



THE SIGNIFICANCE OF ENVIRONMENTAL TAXES USED FOR MITIGATING THE ENVIRONMENTALLY HARMFUL IMPACTS OF ROAD TRANSPORTATION

A KÖZÚTI SZÁLLÍTMÁNYOZÁS KÖRNYEZETKÁROSÍTÓ HATÁSÁNAK CSÖKKENTÉSE ÉRDEKÉBEN ALKALMAZOTT KÖRNYEZETVÉDELMI ADÓ JELENTŐSÉGE

Anikó Danyi-Boll ¹, Andrea Gáspár ²

¹ Commerce, Marketing and International Business Department, Business Administration Faculty, John von Neumann University, Hungary

² Economic, Finance and Management Department, John von Neumann University, Hungary

Keywords:

transportation
environment
tax

Kulcsszavak:

szállítmányozás
környezetvédelem
adó

Abstract

Logistics is one of the most important economic sectors of the European Union, with nearly 1.134 million companies engaged in the field of transportation in the EU. The global logistics market is expected to show further expansion in the forthcoming years. On the other side stands global warming which is one of the greatest problems for the time being. The European Commission has announced a cross-sectoral investment programme worth more than 10 billion euros (nearly 3,200 billion Hungarian forints) for the planning, development and implementation of low carbon dioxide-emitting technologies to improve Europe's global competitiveness. The common data base of OECD and the European Environment Agency (EEA) currently lists 375 environmental taxes and approximately 250 environmental fees or charges in the OECD countries. Among the EU member states, Sweden, for example, introduced a tax system which includes the essential elements of eco-tax more than 10 years ago. Hungary has several of such tax types, such as the excise tax on fuel, the energy tax, the energy suppliers' income tax or the vehicle tax.

Összefoglalás

Az Európai Unió egyik legfontosabb gazdasági ága a logisztika, közel 1,134 millió cég foglalkozott az EU-ban a szállítással. A globális logisztikai piac a várakozások szerint tovább bővíülhet a következő években. A másik oldalon a globális felmelegedés, mely jelenleg az egyik legfontosabb probléma. Az Európai Bizottság több mint 10 milliárd euró (mintegy 3200 milliárd forint) értékű, több ágazatot érintő beruházási programot hirdetett az alacsony szén-dioxid-kibocsátású technológiák kidolgozására, fejlesztésére és megvalósítására Európa globális versenyképességének növelése érdekében. Az OECD és az Európai Környezetvédelmi Ügynökség (EEA) közös adatbázisa jelenleg 375 környezetvédelmi adót és körülbelül 250 környezetvédelmi díjat, illetéket tart számon az OECD országaiban. Az EU

tagállamai közül például Svédország több mint 10 éve vezetett be olyan adórendszert, mely az ökoadó lényeges elemeit tartalmazza. Magyarországon is több ilyen adófajta van, az üzemanyagokat terhelő jövedéki adó, az energiaadó, az energiaellátók jövedelemadója, a gépjárműadó.

1. Introduction

There are approximately 23.3 million active businesses in the European Union, about 4.7% of which are engaged in transportation. For the purposes of this study, this figure includes companies involved in road transportation [7]. Road traffic is the major source of air pollution, i.e. one of the most adverse forms of pollution. Transport, however, is important, for it ensures the free movement of persons, goods and services. The significance of mitigating environmental damage is beyond doubt and every effort must be made to achieve this, including the use of tools such as taxes.

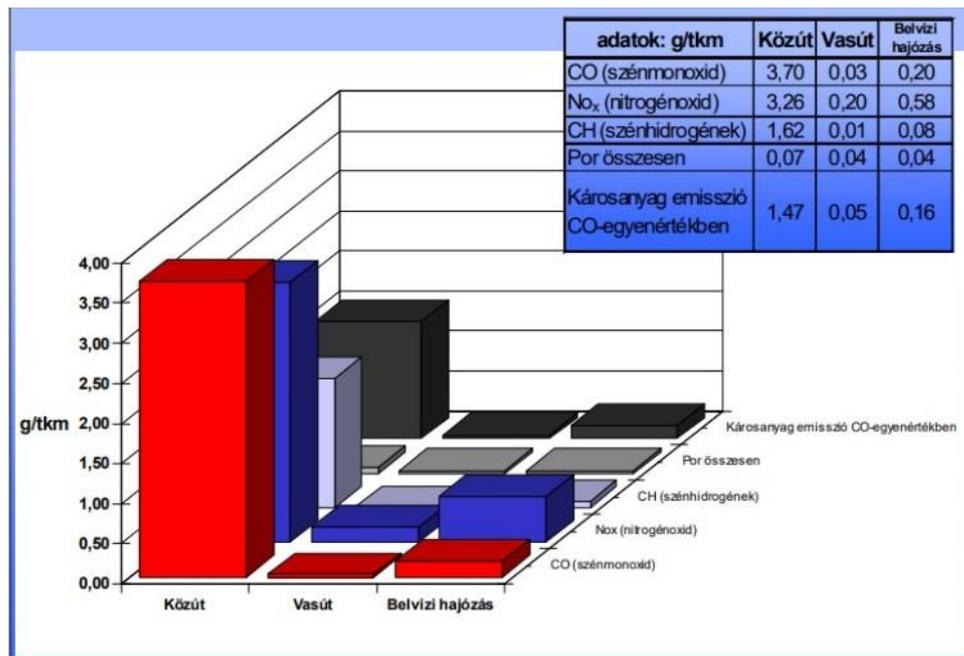
2. Literature review

Road transportation is one of today's most important economic sectors. The efficiency of trade would be greatly reduced without the ability of moving goods. Apart from the environmentally harmful effects, the development of transport networks has a positive, value-added impact on the region. The area becomes swiftly and more easily accessible, there is a reduction in lost time, as a consequence, the value of land increases, except for real estates situated right next to the network lines and affected by high noise levels. This is due to the positive environmental impact of infrastructure development and its well-known value-increasing effect on land prices [8].

Transportation activities exert a harmful influence on the environment on a constant basis. Undeniably, transportation is one of the major environmental pollution factors in modern economies today. The mitigation of the most harmful effects is a voluntary duty that not all the companies engaged in transportation assume in the field of air pollution, noise and vibration control, soil and water contamination as well as waste management. Businesses often need some 'help' and this is where an increase in environmental taxes by the state and a change in the legal environment come into the picture.

Parts of Europe are connected by road networks, railway lines, inland waterways, inland and sea ports, airports as well as railway and road terminals. If we do not consider secondary roads and railways, the Trans-European Transport Network (TEN-T) itself is made up of 138,000 km of railway lines, 136,700 km of roads and 23,506 km of inland waterways. Nearly 3.8 billion tons of goods are handled in the ports of the EU, 10% of which in the port of Rotterdam

Air pollution is mainly caused by the gases emitted by internal combustion engines (emission). The major originator of this type of pollution is road transport, followed by the emission of railway, air and water traffic. The intensity of pressure on the environment depends also on how high the gases are emitted into the air. In this respect, road transportation has the most negative impact. The most harmful substances in exhaust fumes include carbon monoxide, carbon dioxide, hydrocarbons, nitrogen oxides, lead compounds, sulphur dioxide and solid particles (airborne dust). The following data (Figure 1) show the share of transportation in harmful emissions by components (in 1999). The transportation system ensures the free movement of persons, goods and services. Road transport is responsible for 82% of the energy used in transportation, 13% is attributable to air traffic and 5% to railway and water transportation [9].



Figure

Harmful emissions of the various forms of road transportation
 Source: <http://www.tolner.hu/okt/Iparkozl/IK17Kozlekedes.pdf>

1

2.1. Environmental taxes

According to the official definition of environmental tax, it is a tax whose base is a physical unit (or a proxy of it) of something that has a proven, specific negative impact on the environment and which is identified as an ESA 95 tax [1]. Several types of market failures are known among which the most well-known in the field of environmental protection are in connection with external economic impacts (so-called externalities). Due to these market failures, the economy is not in a Pareto-optimal condition, which means that one individual cannot be made better off without others being made worse off. The theory on the control of environmental pollution uses a lot of methods for the optimization of damage caused by harmful environmental exposures and a common effort of all these solutions is to internalise externalities [2].

Living standards will not decrease as a result of the introduction of eco taxes and making them more widespread, however, they will not significantly increase, either. On an individual level, those who wish to take care of their environment tend to be in a better financial condition. The mitigation of environmental damage and the reduction in related health problems are a relief for the state budget. Through decreasing the amount of waste, the costs of waste collection and disposal may be lower and the quality of transportation and mobility as well as life expectancy and living standards may improve. [www.beszelo]

The methods of environmental protection control:

- direct statutory control, (e.g. instructions, prohibition)
- indirect economic control, (e.g. environmental taxes)
- individual controls (e.g. tax allowances, emblems, certificates):
 - Forestry fines
 - Fishing fines
 - Water resource contribution
 - Environmental fines
 - Wildlife fines [3]

Here, environmental taxes, besides taxes in a traditional sense, include fees, allowances, duties and other public burdens, i.e. any payment obligation having an impact on the environment. In a narrow sense, eco taxes include direct public charges to be paid in connection with the environment (such as energy taxes or other fees related to environmental impact) [4].

Sweden introduced a tax system which includes the essential elements of eco-tax more than 10 years ago. Finland, Italy and Austria have also put eco taxes in place. Of all the greenhouse gases, the emission of carbon dioxide (CO₂) and methane (CH₄) is the most dangerous to us. There are many countries where various taxes are levied on the emission of greenhouse gases ('most popular' environmental tax items). There are a number of such taxes in Hungary as well, such as the excise tax on fuel, the energy tax, the energy suppliers' income tax or the vehicle tax.

Environmental taxes are often classified according to the relevant OECD terminology which puts taxes relating to the environment into one of the following four categories:

- energy taxes (including carbon dioxide tax),
- transportation/shipping taxes,
- pollution taxes,
- resource taxes [5].

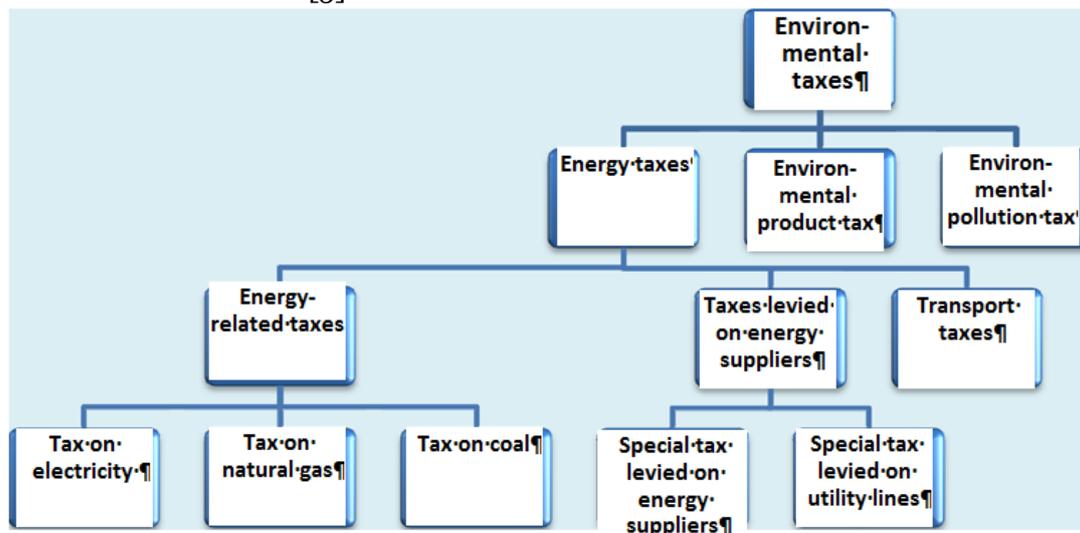


Figure 2 The system of eco taxes in Hungary
Source: www.kozjavak.hu

In Hungary, the system of eco taxes focuses on three tax categories in a narrow sense:

- environmental product tax (Act LXXXV of 2011)
- environmental pollution tax (Act LXXXIX of 2003): air pollution, water pollution, soil pollution.
- energy tax (Act LXXXVIII of 2003): for electricity, natural gas and coal.

Environmental taxes can be categorised into 4 groups: energy taxes, transportation taxes, environmental pollution taxes and taxes on natural resources. A significant part of environmental tax revenues (nearly three-quarters) are attributable to energy taxes. In 2008, the member states of the European Union had revenues amounting to 299 billion EUR from environmental taxes, which made up 2.4% of the GDP and 6.1% of total tax income. In Hungary, environmental taxes were responsible for 2.7% of the gross national product in 2008. This ratio has risen only by 1% point in 10 years; however, it is still the ninth highest share among all the member states [6].

76.5% of the environmental tax revenue collected in the EU in 2014 was imputable to energy taxes, 19.9% to transportation-related taxes and 3.6% to pollution and the use of resources. In 2014, the income from environmental taxes was higher than 10% of total tax revenues in three EU states: Slovenia (10.6 percent), Croatia (10.5 percent) and Greece (10.2 percent). Belgium and France (4.5 percent in each) as well as Germany and Sweden (5.2 percent in each) witnessed the lowest environmental tax burdens.

In Hungary, revenues from environmental-related taxes significantly increased between 2004 and 2014 (from 2.375 billion EUR to 2.713 billion EUR), however, their share in total tax revenues dropped (from 7.7% to 6.8 percent) [1].

3. Materials and methods

This research was based on an online questionnaire-based survey and the processing of the resulting data. Based on the questions, it was clear right from the beginning that we wanted to invite freight forwarders or people working for such companies to participate. The first survey was conducted at the end of 2017, while the second one at the beginning of 2019. The first questionnaire was completed by 119 people and 102 respondents took part in the second survey. We would like to show a part of the findings of the two surveys, without trying to be exhaustive. There were no implications in the question on geographical areas; therefore, no data on coverage could be determined at the starting point. All we can say is that the survey was completed by people engaged in transportation in the territory of Hungary, in Hungarian. The data were processed with the help of the given (google) software.

4. Findings

The logistics sector employs nearly 10.5 million people in the European Union, making it a segment with a significant number of employers and employees. Figure 3 shows that 50% basically agree with the imposition of vehicle tax and 25% mostly agree, however, they are not sure about the proper utilisation thereof.



Figure 3 What do you think of the taxes on vehicles? (2017)
Source: own editing

In line with our presumption, there were people who considered this tax as too high (25%), however, interestingly, half of the respondents regarded vehicle taxes as justified.

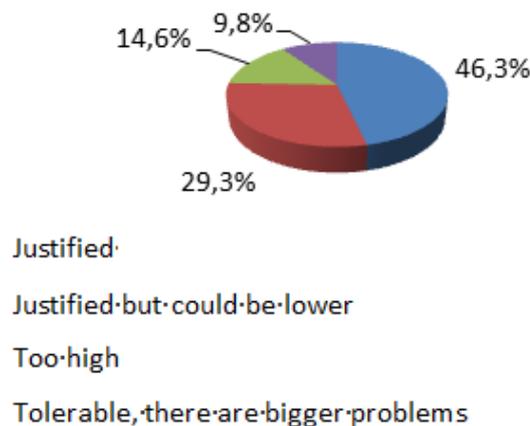


Figure 4 What do you think of the taxes on vehicles? (2019)
Source: own editing

Figure 4 shows this difference: the majority of respondents still considered these taxes to be justified, however, there were fewer people who regarded them too high (14.6% instead of 25%) and 9.8% of them found other problems more serious.

Figure 5 illustrates opinions on how much they agree that our environment needs to be protected and further costs must be borne for this purpose. The majority (34%) of respondents would be willing to pay, however, only if adequate information is provided. Surprisingly, 21% consider it obvious that we must do something for our environment and this comes at a cost.

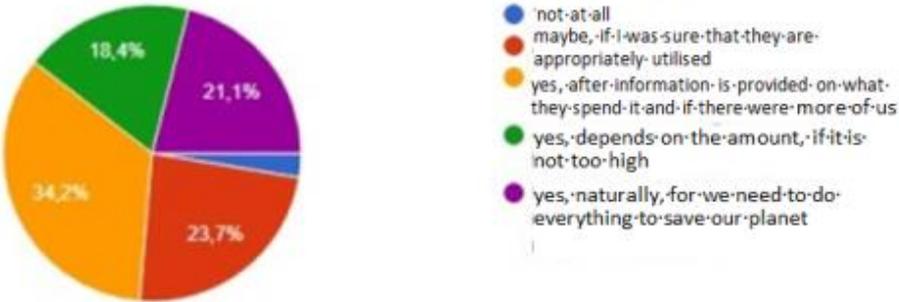


Figure 5: Willingness to pay for environment protection (2017)
Source: own editing

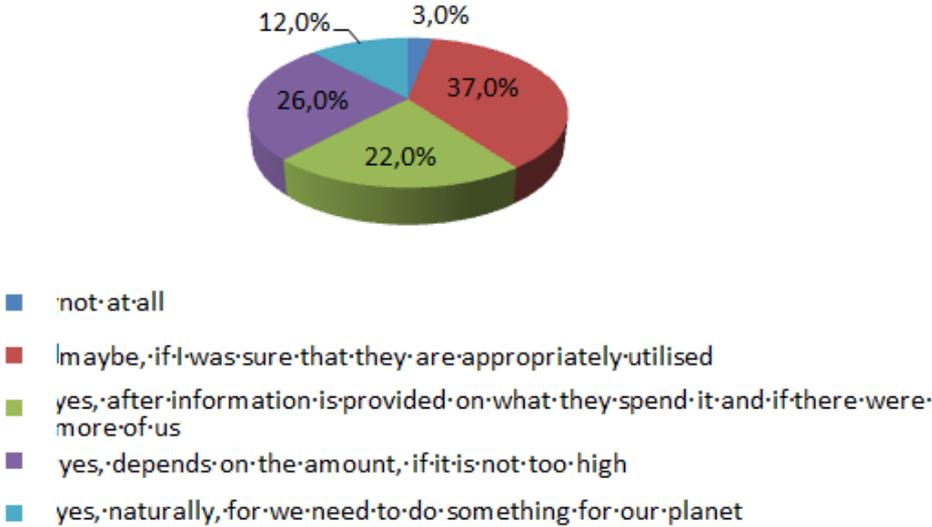


Figure 6: Willingness to pay for environment protection (2019)
Source: own editing

Figure 6 shows the difference between the two surveys: it can be seen that the proportion of those who would be willing to pay if they knew the purpose of utilisation rose to 37% from 23%. However, the ratio of those who would like to do something for our planet slightly dropped, from 21% to 19%.

5. Summary

Logistics is one of the most important economic sectors of the European Union and our study focuses on road transportation. Nearly 1.134 million companies were engaged in the field of transportation in the EU and a stunning 10.5 million people were employed in this field. The global logistics market is expected to show further expansion in the forthcoming years, with road transportation being one of the greatest beneficiaries of this. However, the sector must overcome a number of challenges so that positive expectations can be realised. We can see other important statistical data as well: the value of the European logistics market amounted

to roughly 960 billion EUR in 2014. On the other side stands global warming which is one of the greatest problems for the time being. The common data base of OECD and the European Environment Agency (EEA) currently lists 375 environmental taxes and approximately 250 environmental fees or charges in the OECD countries. Of the 375 taxes, 150 are linked with energy, 125 with vehicles and about 50 with waste. The base for the rest of the taxes greatly varies by country. As a conclusion, we can establish that a huge part of the population does not want to give up the convenience cars provide or the shipping services transporters offer. There are possibilities for transportation activities to be carried out without the emission of harmful gases; however, this comes at a cost.

Acknowledgment

This research is supported by EFOP-3.6.1-16-2016-00006 "The development and enhancement of the research potential at John von Neumann University" project. The Project is supported by the Hungarian Government and the European Union, co-financed by the European Social Fund and realised within the framework of the Széchenyi 2020 programme.

Bibliography

- [1] Környezetvédelmi adók: Magyarország is követi az uniós trendeket (2017). (On-line) Available: <http://kamaraonline.hu/cikk/kornyeztvedelmi-adok-magyarorszag-is-koveti-az-unios-trendeket?> [Accessed: 10-Apr-2019].
- [2] Kocsis, T. (2002): Állam vagy piac a környezetvédelemben? A környezetszennyezés-szabályozási matrix. In: Közgazdasági Szemle, 49 (10) pp. 889–892.
- [3] Herich György (2018): Adótan 2018. Penta Unió Oktatási Centrum <http://beszelo.c3.hu/cikkek/ado-es-kornyeztvedelem> [Accessed: 21-Mar-2018].
- [4] Bartha, I. – Nagy, Z. (2017): Energiaadó vagy valami más? A környezetvédelmi közterhek hatásmechanizmus-áról. (On-line) [Accessed: 10-Apr-2019].
- [5] Szilágyi, G. (2003): Környezeti adók Magyarországon és Nyugat-Európában. In: Gazdaság és Statisztika, 15 (5) pp. 44-54.
- [6] <http://www.ksh.hu/docs/hun/xftp/gyor/jel/jel31007.pdf> [Accessed: 11-Apr-2018].
- [7] <http://www.europarl.europa.eu/factsheets/hu/sheet/63/a-kis-es-kozepvallalkozasok> [Accessed: 02-May-2019].
- [8] <https://ko.sze.hu/catdoc/list/cat/7086/id/7097/m/4974> [Accessed: 02-May-2019].
- [9] <http://www.tolner.hu/okt/Iparkozl/IK17Kozlekedes.pdf> [Accessed: 02-May-2019].

