Perspective of Environmental Tax Reform in Europe

Many economists have considered eco-taxation as a possible solution to many environmental problems. Sweden’s Carbon Tax is the first example of such taxation scheme in actual use. The Ukraine introduced an Environmental Tax Reform in 2011. This paper presents an analysis of tendencies in the environmental policy and taxation in the European countries. Particular attention is paid to Sweden – the first and Ukraine – the last of the countries, which introduced the Environmental Taxes.

Keywords: Environmental Tax, Carbon Tax, Environmental Tax Reform.

Introduction. The deficit of natural resources will certainly become one of the signs of the 21st century. At the beginning of 20th century scientists noticed the change of quality of environment in large industrial cities [15].

Currently, Greenhouse Gas Emissions are the main reason of the global warming threat. The introduction of Environmental Taxes Reform can become a powerful instrument in solving many ecological problems. Therefore the tax policy of the state have to be concerted with the environmental policy. Taxes should promote the implementation of the main priority of the state to provide human rights to a healthy environment that is constantly being destroyed in a market economy.

The introduction of environmental tax reforms gained increasing support during the 1990s. The basic idea was to shift the tax burden from the labor as the main factor of production at use of natural resources and environmentally harmful goods and activities. With the publication of Jacques Delors’ White Paper on Growth, Competitiveness and Employment’ in 1993 the idea of such fiscal reform became politically attractive, as tool to promote simultaneously growth, jobs, and better environmental quality. Similar ideas have been later endorsed also in many strategies and actions of the European Union. In the Member States the ideas of green tax reforms have met varying success. Among others, Denmark, Finland, Germany, the Netherlands, Sweden, and the United Kingdom have introduced the elements of green tax reforms over the last decade. They have increased environmentally related taxes and used additional tax revenues to finance tax cuts on labour or personal income, with the intention to boost employment. At the same time they have taken measures, in the form of rate reductions or refund schemes, to protect producers from any negative effect on competitiveness arising from increases in prime costs [20].

As European experience testifies, green taxes are regarded as an effective economic instrument for the improvement of the state of environment. Many economists have been regarding eco-taxation as a possible solution of many environmental problems. Sweden’s Environmental Tax is one of the a few examples of such a taxation scheme in actual use.

Nekrasenko Larisa, candidate of biological science, associate professor of department of finance and credit of Poltava State Agrarian Academy, Poltava, Ukraine.

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Nowadays, the ecological taxation is not paid proper attention in Ukraine. The general level of tax collections on contamination does not reach 1% of GDP. The questions concerning adjusting of economic instruments of defense of environment in Ukraine are unsolved.

In this article we are discussing environmental taxes as a possible solution of many present environmental problems. Our purpose was to ground a necessity and actuality of Environmental Taxes Reform and to attempt to reveal the political-economic instruments for solution of environmental problems.

The paper is organized as follows. Section 2 gives a summary of the store choice literature so far. Further we present environmental taxes in Europe. Section 3 describes the environmental policy in Sweden, the first country which has imposed the Environmental Tax. The analysis of environmental tax in payments in Ukraine is given in section 4.

Section 5 gives a comparison of dynamics of growth of CO₂ emission per year and GDP output in Sweden and in Ukraine. Finally, we present forecast of state budget profits from a Carbon Tax in Ukraine at increasing rates. Part 6 is conclusion.

2. Environmental taxes in Europe. There are many reviews of environmental taxes and literature about their potential, that taxes operated more effective and assisted more effective environmental policy [6, 7, 8, 15, 19].

In Ukraine, more attention has been paid to the projects attempting to quantify the economic and social implications of the various ETR. Their task is to improve the decision-making of the public administration, in particular the Ministry of the Environment (see, for instance [23]).

Industrial air pollutions, domestic heating, and carbon dioxide emissions from transport vehicles are the basic sources of environment contamination. Incineration of fossil fuels is main reason of greenhouse effect.

The most commonly used economic tools for the environment protection are taxes. Environmental taxes can be levied to discourage behavior that is potentially harmful to the environment. They can provide incentives to lessen the burden on the environment and to preserve it by integrating the cost of adverse environmental impacts into prices. Taxes are a tool for implementing the ‘polluter pays’ principle since they allow pricing in environmental externalities. Through environmental taxes consumers and producers are motivated to use natural resources responsibly and to limit or avoid environmental pollution.

Environmental taxes can be divided into four main categories: energy, transport, pollution and resource taxes. Energy taxes are by far the most significant, representing approximately three quarters of environmental tax revenues and around one twentieth of total taxes and social contributions. In the EU-27, transport taxes make, on average, slightly less than one quarter of total environmental tax revenues and 1.4% of total taxes and social contributions. The remaining two categories, pollution taxes and resource taxes, raise only insignificant amount of revenue: together they make up just 5% of total environmental taxes [20].

Environmental Tax has already been tested in many countries of the world, and deduced the efficiency as powerful stimulus for reduction of emissions and as an instrument of fight with climate changes. This tax appeared to be a serious source of filling the state budget in countries, where it was enacted. The profit from an Environmental Tax allowed in some countries to reduce the rates of pension collections.

Starting in 1999, the Ukrainian government has imposed Environmental Tax, officially known as Environmental Pollution Fee. They are collected from all polluting entities, whether it’s one-time or ongoing pollution and regardless of whether the polluting act was legal or illegal at the time. Over the past decade the discussions about introduction of Carbon Tax are conducted in Ukraine. Pre-conditions of its introduction in Ukrainian scientific literature were first revealed in 2008 [23]. At result in 2011 Ukraine introduced an Environmental Tax and a Carbon Tax in Tax Code. The rate of Carbon Tax was set at €0.02/t CO2 [22].

Fig. 1 shows the environmental tax-to-GDP ratio by European States and breaks it down by type of tax. In general, most Member States tend to fall in a band ranging from 2% to 3% of GDP, or slightly higher. Only four Member States show levels below 2% of GDP, while in five other countries environmental tax revenues exceed or are equal to 3.5% of GDP. At 4.79% in 2009, Denmark displays by far the highest level of ‘green’ taxes. Followed by the Netherlands (3.98%). The all below 2% in 2009 environmental tax revenues in relation to GDP are instead found in Greece 1.98%, Slovakia 1.94%, Romania 1.88%, Spain 1.63%. Revenues from environmental taxes in Ukraine accounted 0.13% GDP.

Fig. 1. Environmental tax revenues in Europe State 2009, in % of GDP [13; 20]
From data of EUROSTAT, in 2009, revenues from environmental taxes in the EU-27 accounted for 2.43% of GDP and for 6.1% of total revenues. In only five countries did environmental tax revenue exceed 3%-3.5% of GDP: Denmark, the Netherlands, Slovenia, Malta and Bulgaria. Greece, Slovakia, Romania and Spain were the only countries to raise less than 2% of GDP in environmental taxes. Revenues from environmental taxes in Ukraine does not run up 1% from GDP. The share of Environmental Taxes in EU of GDP remained stable or insignificantly went down from 1999 to 2007. Nevertheless, Environmental Taxes make more considerable proportion of tax charges of housekeeping and enterprises [20].

So, an obligatory Environmental Tax must become the main fiscal lever to lessen the burden on the environment. Appropriately, the introduction of ecological tax for the use and damage of natural resources will result in the certain appreciation of value of products. However, it will be compensated by upgrading of natural environment and liquidation of insalubrious for man chemical contamination of foods and other dangerous changes of the state of environment.

3. Swedish Carbon tax. Sweden was one of the first country which introduced an ecological tax – tax on carbon. Carbon dioxide being a known greenhouse gas, in excessive quantities has been shown to cause a warming of the earth's surface by trapping solar heat within the earth's atmosphere. In response to this threat, Sweden signed the Rio Declaration. This declaration committed Sweden to stabilizing its carbon dioxide emissions at its 1990 level and therefore on January 1, 1991, the Swedish Carbon Tax was enacted.

In 1991, Sweden CO$_2$ tax was $100 per ton on the use of oil, coal, natural gas, liquefied petroleum gas, petrol, and aviation fuel used in domestic travel. In 1993, due to protest by many Swedish industries, industrial users were granted further relief. The industry taxation rate was lowered to just 25% of the normal rate. Additionally, certain high energy using industries such as commercial horticulture, mining, manufacturing and the pulp and paper industry were fully exempted from these new taxes. In 1997 the Tax Code was revised again and the industry rate was returned to 50% and the overall tax on carbon emissions was raised to $150 per ton of CO$_2$ released. Yet, the practice of exempting certain industries from the tax was continued [3]. In 2011, the tax was $109 per ton of CO$_2$ [20].

Swedish legislation play an important role in-process in relation to defense of environment. The Environmental Code has been in force since 1 January 1999. Through the environmental acts and their application the principles of precaution, polluters-pay and substitution have got a practical meaning within Swedish legislation and been important tools in the environmental protection work [9].

Fig. 2 shows the GDP and Greenhouse Gas Emissions in Sweden. Total greenhouse gas emissions in Sweden, expressed in carbon dioxide equivalents, were about 66.2 million tonnes for 2010 [11].
Fig. 2. GDP and Greenhouse Gas Emissions intensity in Sweden [5; 11]

The emission increased by about 6.6 million tonnes compared to 2009. On 1990 carbon emissions in Sweden were 72.755 million tonnes. Emissions have fallen by about 9% or approximately 6.5 million tonnes between 1990 and 2010 and by 6% between 2002 and 2010. An intermediate purpose on a current period is reduction of paid emissions with at least 5% during 2008–2012 compared to the base year 1990.

GDP growth averaged around 3.8% over the period 2002-2010. The GDP has been increasing by an average of around 3% per year since 2002, except 2008 and 2009, when growth fell by 0.5% and 5% respectively. GDP in 2010 increased by around 5%. Despite economic growth of around 50% between 1990 and 2007, emissions of greenhouse gases have still been able to be reduced [11].

Sweden is one of few highly developed countries of the world, which managed to shorten Greenhouse Gas Emissions. In 2007 Sweden topped the list of countries that did the most to save the planet – for the second year running – according to German environmental group, German watch. Between 1990 and 2010 Sweden cut its carbon emissions by 9%, largely exceeding the target set by the Kyoto Protocol, while enjoying economic growth of 44% in fixed prices. It can be hypothesized that emission levels will continue to drop as a result of the increase in the overall tax rate and the reintroduction of the 50% industry rate.

The tax is credited with spurring a significant move from hydrocarbon fuels to biomass. As Swedish Society for Nature Conservation climate change expert Emma Lindberg (2008) said, “It was the one major reason that steered society towards climate-friendly solutions. It made polluting more expensive and focused people on finding energy-efficient solutions.

Overall, the Swedish Environmental Tax demonstrates the ability of an eco-taxation system to reduce Greenhouse Gas Emissions.

4. Environmental Tax in Ukraine. In 2010 Ukraine introduced an Environmental Tax and a Carbon Tax in Tax Code. But the tax rate in €0.02/t CO2 is very-low for fear to lose a
competitiveness of power-hungry domestic industry. At the same time a Carbon Tax rate in 40$ per ton CO2 is considered reasonable in the industrial developed countries.

Now days the level of profits from environmental taxes in Ukraine does not get 1% in relation to GDP. For instance in 2010 revenues from Environmental Pollution Fee accounted only 0.18% of GDP. At the same time according to the forecast on 2011 the revenues from Environmental Taxes will decrease and will make 0.07% of GDP and in 2012 – 0.09% of GDP [1; 2; 13].

In 2010 Ukrainian Greenhouse Gas Emissions decreased by 3.7 million tonnes as compared with 2000 and made 57.79% emissions of 1990, which is a base year according to Kyoto’s protocol.

It is necessary to mark that the fall-off of Greenhouse Gases Emissions happened not as a result of careful attitude toward environment, but because of disintegration of economy at the beginning of the 90s. Many enterprises ceased to exist. Those that survived shortened production volumes considerably. All these formed the picture of decline of emissions.

Fig. 3 shows the GDP and Greenhouse Gas Emissions in Ukraine. In 2009 a decline of GDP and CO2 emissions are in parallel. A conclusion is: there is a close correlation between power-hungriness of Ukrainian GDP and the volumes of air pollutions.

Over the past ten years dynamic of Greenhouse Gas Emissions shows relative stability of volumes of emissions. There is an insignificant decline in 2009 on 18.6 million tonnes as compared with 2000. But it is related to the cutback of economic activity as a result of crisis in 2008. This tendency is very well seen on a diagram.

![Fig. 3. GDP and Greenhouse Gas Emissions in Ukraine [12; 25]](image-url)
5. Comparison of environmental tax revenues in Sweden and Ukraine. It is surely difficult to compare countries with such a large break in economic development as Sweden and Ukraine. But it is necessary to take into account also, that it was not always.

Fig. 4 shows that emissions of CO$_2$ in Ukraine more than 6 times exceed Swedish. And GDP is 3.4 times lower than in Sweden. The increase of rates on carbon will not decide this problem. But if to create the system of ecological taxes, which will replace the system of labour taxes gradually, then it would become a powerful incentive to high GDP growth.

5.1. Forecast of profits from a Carbon Tax. We made the forecast of state budget profits from a Carbon Tax and Tax on an income in Ukraine in 2012 at volume of CO$_2$ emissions 292.20 million tonnes (at the level of 2010) in table 1.

Surely the increase in tax rate on carbon should be accompanied by a reduction in other taxes for balancing the tax loading on enterprises.

The Ukrainian Enterprises Revenues was € 34041.92 million with middle course of euro was 10.05 UAH in 2011. For example we consider the cut of tax rate on an income from 16% to 15%. The budget losses will amount to € 340.42 million. The difference in profits of budget we suggest to compensate due to raising of carbon tax rate.

Calculations show that in this case would be the optimal rate of € 1,18 per tonne CO$_2$. Thus, revenues from the carbon tax would amount to € 346.14 million, that completely covers the loss budget. So, with using compensative scheme to increase the carbon tax rate by reducing the tax rate on capital and labour can reach the necessary compromise between the preservation of the cost of production of enterprises and increase their interest in reducing emissions of carbon dioxide and other greenhouse gases.

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Fig. 4. Comparison of Greenhouse Gas Emissions and GDP in Ukraine and in Sweden [5; 11; 12; 25]
Table 1 – Forecast of profits from a Carbon Tax and Tax on an income in Ukraine in 2012 at increasing rates and permanent volume of CO₂ emissions (at the level of 2010)

<table>
<thead>
<tr>
<th>Tax</th>
<th>Tax rate</th>
<th>Revenue in million euro</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tax on an income in Ukraine in 2011 [10; 23]</td>
<td>16%</td>
<td>€ 5446.71</td>
</tr>
<tr>
<td>Forecast of tax on an income in Ukraine</td>
<td>15%</td>
<td>€ 5106.29</td>
</tr>
<tr>
<td>Rates of Carbon Tax in Ukraine in euro per tonne of CO₂ in 2011 [10; 23]</td>
<td>€ 0.02</td>
<td>€ 5.81</td>
</tr>
<tr>
<td>Forecast of Carbon Tax rates in Ukraine in euro per tonne of CO₂</td>
<td>€ 1.18</td>
<td>€ 346.14</td>
</tr>
</tbody>
</table>

In addition it is necessary to take into account also, that the increase of tax rate will stimulate enterprises and population to change the attitude toward fossil energy sources, as for the expensive instruments for receiving own income. As a result a stimulus to use alternative environmentally clean technologies and energy sources will appear, that in turn will lead to the decline of greenhouse gases emissions.

Thus, we shouldn’t ignore the hidden potential of Environmental Tax. At the clever assessment of tax load on commodity producers and housekeeping it can become at first – the considerable source of addition to the Ukrainian budget, secondly – stimulate enterprises to the use of energy-efficient technologies, and thirdly – will result in diminishing of greenhouse gases emissions in atmospheric air. It is possible to get the growth of Ukrainian economy and increase of life quality taking into account these changes.

Conclusion. Reliable assessments show that green taxes can be effective. On the example of Sweden an Environmental Tax demonstrates the ability of an eco-taxation system to reduce air pollution, to increase economy and to develop population ecological consciousness.

The Ukrainian legislation and environmental tax policy need future improvement, especially if to take into account Ukraine’s adaptation to the requirements of European Union and fight for climate stabilizing. Surely there have been positive tendencies in this direction in the last few years. The necessity of creation of the effective Ecological Taxes System is obvious for replacement of the Labour Taxes System. Only a Carbon Tax can give considerable investment in the budget. In the whole green taxes can become the powerful source of GDP growth.

As for the risks of loss competitiveness of national industry on condition of increase of environment tax rate there are enough examples of successful development of ecological policy in the European countries. In addition the development of innovations and growth of life quality will be a compensation of temporal negative influence on commodity producers.

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Розділ 1 Економіка природокористування і еколого-економічні проблеми


Л. А. Некрасенко
Перспективи екологічної податкової реформи у Європі

Многі економісти уже давно досліджують екологічне податкове змагання в рамках економічних проблем. Углеродний податок Швеції є одним з перших прикладів такої моделі. Україна ввела податкову реформу в 2011 р. Ця стаття розглядає соціальні тенденції екологічної податкової реформи у Європі.

Ключові слова: екологічний податок, углеродний податок, екологічна податкова реформа.

Л. А. Некрасенко
Перспективи екологічної податкової реформи у Європі

Одноє з ознак XXI ст. неодмінно стане дефіцит природних ресурсів. У наступному звітному році, викиди парникових газів є основною причиною глобального потепління. Екологічна податкова реформа може стати ключовим інструментом у вирішенні екологічних проблем. Головна мета було б забезпечити сприяння досягнення справедливого екологічного рівноваги.

У статті ми обговорюємо екологічні податки, як можливі інструменти для вирішення екологічних проблем. Національною метою було обґрунтувати необхідність і актуальність екологічної податкової реформи і спробувати виявити політико-економічні інструменти для вирішення екологічних проблем.

Введення екологічних податкових реформ протягом 1990-х років отримало велику підтримку в країнах Євросоюзу. Основна мета було перекладення частини податкового тягаря з праці, як основного фактора виробничого потенціалу, в використання природних ресурсів та екологічно шкідливих товарів і видів діяльності. Як свідчить європейський досвід, зелені податки це не тільки ефективний економічний інструмент для поліпшення стану навколишнього середовища, а також важливе джерело поповнення державного бюджету.

На даний час в Україні екологічному оподаткуванню не приділяється належного уваги. Загальний рівень надходжень від екологічних податків не досягає 1% від ВВП. Питання, що стосуються надходжень економічних інструментів захисту навколишнього середовища в Україні також не вирішені.

В статті зроблено прогноз доходів державного бюджету України в 2012 році від податку на вуглець і податку на дохід. Прогноз ілюструє, що з використанням компенсаційної схеми збільшення ставки податку на викиди вуглецю паралельно зі зниженням ставки податку на прибуток можна досягти необхідного компромісу між збереженням собівартості продукції підприємства та підвищення зарплати його працівників.

Received 27.08.2012

Механізм регулювання економіки, 2012, № 4
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Reliable estimates indicate that green taxes can be effective. For example, the ecological tax in Sweden demonstrates the ability of the ecological system of taxation to reduce air pollution, economic growth, and environmental awareness.

Ukrainian legislation and ecological tax policy require improvement. It is necessary to create an effective ecological taxation system. Proper distribution of tax burdens on producers and households can first significantly replenish the state budget, second stimulate businesses to use less energy-intensive and cleaner technologies, and third reduce emissions of greenhouse gases. Against this background, one can expect economic growth in Ukraine, increased living standards and quality of life for the population.

Key words: ecological tax, carbon tax, ecological tax reform.