_normele_2007.htm#_Toc150852239
15. www.inssee.ro
16. <http://ier.gov.ro/>