

Application of selected environmental taxes in Slovakia and Hungary

Jana SIMONIDESOVÁ¹, Eva MANOVÁ², Adela FERANECOVÁ³ and Erika KURIMSKÁ PAJERSKÁ⁴

Authors' affiliations and addresses:

¹ Faculty of Business Economics of the University of Economics in Bratislava with seat in Košice, Tajovského 13, 040 01 Košice, Slovakia
e-mail: jana.simonidesova@euba.sk

² Faculty of Business Economics of the University of Economics in Bratislava with seat in Košice, Tajovského 13, 040 01 Košice, Slovakia
e-mail: eva.manova@euba.sk

³ Faculty of Business Economics of the University of Economics in Bratislava with seat in Košice, Tajovského 13, 040 01 Košice, Slovakia
e-mail: adela.feranecova@euba.sk

⁴ Faculty of Business Economics of the University of Economics in Bratislava with seat in Košice, Tajovského 13, 040 01 Košice, Slovakia
e-mail: erika.kurimskapajerska@euba.sk

*Correspondence:

Jana Simonidesová, University of Economics in Bratislava with seat in Košice, Tajovského 13, 040 01 Košice, Slovakia
tel.: +421557223290
e-mail: jana.simonidesova@euba.sk

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Abstract

Global environmental problems present a challenge to individual governments, and at the same time, they create pressure associated with various climate agreements for governments to find ways to reduce the environmental burden but not slow down the country's economic growth. Without the government's intervention, there is no market consensus between companies and households to take into account interests other than their own. Therefore, the state should act as a regulator in relation to the environment in the economic market. The aim of the paper is to analyse environmental taxes in selected EU countries. In the contribution, we will focus on a detailed analysis of selected environmental taxes in selected EU countries and the definition of the main differences between the established environmental taxes. The result of the issue is a proposal for environmental taxes at the macroeconomic and microeconomic levels. We focused on two EU member countries (Slovakia and Hungary) for comparing the shares of environmental taxes on GDP. Indicators such as geographical location, history and the state of the economy played a role in this selection. In accordance with the environmental policy of the European Union, the basic principles are considered non-binding rules on which decisions and programs are based. In the Treaty of the European Community, these principles are established in Article 174 par. 2. It is necessary to have an overview of all principles to reveal the functionality of environmental policy in the EU correctly. In the post, we will focus on mining companies (mining sector), where we will focus on the environmental fund.

Keywords

Environmental taxes, the EU, mining and quarrying companies



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Introduction

Environmental taxes are primarily related to activities that have a negative impact on the environment in some way. There is no uniform legal definition for this term in the legislation of European countries. Different opinions of authors in individual professional publications contributed to a large number of definitions of this tax. We can divide them into two main approaches:

- The first approach accepts the reason for introducing environmental taxes and considers this step beneficial. These taxes are understood as payments to the public budget. The introduction or reduction of these taxes is expected to have a positive impact on the environment.
- The second approach is focused on the view of the actual impact of taxes. The definition is that an ecological tax is a tax whose introduction or increase will affect the tax base, which is considered to be environmentally harmful to production, consumption, etc.

The introduction of an environmental tax in the European Union can be traced back to 1990. Since then, it has gained the attention of various governments that intend to minimise environmental degradation. The idea was to charge polluters a certain fee per unit of damage they caused to third parties. In line with this objective, the European Union has introduced four types of environmental tax: energy, transport, pollution, and resource. (Sterner and Köhlin, 2015)

According to the OECD, an environmental tax is the basis of a physical unit or a corresponding substitute for this physical unit, performing a specific and demonstrable illegal impact on the environment. Environmental taxes can be divided into 4 main groups, namely:

1. Energy taxes
2. Taxes related to transport
3. Air pollution taxes
4. Taxes from the deterioration of natural resources

The first two groups mentioned above, energy taxes and transport-related taxes, account for up to 90 per cent of the total income from environmental taxes.

The energy tax is mainly used in Italy, Germany, Netherlands, France, Sweden and Finland because they use heavy power plants and consume a lot of electricity compared to other countries. It also means that these countries get more tax revenue from electricity tax while Sweden and Denmark get more tax revenue from fuel tax. (Voulis a kol., 2019)

In the European Union, there is a noticeable increase in taxation of emissions and environmental sustainability. Taxation takes the form of energy tax, environmental and transport taxes, especially in Slovenia, Poland, France, Portugal, Finland, Latvia, Ireland and Denmark. In addition, environmental and emissions taxes increase government revenue and contribute significantly to economic growth. A survey by Sterner and Köhlin found that the environmental and emissions tax contributes 8% to government revenue and 3% to economic growth in the European Union region. (Trinomics, 2019)

Rather than being designed to obtain revenues – the primary reason for the establishment of any tax – environmental taxes are designed to modify the behaviour of economic agents, such as households and firms. Thus, they must be carefully designed and implemented to achieve the desired results. There is consensus among economists that such taxes are one of the most cost-effective instruments, owing to their profound global effect on agents' decisions at a low cost (Baranzini et al., 2017).

However, firms cannot achieve sustainability goals using traditional operational tools and mechanisms. They must capitalise on modern and environment-friendly technologies, tools, and products. In this regard, D'Attoma and Ieva (2020) argued that green innovation is essential for environmental recovery and economic growth. It focuses on environmentally friendly and energy-saving grounds and can potentially boost national green productivity while reducing negative environmental impacts significantly. Along with this, some nations are imposing carbon taxes to force industries to minimise their harmful emissions and shift their reliance on non-renewable and unfavourable energy to renewable ones.

To combat climate change and environmental degradation, environmental policymakers focus on sustainable environmental growth without jeopardising environmental sustainability. As a solution, implementing market-based regulatory measures such as environmental taxes has gained support, which internalises ecological and social costs from environmental pollution into market prices. (Ma et al., 2023).

Other studies have suggested further justifications for a positive causal effect from environmental policies to economic growth. Pautrel (2009) indicated that when the reduced effects of pollution on health are taken into account, the effects of the environmental policy can be positive on the economy. Causality could also run in the opposite direction from GDP to taxes, as a rise in the income and wealth of a country increases the ability and inclination of a country to pay for higher environmental taxes.

The approach to environmental taxation in the EU has concentrated on the use of taxes to improve the environment whilst using the revenue raised to reduce the distortionary taxation on labour and production. This policy is often regarded as producing a double effect whereby the environment is improved, and at the same time, the economy benefits through the reduction in these distortionary taxes (Bosquet, 2000).

According to Mišúňová, the definition of environmental payment reads: "Environmental payments are considered instruments of environmental policy. Their goal is to have a stimulating effect on the protection of the environment and, at the same time, create financial resources. These resources are subsequently intended to finance environmental protection measures. From the point of view of categorisation, these are financial and economic instruments, including **ecological taxes and fees.**"

At the beginning of 1826, T. Malthus emphasised the limits that result from the economy's growth. He compared the geometric growth of the population and the linear growth of food production. Another important milestone was A.C. Pigou's contribution in 1920, which emphasised the difference between private national economic returns and costs and introduced the term internationalisation of external costs. This term represents such costs, the creation of which causes damage to the environment. Subsequently, they were included in the costs of polluters. This is how environmental policy began to take shape.

Environmental policy is the commitment of a business, organisation or government to comply with laws, regulations and other policy mechanisms related to environmental issues. These issues generally include air and water pollution, waste management, ecosystem management, maintaining biodiversity, managing natural resources, wildlife and endangered species. In terms of environmental policy, implementing a green energy-oriented policy at the global level could be addressed to address the problems of global warming and climate change. (Eccleston, Charles H., 2010)

Policies – related to energy or the regulation of toxic substances, including pesticides and many types of industrial waste – are part of the environmental policy theme. This policy can be used to deliberately influence human activities and thereby prevent unwanted effects on the biophysical environment and natural resources as well as ensure that changes in the environment do not have unacceptable effects on people. (Banovas et al., 2010)

The environmental policy of the European Union can be defined based on basic categories into which these definitions can be classified:

1. Economic dimension: the main emphasis is placed on the fulfilment of environmental goals. On the basis of these goals, decisions are subsequently made with regard to the most efficient use of environmental resources.
2. Political dimension: it aims to ensure environmental policy in the sense of fulfilment and application of procedures at the level of member states. This enables the maximisation of the effectiveness of the measures taken and the transparency of the formulation of goals.
3. Ethical dimension: The European Union considers ethics and moral behaviour to be part of the decision-making processes that consider and determine environmental impacts.

Robert Friis defined environmental policy as: A statement by an organisation (public such as a government or private) of its intentions and policies regarding its overall environmental behavior. Environmental policy provides a framework for activity and setting its environmental goals and objectives (2011, p.8).

Environmental policy is necessary because an organisation, business or government usually does not consider environmental values in decision-making. There are two main reasons for this omission: 1. Environmental impacts are economic externalities. Polluters usually do not bear the consequences of their actions, while negative impacts most often occur somewhere else or in the future. 2. Natural resources are almost always undervalued because they are often assumed to have unlimited availability. (Beuren, 2019)

Currently, many states have incorporated environmental policy into their economic policy. Its main goal is to enter the production and consumption decisions of the consumers themselves. However, the business sphere is also important. The meaning is to achieve a change in the behavior of individual subjects in favor of environmental protection. (Romančíkova, 2011, p.13)

Environmental taxes represent a benefit in the area of efficient spending of financial resources. This benefit can be static or dynamic. The static aspect will be manifested if the amount of ecological tax for all polluters will have the same value. And that without their marginal costs of reducing environmental pollution. On the contrary, the dynamic aspect is manifested if the polluter applies technical progress, resulting in a reduction in the amount of emissions released by the given polluter and a subsequent reduction in the basis for calculating the ecological tax.

Material and Methods

When processing this issue, we were based on currently valid legislative measures and regulations. This mainly includes Act no. 24/2006 Coll. on environmental impact assessment and amendments to certain laws, Act no. 158/2011 Coll. on the support of energy- and environmentally- efficient motor vehicles and on the amendment of certain laws, Act no. 359/2007 Coll. on prevention and remediation of environmental damage, Act no. 409/2011 Coll. on some measures in the area of environmental burden and on amendments to some laws, and last but not

least, Act no. 595/2003 Coll. on income tax as amended. We drew information to solve the problem from the database of financial statements of Slovak companies that operate in the mining sector.

We analyse environmental taxes in selected EU countries and the differences between environmental taxes within the compared EU countries (Slovakia and Hungary) for 2014 – 2022.

In the contribution, we also deal with the environmental fund that business entities can obtain from the state. It is a special fund that the state provides as financial support for projects in the field of environmental protection. This fund helps finance activities to improve the environment. The fund can also be used to support projects that contribute to sustainable development and mitigation of climate change in Slovakia.

We selected companies operating in the mining industry to analyse the above-mentioned facts. According to the economic structure of SK NACE, companies in this sector are engaged in the following activities:

- coal and lignite mining;
- limestone mining;
- mining of dolomite;
- extraction of natural sand;
- gravel mining;
- pebble mining;
- extraction of broken stone.

In order to obtain results in the research area, we used a comparison of the data obtained for selected environmental taxes in the monitored countries.

Results

The analysis of selected environmental taxes applied in Slovakia and Hungary in the monitored period 2014 – 2022 focused on the development of the share of energy taxes in GDP, transport taxes in GDP and pollution taxes in GDP/from sources.

Selected environmental taxes in Slovakia and Hungary

In statistics on taxes related to the environment, data are recorded and presented from the point of view of entities paying taxes. They record the income of national economies from taxes related to the environment, divided by economic activity. Economic activities include production and consumption.

Environmental tax statistics are based on data supported by assessments and declarations or time-adjusted treasury blocks to ensure compliance with ESA 95 and improve international comparability.

In the following tables, we present an overview of the development of individual selected environmental taxes (the share of energy taxes on GDP, the share of transport taxes in GDP and the share of pollution taxes in GDP/from sources) in the countries of Slovakia and Hungary for the period 2014 – 2022.

Tab. 1 Comparison of selected environmental taxes in Slovakia and Hungary in the period 2014 - 2022 in % of GDP

| Slovakia | Share of energy taxes on GDP | Share of transport taxes on GDP | Share of pollution taxes on GDP / from sources |
|----------|------------------------------|---------------------------------|--|
| 2014 | 2,22 | 0,27 | 0,04 |
| 2015 | 2,20 | 0,25 | 0,04 |
| 2016 | 2,18 | 0,26 | 0,04 |
| 2017 | 2,24 | 0,26 | 0,03 |
| 2018 | 2,19 | 0,26 | 0,03 |
| 2019 | 2,22 | 0,25 | 0,03 |
| 2020 | 2,21 | 0,21 | 0,03 |
| 2021 | 2,15 | 0,2 | 0,03 |
| 2022 | 2,26 | 0,19 | 0,02 |
| Hungary | Share of energy taxes on GDP | Share of transport taxes on GDP | Share of pollution taxes on GDP / from sources |
| 2014 | 1,84 | 0,37 | 0,21 |
| 2015 | 1,86 | 0,36 | 0,25 |
| 2016 | 1,93 | 0,36 | 0,25 |
| 2017 | 1,83 | 0,34 | 0,26 |
| 2018 | 1,75 | 0,32 | 0,24 |

| | | | |
|------|------|------|------|
| 2019 | 1,75 | 0,31 | 0,23 |
| 2020 | 1,69 | 0,3 | 0,21 |
| 2021 | 1,56 | 0,28 | 0,21 |
| 2022 | 1,41 | 0,29 | 0,18 |

Source: own processing from Eurostat data

Table 1 shows the percentage share of energy taxes on GDP in the Slovak Republic and Hungary. These data represent the development of the percentage share of GDP for the monitored period of 2014 – 2022. As we can see in Slovakia, the share of energy taxes in GDP reaches a higher value than in Hungary. While it reached the maximum value (2.26%) in Slovakia in the last monitored year, 2022, it reached the lowest value (1.41%) in Hungary this year.

Another of the monitored taxes is the transport tax. We also compared it between 2014 and 2022. In both compared countries, they tried to reduce this share of transport taxes on GDP for the entire period, while in the last monitored year, their lowest value was reached. In 2022, the share of transport taxes in GDP was 0.19% in Slovakia and 0.29% in Hungary.

The third in order is the pollution tax/from resources; we compared this tax, just like the previous ones, for 2014 – 2022. Of all the compared taxes, this tax makes up the lowest percentage of the total shares of environmental taxes on GDP in Slovakia and Hungary. As we can see, this is not the most significant component of Slovakia's share of environmental taxes on GDP. Development is slow and unremarkable. Both countries reduced this tax in the monitored period, while in Slovakia, in the last year, 2022, it reached a value of 0.02% and in Hungary, 0.18%.

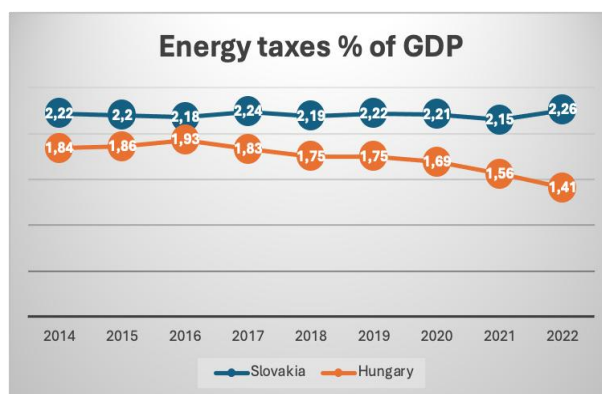


Fig. 1 Development of the share of energy taxes in Slovakia and Hungary in the years 2014 – 2022 in % of GDP
Source: own processing from Eurostat data

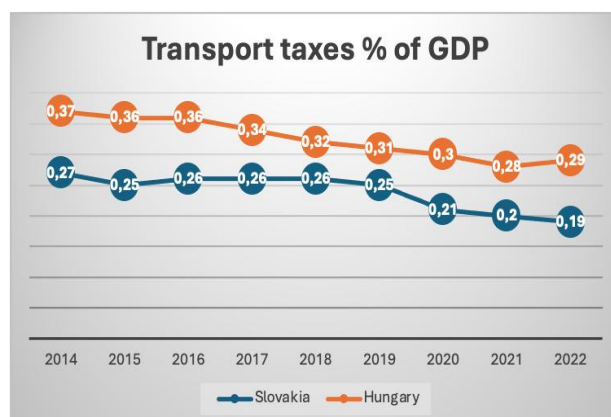


Fig. 2 Development of the share of transport taxes in Slovakia and Hungary in the years 2014 – 2022 in % of GDP
Source: own processing from Eurostat data

The development of energy taxes is shown in the graph above. We can state that in Slovakia, the percentage of GDP for these taxes decreased until 2016. In 2017, there was a growth of 0.06%, which reached the level of 2.24%. After this year, there was a downward trend of energy taxes, reaching the lowest value of 2.15% of GDP only in 2021. A year later, i.e. in the last monitored year of 2022, there was a sharp increase in these taxes up to the level of 2.26% of GDP. In Hungary, there were no significant fluctuations in the values for the entire monitored period. There was a decrease in these taxes until last year when Hungary reached the lowest value of 1.41% of GDP.

Based on a graphic representation, we can see the development of the percentage share of transport tax on GDP. In the first year of 2014, Slovakia's share of transport taxes in GDP was the highest for the monitored period of 2014 – 2022. This value reached 0.27% of GDP. In the last monitored year of 2022, Slovakia reached the lowest value of 0.19% of GDP in the share of transport taxes. During the observed period, Slovakia had a gradual downward trend of these taxes. The same trend of the share of transport taxes on GDP was also recorded in Hungary, with a level of 0.37% of GDP being reached in the first year of 2014 and a value of 0.27% of GDP in the last monitored year of 2022.

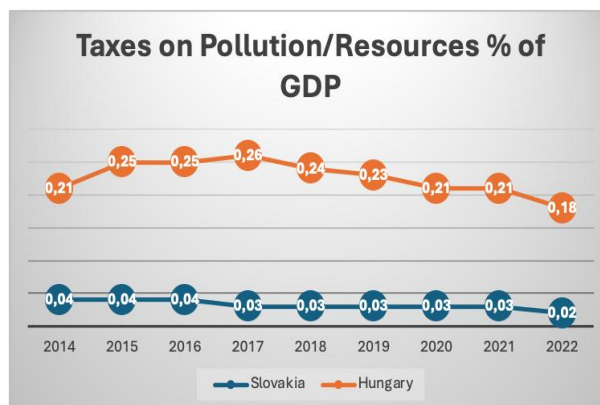


Fig. 3 Development of the share of taxes on pollution/sources in Slovakia in Hungary in the years 2014 – 2022 in % of GDP
Source: own processing from Eurostat data

The third group of environmental taxes that we compare for the monitored period of 2014 – 2022 is the pollution taxes/resources and their share of GDP in Slovakia and Hungary. In Slovakia, in this graphic representation, there was a gradual decrease in the share of pollution/source taxes from 0.04% to 0.02% of GDP. In Hungary, these taxes for pollution/sources represent higher values than in Slovakia, while in the last monitored period, it reached the lowest value for taxes for pollution/sources, namely 0.18% of GDP

Environmental view of companies operating in the mining industry in Slovakia

In this paper, we analyse selected companies operating in the mining industry in Slovakia from the point of view of applied environmental taxes. Specifically, we focused on:

- Kameňolom Sokolec, s. r. o.,
- Štrkopiesky Batizovce, s. r. o.,
- KAS, a. s.,
- SZM, s. s. Jelšava,
- Kremnická banská spoločnosť s. r. o.,
- KSR – Kameňolomy SR, s. r. o.,
- Rudné bane a
- Hornonitrianske bane Prievidza, a. s.

Based on the data obtained from the Finstat database of the listed companies operating in the field of mining, only one company was provided with an environmental fund. It is the company KAS, a. s. (Kameňolomy a štrkopieskovne, a.s.). The Environmental Fund is a claim of the state while the administrator of the claim is the Environmental Fund, and the administrator's department is the Ministry of the Environment of the Slovak Republic

The Environmental Fund is a state fund that serves to implement state support for environmental care. The fund is managed by the Ministry of the Environment of the Slovak Republic.

The environmental fund is primarily established for the purpose of state support for the care of the environment and the creation of the environment based on the principles of sustainable development. **The main mission of the fund is to provide financial resources to applicants in the form of grants or loans** to support projects within activities aimed at achieving the goals of state environmental policy at the national, regional or local level. In addition, the fund also provides funds for other activities specified in the provisions of the Act on this fund.

The sources of the environmental fund are fines imposed by the state environmental care authorities, payments for registration in the list of professionally qualified persons for assessing the effects of activities on the environment, revenues from public collections intended for environmental care, levies, penalties and fines for violating financial discipline in the management of the funds of the fund, fees for the discharge of wastewater into surface waters and fees for the withdrawal of groundwater outside of withdrawal by simple devices for water withdrawal, charges for air pollution from major sources of pollution and medium sources of pollution.

Furthermore, the resources of the Environmental Fund are non-refundable support (hereinafter referred to as "subsidy"), revenues from funds deposited in the State Treasury except for revenues to funds provided from the state budget, donations and contributions from domestic and foreign legal entities and natural persons, sanctions for violations of the contractual conditions, income from the proceeds from the execution of the thing for which a contractual lien was established and several other sources.

According to Act no. 587/2004, resources of funds can be provided and used mainly to support activities aimed at achieving the goals of the state environmental policy at the national, regional or local level, support for research, research and development aimed at detecting and improving the state of the environment.

Also, for the support of environmental education, training and promotion, support for the solution of an extremely serious environmental situation or solution for the removal of environmental burdens and support for the removal of the consequences of an accident and an extraordinary deterioration of water quality or an extraordinary threat to water quality.

Discussion

From the analysis of selected environmental taxes, it is possible to state conclusions and proposals in the field of applying environmental taxes from the point of view of the country's economy as a whole and from the point of view of business entities.

From the point of view of the country's economy, we compared the EU countries Slovakia and Hungary in terms of the share of environmental taxes in GDP. Since GDP is one of the significant indicators of the strength of the economy in countries, the goal of each country is to support and increase the percentage of this indicator. Slovakia has a higher percentage of the share of energy taxes on GDP than Hungary, and it is also the average of EU countries. On the contrary, the percentage of the share of transport taxes on GDP and the share of pollution/resource tax is lower than Hungary and the average of EU countries. It is in the country's interest to support the introduction of environmental taxes. Slovakia does not have an established resource tax, but there are many other taxes from individual subgroups of environmental taxes. The introduction of this tax, as well as other taxes, would help to increase the overall GDP and, therefore, also strengthen the economy in Slovakia. Taxes on resources include taxes on water withdrawal or extraction of certain raw materials.

Another solution for using environmental taxes to contribute to improving the state's economy is the introduction of the so-called consumer bottom. This measure is mitigating in nature, and no tax is imposed below its level. By increasing one of the types of environmental tax, a reduction in the personal income tax rate could be achieved at the same time. This is the most significant tax rate as it affects almost every resident of the state. For example, the Netherlands has already introduced this measure.

From the point of view of business entities, we focused on the company KAS, a. s., which received a subsidy from the Environmental Fund, while this fund is used to implement state support for environmental care.

Business sustainability is closely related to environmental policy and the environment. Today, sustainability is becoming an important factor for large corporations and small and medium-sized enterprises. Customers, investors and regulators are stressing that businesses should be held accountable not only for their profits but also for their overall impact on the world. The Corporate Sustainability Reporting Directive (CSRD) initiative of the European Union aims to improve the transparency and quality of corporate sustainability reports. CSRD is an important step towards ensuring the responsibility and sustainability of business in Europe.

Companies should prepare this information for publication in accordance with the standards for reporting sustainability information from the accounting year 2023 indicated for each category of companies.

Pursuant to the directive of CSRD, the Accounting Act details the obligation of individual reporting of sustainability information. It details the scope of obligations of companies by size groups to include in a separate, specially marked part of the annual report, individual reporting of information on sustainability, which includes the following information:

- necessary to understand the entity's impact on aspects of sustainability, including
- how aspects of sustainability affect the development, performance and position of the accounting unit.

Obligations resulting from changes in the Accounting Act also apply to an accounting unit that is a trading company and, in each of the two immediately preceding accounting periods, meets at least two of the following conditions:

1. the total amount of assets exceeded 25,000,000 euros,
2. net turnover exceeded 50,000,000 euros,
3. the average recalculated number of employees during the accounting period exceeded 250, or it issued securities, and they were accepted for trading on the regulated market of a member state and in each of the two immediately preceding accounting periods, it meets at least two conditions from the conditions of the Accounting Act for classification into a size group.

The accounting entity that is subject to the above obligation is obliged to inform the employee representatives at the appropriate level about this task and to discuss with them the necessary information and methods of obtaining information on sustainability, including their control, and, if it is necessary, to notify the opinion of the employee representatives to the administrative body, the management body or supervisory authority of the accounting unit.

A company's sustainability reporting could include several key aspects for assessing its environmental, social, and economic impacts.

Sustainability reporting is recommended to be updated regularly to reflect developments and changes in political, economic and environmental conditions. It is important for the company to maintain open communication with the public and stakeholders regarding its sustainability initiatives.

Conclusion

An environmental tax is any payment based on something that has a negative impact on the environment, i.e. it pollutes or invalidates the environment.

The main goal of the contribution was to characterise and compare selected environmental taxes in selected EU countries (Slovakia and Hungary) regarding their forms of application, to define the main differences in the implementation of these taxes in the tax systems of EU countries and to point out similarities and differences in the application of environmental taxes as one from the instruments of environmental policy of countries. In the introduction, we defined the theoretical concepts related to the issue of environmental taxes. Subsequently, we implemented the information obtained to compare selected environmental taxes, which we present in a table and graphs for a clearer expression of the share of environmental taxes on GDP in the compared countries.

From the results of the analysis of selected environmental taxes, we established conclusions and proposals from the point of view of the country's economy as a whole and from the point of view of business entities.

The contribution was also focused on areas related to the sustainability of the company. Business sustainability is an important concept that deals with reducing the negative impacts of business on the environment, society, and economy. Everyone should contribute to a more sustainable future by adopting changes in their behavior and operations. In the modern business environment, corporate sustainability is becoming an essential consideration as companies and consumers realise that economic success should not be achieved at the expense of the environment or society. In this context, companies must report information related to sustainability per the Accounting Act in their annual report. The mentioned fact is related to a difficult process; therefore, companies are advised to prepare in sufficient time. The sustainability reporting process is currently beginning; the legislation is set, and the resulting changes will be adjusted. It is recommended that companies monitor these changes and continuously consider them when reporting the sustainability of the company in the annual report.

Summary

Currently, many states have implemented environmental policy into their economic policy. Its main goal is to enter the production and consumption decisions of the consumers themselves. However, the business sphere is also important. The goal is to achieve a change in the behavior of individual subjects in favor of environmental protection.

Environmental taxes are supposed to be beneficial in the area of efficient financial resource spending. This benefit can be static or dynamic. The static aspect will be manifested if the amount of the environmental tax for all polluters is the same. On the contrary, the dynamic aspect is manifested if the polluter applies technical progress, resulting in a reduction in the amount of emissions released by the given polluter and a subsequent reduction in the basis for calculating the environmental tax.

The contribution is focused on comparing selected environmental taxes applied in the tax systems in Slovakia and Hungary in the monitored period of 2014 – 2022. We paid attention to selected mining and quarrying companies operating in Slovakia in terms of applied environmental taxes. The investigated issue is closely related to the sustainability of businesses because economic success and the approach to business should not only consider the achievement of profit but also the environmental and social impact. Corporate sustainability is currently becoming an essential approach in the modern business environment, as companies and consumers realise that economic success cannot be achieved at the expense of the environment or society.

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