EVOLUTION OF ENVIRONMENTAL TAX REVENUES IN POST-COMMUNIST EUROPEAN MEMBER COUNTRIES

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***Abstract**: Human activities can have harmful effects on the environment, which may affect the ability of future generations to meet their own needs. Therefore, policymakers must decide which economic instruments should implement in order to achieve the sustainable development objectives.*
In Europe, effective action demands the collaboration of all economic agents on all member states in order to bring environmental taxation in line with the EU's climate change targets: reducing its greenhouse gas emissions by 20% in 2020 compared to 1990, raising the share of EU energy consumption produced from renewable resources to 20%, and 20% improvement in the EU's energy efficiency.
After two decades of post-revolution economic problems and living-standards, some countries from Central and Eastern Europe took the first steps in designing extensive environmental fiscal reforms. The reform implemented in more advanced post-communist countries spread pretty quickly to upper-middle-income and middle-income countries.
Through this article, I intended to present an in-depth analysis of energy taxation and an assessment of trends and status of the environmental tax revenues as a share of GDP levied by post-communist E.U. member countries: Bulgaria, The Czech Republic, Estonia, Latvia, Lithuania, Hungary, Poland, Romania, Slovakia, Slovenia by processing the information provided by Eurostat database.
Each information is updated and accurate as possible, although that the use of economic instruments for environmental policy is rapidly changing.
This article, which is only a work in progress, will conduct further research on a wide range of environmental tax issues. Potential projects will be submitted in publications, article, and conferences. They will cover:

- *main drivers for the evolution of environmental tax revenue such as final*
- *energy consumption, energy efficiency policies, renewable energy, Europe*
- *Brent Oil Spot price;*
- *the situation of excise duties applied to the most important sources of*
- *energy in relation to the minimum energy tax provided by EU legislation in*
- *CEEC-10;*
- *assessments of the extent to which governments from EU-27 and CEEC-*
- *10 are using environmental taxes; and*
- *entropic degradation – consequences of economic growth.*

***Keywords**: environmental tax policy; environmental fiscal policy; environmental tax revenues; new E.U. member countries.*

***JEL classification**: H23; Q50; O57*

1. Introduction

Environmental tax policy, which is an indispensable part of European fiscal policy, is employed by governments in order to reduce resulting emissions and to promote environmentally sound products. Environmentally-related taxes are designed by the policy makers such that to be environmental effective. They should ensure fiscal sustainability by achieving revenues and can have distributional implication.

The environmental fiscal policy reform in transition and emerging-market countries of Central and Eastern Europe (CEE) has introduced taxes for environmental purposes, relating to: energy, transport, pollution and resources as European statistics distinguish.

According to the European Commission, an environmental tax is a tax whose tax base is a physical unit that has a proven specific adverse effect on the environment. (European Commission, 2001)

The EU publication "Environmental taxes — A statistical guide" presents several reasons why including the CO2-taxes under energy taxes rather than under pollution taxes. "First of all, it is often not possible to identify CO2- taxes separately in tax statistics because they are integrated with energy taxes. In addition, they are partly introduced as a substitute for other energy taxes and the revenue from these taxes is often large compared to the revenue from the pollution taxes"

Many countries from Central and Eastern Europe, especially developed countries, have improved their environmental tax policy by introducing new economic instruments with the purpose of supporting and promoting environmental improvements. Therefore, environmental taxes are being increasingly recognized as having the potential to serve as an effective instrument for efficient management of natural resources and to encourage environmentally positive behaviour change. (Deepak Das, 2005)

However, the environmental tax policy had become politically sensitive when the price of mineral oil products increased drastically due to the high prices for crude oil and the devaluation of the euro. (Stefan Bach et al. 2001)

The extent to which environmental tax receipts should have the potential to generate additional government revenues calls for a much closer interaction between environmental tax and government environmental objectives. Thus, the new environmental tax revenues that could be collected may provide an opportunity to increase economic incentives for stakeholders to promote ecologically sustainable activities.

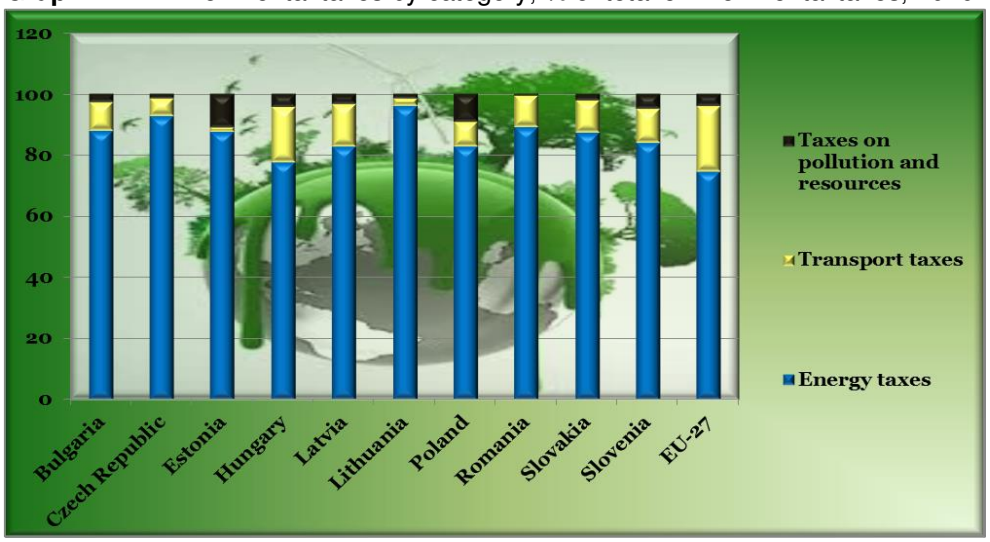
1. Trends of environmental tax revenue in total taxation in Central and Eastern European Countries

Further, the discussion focuses on a comparison of 'green taxation' system between European member states from Central and Eastern Europe.

In most post-communist European countries, taxes on energy account for the largest part of environmental tax revenues, between 77,9% (Hungary) and 96,1% (Lithuania) in 2010.

In Hungary, revenue from transport taxes forms 18,1 % of total environmental taxes in 2010, the highest in CEECs. Estonia ranks first in revenue from pollution/resources taxes.

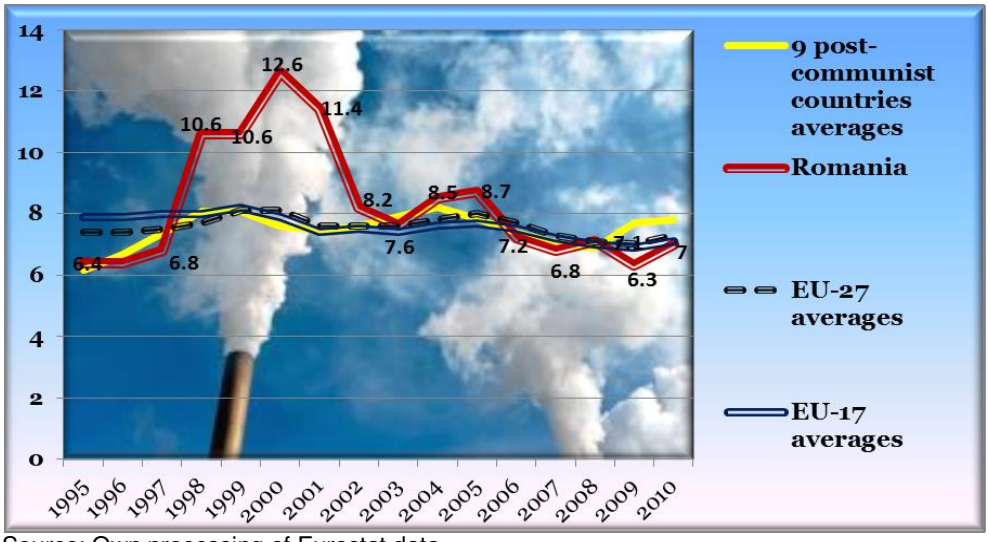
Graph 1.1. Environmental taxes by category, % of total environmental taxes, 2010



Source: Own processing of Eurostat data

The share of pollution and resources taxes in total environmental taxes differs a lot across the CEECs, from above 8,5 % in Poland (8,8%), Hungary (10,6%) to only about 1,5 % in Czech Republic (1,5%), Lithuania (1,4%)- see Graph 1.1.

Graph 1.1. Environmental taxes as % of Total Taxation in Romania, CEEC, EU-27 and EU-17



Source: Own processing of Eurostat data

In the first decade after communism, Romania recorded a rising trend of the share of environmental tax revenues in total fiscal taxation, thus, between 1995 and 1999 increased almost 6% recording a peak in 1999. This was the highest level of collections from environmental taxes in Europe of all time.

Table 1.1 is focused primarily on the revenues that were raised in Romania in certain years. They can explain the increased levels of the receipts of environmental taxes in a post-communist country between 1994 and 2004. It also describes the main characteristics of the environmentally related taxes, fees and charges in Romania.

Table 1.1. Revenues raised from environmentally related taxes in Romania in million Dolar U.S.

Name	Type	Year	Million Dollar U.S.
Air emission non-compliance fees	Fee/Charge	2000	0.3
Fuel excise tax	Tax	1998	0.1
Fuel excise tax	Tax	1999	0.2
Fuel excise tax	Tax	2000	0.2
Fuel excise tax	Tax	2001	0.2
Fuel excise tax	Tax	2002	0.2
Water abstraction charge	Fee/Charge	1998	4.1
Water abstraction charge	Fee/Charge	1999	3.6
Water abstraction charge	Fee/Charge	2000	16.9
Water abstraction charge	Fee/Charge	2001	15.7
Water abstraction charge	Fee/Charge	2002	19.5
Water abstraction charge	Fee/Charge	2005	45.6
Water abstraction charge	Fee/Charge	2006	64.2
Water effluent charge	Fee/Charge	2000	8.2
Water effluent charge	Fee/Charge	2001	11.1
Water effluent charge	Fee/Charge	2002	16.8
Water pollution non-compliance fees	Fee/Charge	1994	0.7
Water pollution non-compliance fees	Fee/Charge	1995	0.8
Water pollution non-compliance fees	Fee/Charge	1996	1
Water pollution non-compliance fees	Fee/Charge	1997	0.4
Water pollution non-compliance fees	Fee/Charge	1998	0.3
Water pollution non-compliance fees	Fee/Charge	1999	0.2
Water pollution non-compliance fees	Fee/Charge	2000	0.8
Water pollution non-compliance fees	Fee/Charge	2001	1.2

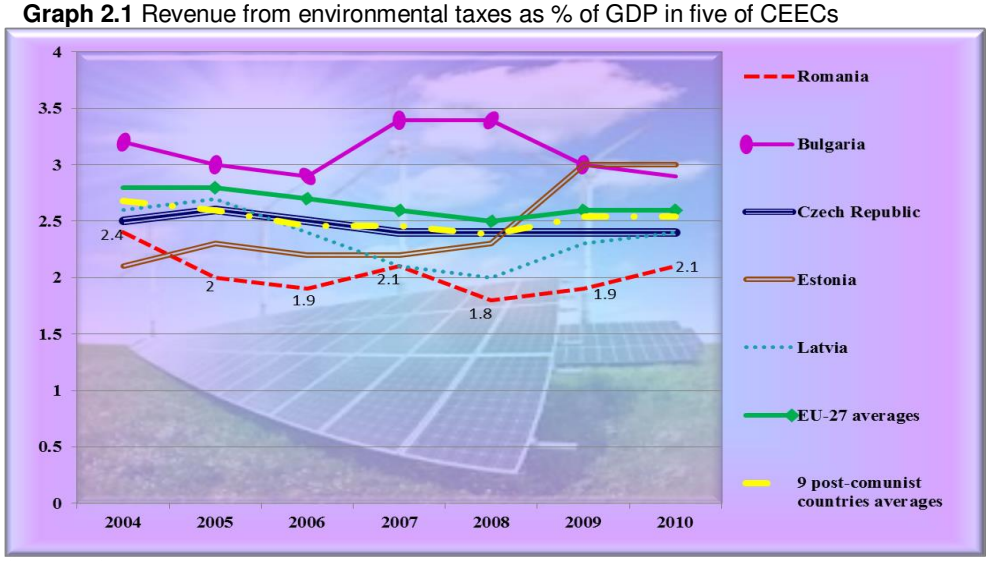
Source: OECD/European Environment Agency database on environmentally related taxes, fees and charges

In the analyzed period, Romania raised around 212,2 million dollar U.S., from different green taxes, fees and charges levied by Romanian Governament in accordance with European Environment Agency. fNeverthless, in 2010 Romania raised around 2,5 billion EUR from environmental taxes, corresponding to 2.1% of GDP.

2. Comparation between post-communist european countries concerning the ratio of environmental taxes revenue in GDP

This section includes a historical data chart including the ratio of green taxes to GDP of the ten post-communist European member countries**.**
In CEEC-10, the share of environmental taxes in GDP has fallen between 2004-2008, mainly due to a reduced levels of energy tax revenues, as graph 2.2. shows.

Graph 2.1 Revenue from environmental taxes as % of GDP in five of CEECs



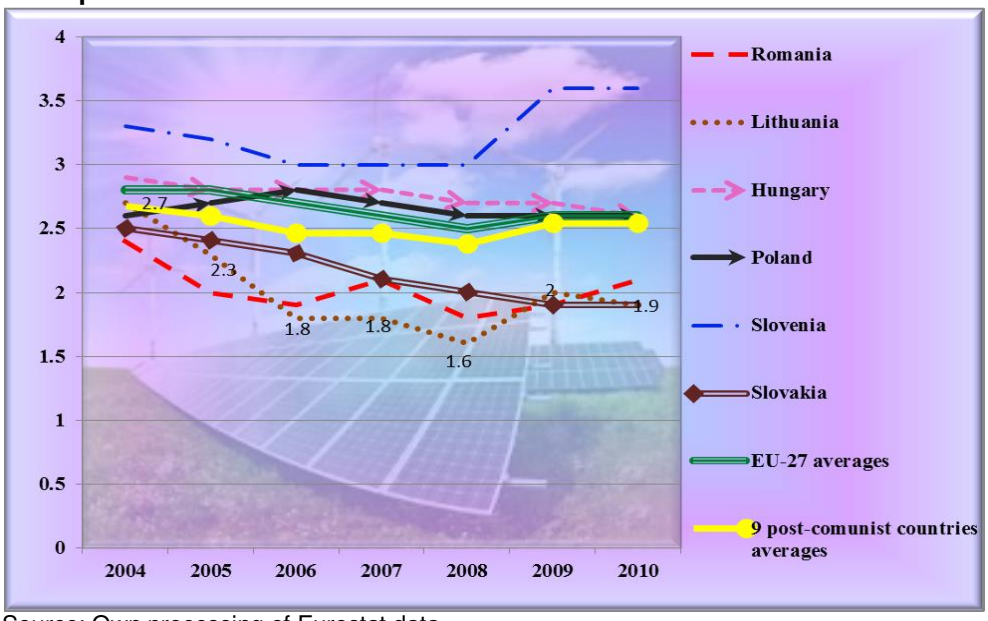
Source: Own processing of Eurostat data

Graph 2.1. emphasize that the aggregate trends in environmental tax revenues in Romania recorded two distinct phases in the prior and post European integration period. In the first phase, the ratio of green tax revenue to GDP dropped, from 2,4 percent in 2004 to 1,9 percent in 2006. In the year when Romania joined European Union, the share of environmental tax revenue to GDP recorded an increase of 0,2 percent over the previous year, followed by a second decrease in 2008. The second phase occurred during the economic crises when green tax revenues increased from 1,8 percents in 2008 to 2,1 percents in 2010.

During the analyzed period, Bulgaria (Graph 2.1 and Slovenia (Graph 2.2.) were the only two countries surpass the EU-27 and CEE averages in respect of the revenues from environmental taxes as a percent of GDP. The Czech Republic environmental

tax revenues recorded a similar trend to that of the CEEC's averages around the amount of 2,5 percents of GDP/

Graph 2.2. Revenue from environmental taxes as % of GDP in five of CEECs



Source: Own processing of Eurostat data

During the analyzed period, another two Central and Eastern European countries, Lithuania and Slovakia have had recorded levels of the ratio of tax revenue to GDP below the trend of EU-27 averages and CEEC's averages. Slovakia highest value over the past 10 years was 2,7 percents in 2004 while its lowest value was 1,6 (%) in 2008. Starting from a value of 3,3 percents in GDP in 2004, tax revenue in Slovenia reached a peak of 3,6 percents in 2009 and 2010 in a period of economic downturn and stood there in 2010. The dispersion of tax revenues amount across the ten post-communist European member countries had ranged across time, recording the lowest range (2,38 %) in 2008.

3. CEEC-10 Kyoto targets and results corresponding to the first commitment period

All Central and Eastern European Countries have individual GHG reduction and limitation targets under the Kyoto Protocol that should be reduced in two commitments periods: between 2008-2012, and between 2013-2020.
Party's assigned amount is the maximum amount of emissions (measured as the equivalent in carbon dioxide) that a country may emit over a commitment period in order to comply with its emissions target.(Kyoto Protocol Reference, European Commission, 2002)

Table. 3.1 Kyoto emissions between 2003-2010, under or above Kyoto target 2010/2012

EU MEMBER STATE	2003	2004	2005	2006	2007	2008	2009	2010	KYOTO TARGET 2012	% 2010/2012 UNDER KYOTO TARGET
ROMANIA	-	160.1	153.7	153.9	152.3	145.9	123.4	121.4	**259.9**	53.3 %
LITHUANIA	16.7	21.1	22.6	22.8	24.7	24.3	20.0	20.8	**44.1**	53 %
BULGARIA	-	68.9	69.8	71.5	75.7	73.5	58.9	61.4	**127.3**	51.77 %
LATVIA	10.7	10.7	10.9	11.7	12.1	11.9	11.0	12.1	**23.3**	48%
HUNGARY	83.3	79.5	80.5	78.8	75.9	73.1	66.9	67.7	**114.9**	41 %
POLAND	382.5	396.7	399	399.3	398.9	395.6	381.8	400.9	**551.7**	27.33%
SLOVAKIA	51.1	49.5	48.7	49.0	47.0	48.8	44.2	46	**67.2**	22.9 %
CZECH REPUBLIC	147.5	147.1	145.6	149.1	150.8	141.4	134.7	139.2	**180.6**	22.9 %
ESTONIA	21.2	21.2	20.7	19.2	22.0	20.3	39.2	39.2	**40**	2 %
										% 2010/2012 ABOVE KYOTO TARGET
SLOVENIA	19.7	19.9	20.3	20.5	20.7	21.3	19.5	19.5	**18.6**	**4.84 %**

As Table 3.1 shows nine out of ten Central and Eastern European member countries analysed in 2010. Data for 2010 show that Romania GHG emissions dropped by 24,17% and Bulgaria emissions by 10,88% in 2010 compared with 2004. Although the economy has expanded significantly, emissions have declined, which proves notes the Commission that it is possible to decouple economic growth from emissions

The table details performances by member states: nine out of ten Central and Eastern European Countries – Bulgaria, The Czech Republic, Estonia, Latvia, Lithuania, Hungary, Poland, Romania, Slovakia– had met the targets under the protocol using existing measures, in 2010 compared to 2012 target. Taking into account the information of all available data, Slovenia alone had not met its targets in 2010 compared to 2012 targets, GHG emissions being 4,84% above Kyoto target. In most of the 10 CEEC, emissions has decreased slightly from 2004 to 2010.

4. Conclusions

Focusing primarily on environmental tax revenues, regional environmental tax policy, this study shows clearly how Central and Eastern European countries have improved their new economic instruments, such as environmental taxes. Governments aim to ensure fiscal sustainability with the desire to support and

promote environmental improvements, by collecting tax revenues.
Ten years after EU enlargement, the new member states from Central and Eastern Europe have been hit by the current economic and financial crises which has been characterized by more or less turbulence in different countries.
During the analysed period, we can see that in post-communist European member countries as a whole, environmental tax revenues (as % of GDP) were situated well below the EU-27 averages. This may be a result of uncertainty and unpredictability of environmental tax revenues, and, in particular, their erosion as a result of the behavioural responses of polluters and final consumption compression.
As The revenue from pollution, resources, transport taxes may be affected by behavioural responses. (Don Fullerton et al. 2008) Energy taxes, fuel taxes might be less affected by behavioural responses than other environmental taxes due to their inelastically-demand commodities.
In respect of increasing environmental taxes, Governments should take into consideration the negative impacts of environmental taxes on competitiveness of different economic sectors and income distribution of households.
Environmental taxes should be levied to more detailed environmental issues, such as energy consumption, toxic waste, sprawl, water and air quality, and habitat protection.

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