

UDC 336.77
JEL Classification: G21*Levchenko Nataliia^a, Antonova Liudmyla^b***DESIGN OF CARBON TAXATION REFORM AND ITS IMPACT ON THE COMPETITIVENESS OF METALLURGICAL ENTERPRISES**^a “Zaporizhzhia Polytechnic” National University, Zaporizhzhia, Ukraine^b Petro Mohyla Black Sea National University, Mykolaiv, Ukraine

The article states that the deepening of the problem of climate change and global warming, the aggravation of environmental risks of the functioning of the national economies of the countries of the world determine the urgency of prioritizing measures to reduce greenhouse gas emissions. It is emphasized that the most effective tools for limiting greenhouse gas emissions in world practice are price instruments, which primarily include carbon taxation. The most common models of carbon taxation are considered and briefly characterized. The factors influencing the choice of carbon taxation model are determined. The characteristic of the main elements of the tax on carbon dioxide emissions under different models of carbon taxation is summarized. The inefficiency of the current model of carbon taxation in Ukraine is substantiated and the reasons for its inaction are substantiated. The need for immediate reform of the mechanism of carbon taxation in Ukraine was noted. Alternative options for reforming the taxation of CO₂ emissions are considered and characterized. Identified on the basis of global experience, national conditions and historical realities, the architecture of reforming carbon taxation. The need to choose the design of reforming carbon taxation is indicated. It has been proven that the design of reforming carbon taxation should be multi-level, that is, it should involve the implementation of the reform at the national, sectoral and macro levels. An author's design for reforming carbon taxation is proposed, taking into account its impact on the competitiveness of industrial enterprises, in particular, metallurgy enterprises. It has been proven that the introduction of the proposed measures to reform carbon taxation will stimulate economic agents to change consumer and production behavior, which will reduce the energy intensity and carbon intensity of GDP and counteract climate change.

Keywords: carbon taxation, enterprise competitiveness, carbon dioxide tax, frontier carbon adjustment, emissions trading system.

DOI: 10.32434/2415-3974-2022-15-1-28-37

Introduction and problem statement

The deepening of the problem of climate change and global warming, the aggravation of environmental risks of the functioning of the national economies of the countries of the world determine the priority of measures to reduce greenhouse gas emissions. Therefore, representatives of government, business and civil society are quite actively engaged in a dialogue at the level of international diplomatic

events, economic forums, and the media on the introduction of the Green Deal, the process of decarbonization and the achievement of zero CO₂ emissions [1].

Ukraine is also an active participant in measures to reduce greenhouse gas emissions. As part of the Second Nationally Assigned Contribution (hereinafter referred to as NAC2) [2] to the Paris Climate Agreement [3], Ukraine has committed itself

© Levchenko N., Antonova L., 2022



This article is licensed under Creative Commons Attribution 4.0 International License (CC-BY)

Levchenko N., Antonova L.

to achieve ambitious targets to reduce greenhouse gas emissions by 65% in 2030 from 1990 levels [2] and climate neutrality no later than 2060 (as indicated in the National Economic Strategy for the period up to 2030, approved by the Resolution of the Cabinet of Ministers of March 03, 2021 under No. 179 [4]), which requires the synchronization of Ukraine’s climate policy with the European Green Deal and, consequently, the reform of carbon taxation [5, p. 3].

Analysis of recent studies and publications

An analysis of recent studies and publications shows that the issue of carbon taxation has long been a concern for both practitioners and scientists. In particular, in the works of such scientists as Boboshko O., Veklych O., Vervehy T., Novytska N., Olekhova O., Pashkova M., Sidenko V., Markevich K., Stetsiuk P., Gonchar M., Stukalenko I., Popova S., Khlebnikova I., Chekunova S. and others comprehensively substantiated that the taxation of carbon dioxide emissions introduced in Ukraine is an exclusively fiscal measure that absolutely does not stimulate business to reduce environmental pollution and counteract climate change. Therefore, of course, now there is an urgent problem in reforming carbon taxation in order to create an effective mechanism that, without cardinal interventions in the activities of economic agents, will ensure the effective influence of the state on their behavior and the achievement of ambitious climate goals to reduce CO₂ emissions provided by NAC2.

The purpose of the article

The purpose of the article is to solve an important scientific and practical task of developing a design for reforming carbon taxation and determining its impact on the competitiveness of metallurgical enterprises in the medium and long term.

Presentation of the main material of the study with a full justification of the obtained scientific results

In the context of the aggravation of the problem of climate change, the issue of finding effective tools to limit greenhouse gas emissions is being significantly updated. At present, price-based instruments are considered to be the most effective, which, first of all, include a carbon tax. At its core, it is the price that a polluter must pay for each ton of CO₂ emissions. But in each of the countries it takes a different form. In particular, either in the form of excise taxes on energy resources or a tax on measured or estimated emissions of a given greenhouse gas (emission base carbon tax), or in the form of a tax on energy consumption (fuel base carbon tax), the rates of which are differentiated depending on the carbon content in fuel, etc. (Table 1).

However, under any of the tax models, the carbon tax in world practice has proven to be an effective regulator of preventing the negative impact of economic agents on the environment. Instead, in Ukraine, carbon taxation still has little regulatory role due to:

- collection of tax on carbon dioxide emissions

Table 1

Generalized characteristics of the main elements of the tax on carbon dioxide emissions of different models of taxation [5, p. 30]

| Elements of the tax | Forms of carbon tax | | | Mechanism for maintaining a minimum level of carbon dioxide prices |
|------------------------------------|---|--|---|--|
| | Structural component of carbon dioxide in the excise tax rate | Component of taxes on environmental pollution | | |
| | | measured/estimated emission tax | energy consumption tax | |
| Taxpayers | producers and importers of fossil fuels and petroleum products (except crude oil) | economic operators who use fossil fuels as a factor of production | | |
| Object of taxation | operations for the sale of fossil fuels and petroleum products | actual or estimated CO ₂ emissions | fossil fuel consumption | |
| Base of taxation | physical volumes of fossil fuels and petroleum products | CO ₂ emissions | physical volumes of fossil fuels | |
| Criteria for differentiating rates | depending on the type and origin of the fuel and its carbon content | missing | depending on the type of fossil fuel and its carbon content | |
| Privileges | dismissal, reimbursement | setting the issuer's maximum capacity and / or tax emission limits | exemption | low-power electricity producers, backup generators, geographical redundancies, enterprises using cogeneration technologies |

only from stationary sources (mostly energy sector and processing industry – metal and coke production, chemical and petrochemical production, cement production, food industry), although by the end of 2014 according to the former Article 244 of the Tax Code [6] In its old version, this tax was levied on mobile sources of pollution. But since 2015, the fee for air emissions from mobile sources of pollution in the case of fuel use is charged by tax agents depending on the volume and type of fuel sold or imported into the customs territory of Ukraine and subject to taxation in the form of excise taxes and import duties [7];

– payment of the tax on carbon dioxide emissions only from stationary sources, the volume of annual emissions of which exceeds 500 tons of CO₂ per year. Accordingly, the basis for taxation of the CO₂ emission tax is the volume of CO₂ emissions into the atmosphere by stationary sources, reduced by 500 tons according to the results of the tax (reporting) year. In 2020, only almost 20,000 legal entities in Ukraine were such payers, ie some sectors and entities do not pay a tax on CO₂ emissions at all;

– low tax rate, which until 2019 was 0.41 UAH / t of CO₂ emissions (ie □ 0.013), from 2019 – 10 UAH (ie □ 0.32) per tonne of CO₂ emissions, and from 2022 – UAH 30. (ie □ 0.9) per tonne of CO₂ emissions (compared to the EU average in 2020, the price of CO₂ emission allowances is more than 26 euros / t). That is, even after the increase in the carbon tax rate, it remains the lowest in Europe (excluding Poland) compared to other countries. For example, Sweden has the highest rate of \$ 137 / t CO₂, Switzerland - \$ 101 / t CO₂, Finland - \$ 77, Norway - \$ 64 / t CO₂ and France \$ 55 / t CO₂ [8]. Within the average EU rates (from \$ 20 to \$ 30) is Denmark. Minimum carbon tax in Spain, Ireland and Slovenia. Less than \$ 10 in Portugal, Latvia and Estonia [9];

– lack of stimulation of deep technological changes and innovations in the economy;

– «dissolution» of carbon tax revenues in the State Budget due to lack of proper control and verification of submitted data on carbon dioxide emissions.

Therefore, the need to reform carbon taxation is indisputable. Instead, questions about the design of its implementation are still the subject of heated debate, as an unambiguous answer to optimize the mechanism of carbon taxation, unfortunately, has not yet been formed. Experts are currently proposing the following alternatives for adjusting CO₂ taxation, in particular by:

– increasing the tax rate on carbon emissions with a focus on the rates of this tax in the EU and the price in the EU. Of course, the latest rate increase, according to the State Treasury, contributed to an increase in state budget revenues in 2019 and 2020 to UAH 951 and 940 million (respectively) against UAH 40 million in 2018. However, to reduce carbon emissions in accordance with NNV2 [2] for LCU estimates that the carbon tax rate in Ukraine should be increased to 4.3 euros / t [10] in 2022;

– tax coverage not only of CO₂ emissions, but also of other greenhouse gases due to their conversion into CO₂-equivalent;

– taxation of energy resources by excises at the point of their entry into the economy, in particular, during import or production (upstream tax), which will simplify administration and cover most sectors of the economy with this tax;

– taxation of energy resources by excises at the point of their exit, ie depending on the carbon content of products;

– introduction of ETS, under which the government should systematically set limits on greenhouse gas emissions and allocate free emission quotas among companies, after which they should either reduce emissions or buy quotas, which will accelerate the process of decarbonisation and the transition to a low-carbon economy. Instead, it is important to remember that ETS in Ukraine is more risky than the carbon tax. In particular, with the risk of cartel collusion, as most of the ETS facilities covered are currently owned by SCM Holding and several other companies [5, p. 8];

– combination of these taxes with the emissions trading system according to one of the models presented in fig. 1.

We consider the second model of carbon taxation to be more acceptable for Ukraine, which combines the emissions trading system with the CO₂ tax. Instead, the choice of a model depends on the purpose of carbon taxation (reduction of CO₂ emissions, increase of state budget revenues or stimulation and development of clean technologies) set by the government, introducing one or another instrument of state regulation.

World experience convincingly shows that the development of the vision of the purpose of the carbon tax and its specification, as well as understanding of national conditions and historical realities contributes to a more realistic assessment of the feasibility of introducing a model of carbon taxation. Instead, equally important factors influencing the choice of carbon taxation model are the ability of government bodies to administer the

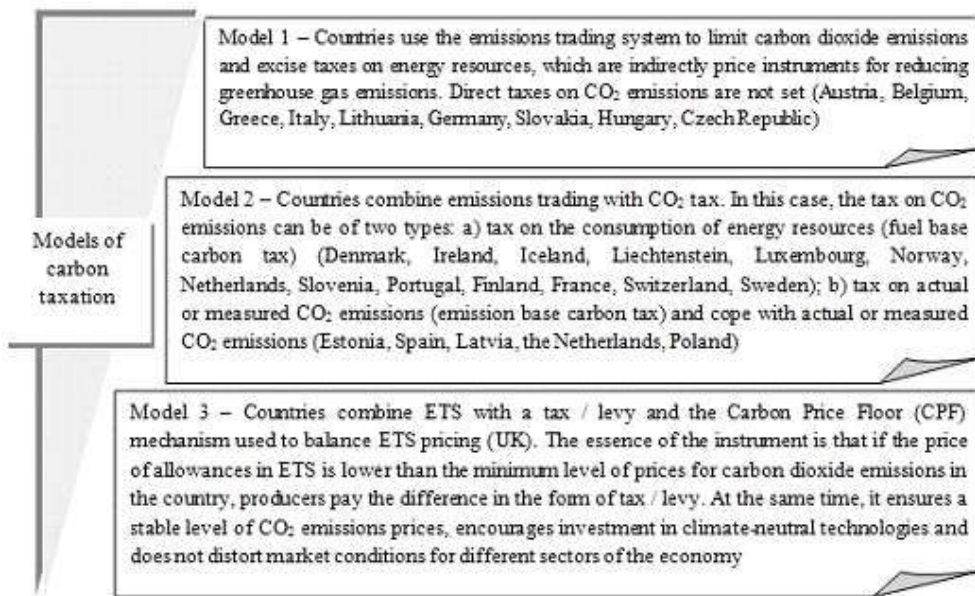


Fig. 1. Models of carbon taxation [5, p. 10]

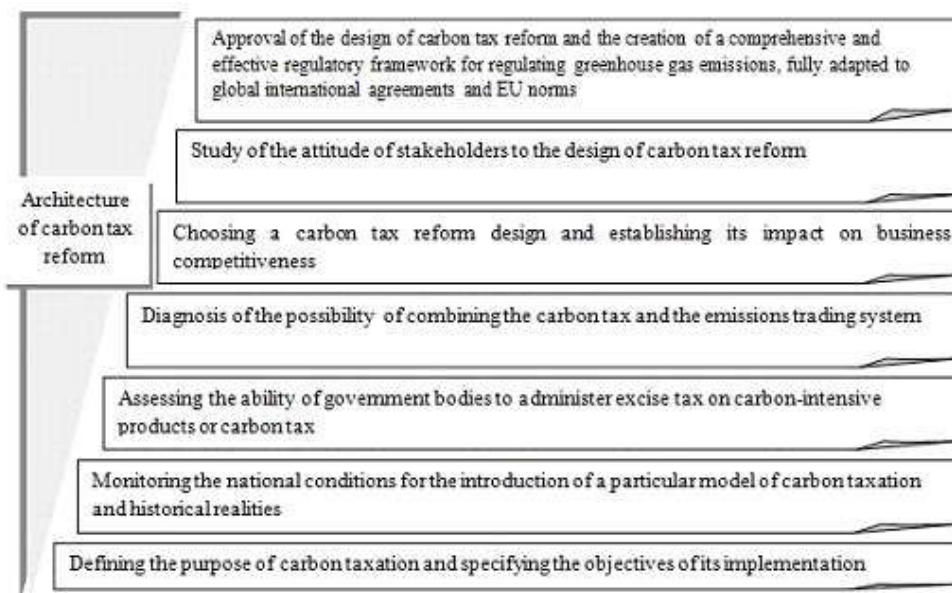


Fig. 2. Architecture of carbon tax reform in Ukraine

Source: author's vision

tax and the level of public, political and business support. Therefore, the architecture of carbon tax reform should take the following form (Fig. 2).

Clearly aware of the architecture of carbon tax reform in Ukraine, the question of its design arises. In our opinion, it should be multilevel, ie provide for reforms at the national, sectoral and macro levels.

Thus, at the national level, in order to optimize the mechanism of carbon taxation and accelerate the process of decarbonization, in particular, the metallurgical business, as one of the leaders in the

generation of carbon emissions, it is necessary:

– first, conclude an Agreement of Equivalence with the EU, which clearly defines the conditions for decarbonisation;

– secondly, to change the nature of carbon taxation from compensatory to incentive (guided by the principle of maximum approximation of domestic legislation to EU legislation) and to amend the TCU [6], in particular, in part:

– payment of carbon tax by environmental pollutants, namely to paragraph 5 of Article 242 of

the TCU [6] on the tax base by providing for its reduction by the amount of environmental investment actually spent by taxpayers in the reporting period on innovative projects for environmental modernization and production environmental effect, confirmed by reporting on monitoring and verification of CO₂ emissions;

– VAT payments by industrial enterprises on waste recycling operations to amend paragraphs 1.2 and 1.3 of Article 195 of the TCU [6] in relation to waste recycling operations of metallurgical enterprises. That is, paragraph 1.2 of Article 195 of the TCU [6] to add paragraph:

e) operations on the supply of goods produced as a result of recycling of waste from metallurgical enterprises are taxed at a zero rate;

At the same time, paragraph 1.3 of Article 195 of the TCU [6] to add:

d) energy and heat supply services are taxed at a zero rate, provided that metallurgical enterprises use waste for their provision;

– third, to create on the basis of existing fragmentary regulations an integrated and effective regulatory framework for regulating greenhouse gas emissions, fully adapted to global international agreements and norms of the European Union, as well as the Budget Code of Ukraine [11];

– fourthly, to introduce the quota trading system as a more effective decarbonisation tool, which will allow faster entry into the European level and integration into the EU-ETS trading system, as delays in the launch of ETS damage Ukraine’s reputation as a reliable participant in global climate change, as well as increases the risks of possible application of Carbon border adjustment mechanism to metal products originating in Ukraine, which will be applied to imports of certain energy and carbon-

intensive goods coming from outside the EU⁸³. For Ukraine, such a mechanism may be an obstacle to further increasing exports and diversifying it in the European direction [12]. In particular, payments of domestic metallurgists under CBAM, regardless of the scenario of its implementation, will amount to € 400 million per year (Table 2).

Such consequences can be avoided by adopting and implementing European climate standards, as well as industrial modernization [12, p.44];

– fifth, to guarantee the targeted use of carbon tax revenues, because despite the fact that the rate of the tax on CO₂ emissions has increased to UAH 30 / t, the distribution of revenues is irrational. Knotted taxation should serve as a financial tool to encourage enterprises to modernize and support environmental measures [9, p. 45].

Therefore, we conclude that effective carbon taxation is impossible without a unified coherent state policy and proper institutional support at the state level, as well as attempts to transfer funding from greening production to business without the introduction of economic mechanisms to stimulate greening. The state needs to take care of the introduction of programs to support greening processes, and business - on technological modernization [9, p. 45].

At the same time at the sectoral level it is necessary:

– first, to introduce the so-called Individual Adjustment Mechanism (IAM), which has significant economic, climatic and legal benefits and will allow Ukrainian metallurgical producers to demonstrate their actual carbon intensity [13];

– secondly, to implement Regulation (EU) 2020/852 [14] and the Directive of the European Parliament on the formation of information support

Table 2

Consequences of the introduction of CBAM for metallurgical enterprises of Ukraine [13]

| Products | Export volume in 2019 | Units Design of carbon taxation reform and its impact on the competitiveness of metallurgical enterprises of measurement | Expected percentage of specific CO ₂ emissions, t | The expected average price of emissions during 2023–2027, euros per ton | Expected tax amount for the year, million euros | Expected amount of tax during 2023–2027, million euros |
|------------------------|-----------------------|--|--|---|---|--|
| Cast iron | 546 | thousand tons | 2,1 | 22,2 | 24,8 | 124 |
| Semi-finished products | 3 299 | thousand tons | 2,8 | 22,2 | 208,0 | 1 040 |
| Rolled metal | 1 835 | thousand tons | 3,0 | 22,2 | 122,1 | 611 |
| Welded pipes | 105 | thousand tons | 3,0 | 22,2 | 7,0 | 35 |
| Ferroalloy | 404 | thousand tons | 2,1 | 22,2 | 18,8 | 94 |
| Pellets | 6 258 | thousand tons | 0,1 | 22,2 | 7,4 | 37 |
| Concentrate | 6 465 | thousand tons | 0,1 | 22,2 | 9,8 | 49 |
| In general | | | | | 397,9 | 1990 |

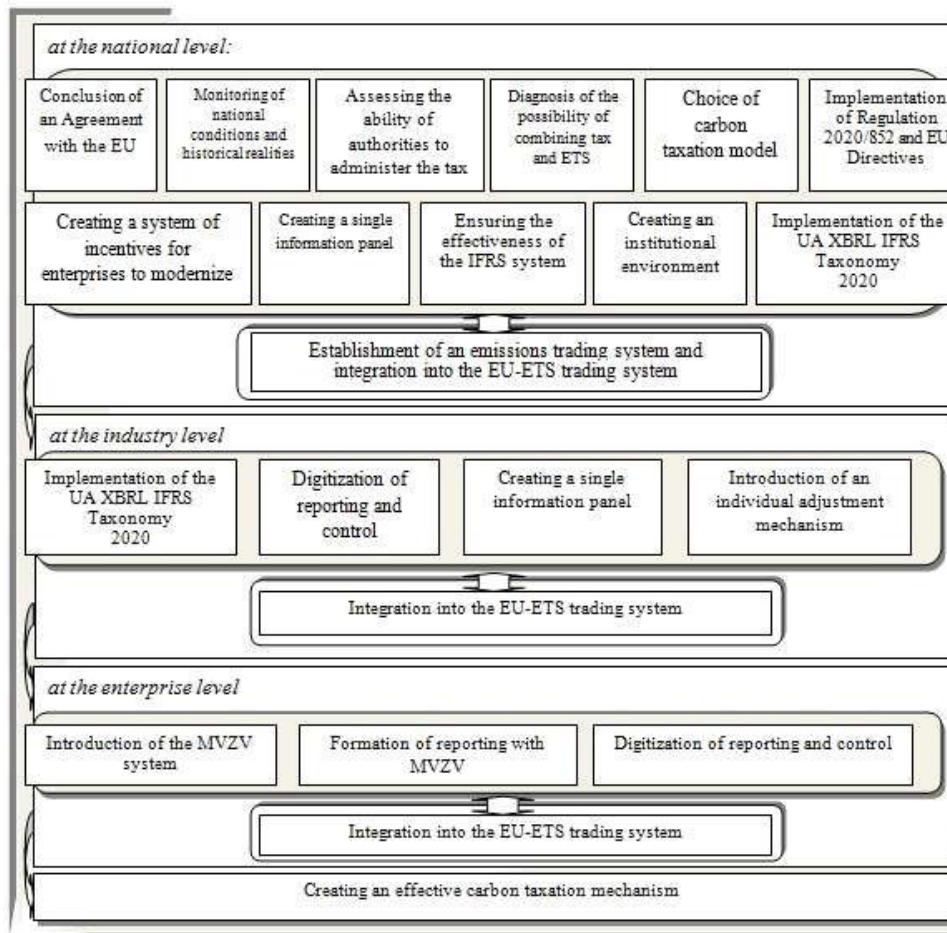


Fig. 3. Carbon tax reform design

Source: author's vision

for financial and non-financial reporting of enterprises, in order to develop regulations to bring them into a single industry standard for ESG reporting;

– thirdly, to create a Single Information Panel of ESG-competitiveness of metallurgical enterprises based on the Taxonomy UA XBRL IFRS 2020 [15], approved on 09.04.2021 by the Financial Reporting System Management Committee (established under the Memorandum of Understanding on the development and implementation of financial reporting from 18.12.2017 for №102 / 15 [16].

At the micro level, in order to optimize carbon taxation and accelerate the process of decarbonization, metallurgical enterprises need:

– start measuring your carbon footprint, monitor carbon prices and their impact on enterprise costs, develop algorithms for action that should be used in different scenarios of the metallurgical sector of the economy;

– to form reports on monitoring and verification of CO₂ emissions in accordance with the

requirements of Regulation (EU) 2020/852 and the Directive of the European Parliament on the formation of information support for financial and non-financial reporting of enterprises.

Thus, the design of carbon tax reform should acquire the style of inter-level synthesis (Fig. 3).

Implementing the proposed carbon tax reform design in Ukraine will stimulate economic agents to change consumer and industrial behavior, which will ultimately reduce energy and carbon intensity of GDP and thus counteract climate change.

Conclusions

Thus, the study found that the deepening of climate change and global warming, exacerbation of environmental risks to the national economies of the world determine the urgency of prioritizing measures to reduce greenhouse gas emissions. It is emphasized that the most effective instruments for limiting greenhouse gas emissions in world practice are considered to be price instruments, which primarily include carbon taxation. The inefficiency of the current model of carbon taxation in Ukraine

is stated and the reasons for its inaction are argued. The need to immediately reform the carbon taxation mechanism in Ukraine was emphasized.

The author's design of carbon tax reform in the style of inter-level synthesis is proposed, which provides for a combination of reforms at the national, sectoral and macro levels. It is proven that the implementation of the proposed measures to reform carbon taxation will stimulate economic agents to change consumer and industrial behavior, which will ultimately reduce energy and carbon intensity of GDP, and thus counteract climate change.

REFERENCES

1. Vervega, T. (2021). Investytsii u stali ekolohichni rishennia ye odnym z napriamkiv transformatsii suchasnoho biznesu. Hra u perspektyvu [Investing in sustainable environmental solutions is one of the areas of transformation of modern business. Game in perspective]. *assets.kpmg*. Retrieved from <https://assets.kpmg/content/dam/kpmg/ua/pdf/2021/12/review-magazine-11.pdf> [in Ukrainian].
2. Druhyi natsionalno-vyznachenyi vnesok Ukrainy do Paryzkoï uhody (NVV2): ambitnist ta perspektyvy. (2020). [Ukraine's second nationally determined contribution to the Paris Agreement : ambition and prospects]. *Ministerstvo zakhystu dovkillia ta pryrodnykh resursiv Ukrainy – Ministry of Environmental Protection and Natural Resources of Ukraine*. Retrieved from <https://mepr.gov.ua/news/36563.html> [in Ukrainian].
3. Zakon Ukrainy Pro ratyfikatsiiu Parizskoi Uhody : pryiniatyi July 14, 2016 №1469-VIII [Law of Ukraine on the ratification of the Paris Agreement from July 14, 2016 №1469-VIII]. Retrieved from https://zakon.rada.gov.ua/laws/show/995_l61#n2 [in Ukrainian].
4. Postanova Kabinetu Ministriv Ukrainy Pro zatverdzhennia Natsionalnoi ekonomichnoi stratehii na period do 2030 roku : pryiniatyi 03 bereznia 2021 roku №179. [On approval of the National Economic Strategy for the period up to 2030. Resolution of the Cabinet of Ministers of 03.03.2021 №179]. Retrieved from <https://www.kmu.gov.ua/npas/prozatverdzhennya-nacionalnoyi-eko-a179> [in Ukrainian].
5. Novitska, N., & Khlebnikova, I. (2021). *Shliakhy vdoskonalennia podatku na vykydy dvookysu vuhletsiu v Ukraini. Analytychnyi zvit [Ways to improve the tax on carbon dioxide emissions in Ukraine]*. LibMod analytical report. Modern Liberal Center [in Ukrainian].
6. Zakon Ukrainy «Podatkovyi kodeks Ukrainy» : pryiniatyi 2 hruden 2010 roku №2755-VI [Law of Ukraine «Tax Code of Ukraine» from December 2, 2010. №2755-VI]. Retrieved from <https://zakon.rada.gov.ua/laws/show/2755-17#Text> [in Ukrainian].
7. Veklich, O.O. (2018). Propozytsii shchodo posylennia diievosti zastosuvannia v Ukraini podatku na vykydy dvookysu vuhletsiu. [Proposals to increase the effectiveness of the application of the carbon tax in Ukraine]. *Efektivna ekonomika – Efficient economy*. 9. Retrieved from http://www.economy.nayka.com.ua/pdf/9_2018/3.pdf [in Ukrainian].
8. Carbon Taxes in Europe. Tax foundation (2021). Retrieved from: <https://bit.ly/3cToY0c>.
9. Chekunova, S. (2021). Prykordonne vuhletseve koryhuvannia YeS ta vyklyky dlia ukrainskoi ekonomiky/ enerhetyky. [EU Border Carbon Adjustment and Challenges for the Ukrainian Economy/Energy]. *razumkov.org.ua*. Retrieved from <https://razumkov.org.ua/statti/prykordonne-vugletseve-koryhuvannia-yes-ta-vyklyky-dlia-ukrainskoi-ekonomiky-enerhetyky> [in Ukrainian].
10. A revision of Ukraine's carbon tax. Reaching Ukraine's energy and climate targets. Low Carbon Ukraine project (2021). Retrieved from https://www.lowcarbonukraine.com/wp-content/uploads/LCU_ReachingUkraines-energy-and-climate-targets.pdf [in Ukrainian].
11. Zakon Ukrainy Biudzhetnyi kodeks Ukrainy : pryiniatyi 8 lypen 2010 roku №2456-VI [Law of Ukraine «Budget Code of Ukraine» from July 8, 2010 №2456-VI]. Retrieved from <https://zakon.rada.gov.ua/laws/show/2456-17#Text> [in Ukrainian].
12. Pashkov, M., Sidenko, V., Markevich, K., Stetsiuk, P., Gonchar, M., & Stukalenko, I. (2020). *Sektoralna intehtratsiia ukrainy do yes: peredumovy, perspektyvy, vyklyky. [Sectoral integration of Ukraine into the EU: preconditions, prospects, challenges]*. Razumkov Center. Kyiv. 99 p. [in Ukrainian].
13. Chekunova, S. (2021). EU Border Carbon Adjustment and Challenges for the Ukrainian Economy / Energy Razumkov center. Retrieved from <https://razumkov.org.ua/statti/prykordonne-vugletseve-koryhuvannia-yes-ta-vyklyky-dlia-ukrainskoi-ekonomiky-enerhetyky> [in Ukrainian].
14. Regulation (EU) 2020/852 of the European Parliament and of the Council of 18 June 2020 on the establishment of a framework to facilitate sustainable investment, and amending Regulation (EU) 2019/2088 (Text with EEA relevance). (2020). Retrieved from <https://uk.practicallaw.thomsonreuters.com/PLCCoreDocument/ViewDocument.html?comp>.
15. Taxonomy UA XBRL IFRS 2020: Decision of the Financial Reporting System Management Committee of 09.04.2021. *frs.gov.ua*. Retrieved from <https://frs.gov.ua/>.
16. Ministerstvo finansiv Ukrainy «Memorandumu pro vzaiemorozuminnia shchodo rozrobky i zaprovadzhennia systemy finansovoi zvitnosti» : pryiniatyi 18 hruden 2017 roku [Memorandum of Understanding on the development and implementation of the financial reporting system dated from December 18? 2017 №102/15]. Retrieved from <https://zakon.rada.gov.ua/laws/show/v0102201-17#Text> [in Ukrainian].

Received 20.02.2022.

ДИЗАЙН РЕФОРМУВАННЯ ВУГЛЕЦЕВОГО ОПОДАТКУВАННЯ ТА ЙОГО ВПЛИВ НА КОНКУРЕНТОЗДАТНІСТЬ ПІДПРИЄМСТВ МЕТАЛУРГІЇ

Левченко Н.М., Антонова Л.В.

У статті констатовано, що поглиблення проблеми зміни клімату та глобального потепління, загострення екологічних ризиків функціонування національних економік країн світу зумовлюють нагальність пріоритизації заходів зі скорочення викидів парникових газів. Акцентовано, що найбільш дієвими інструментами обмеження викидів парникових газів у світовій практиці вважаються цінні інструменти, до числа яких, насамперед, належить вуглецеве оподаткування. Розглянуто найбільш поширені моделі вуглецевого оподаткування та коротко їх охарактеризовано. Визначено чинники впливу на вибір моделі оподаткування викидів вуглецю. Узагальнено характеристику основних елементів податку на викиди двоокису вуглецю за різних моделей вуглецевого оподаткування. Обґрунтовано неефективність діючої в Україні моделі вуглецевого оподаткування та аргументовано причини її бездієвості. Наголошено на потребі негайного реформування в Україні механізму вуглецевого оподаткування. Розглянуто та охарактеризовано альтернативні варіанти реформування оподаткування викидів CO₂. Визначено з урахуванням світового досвіду, національних умов та історичних реалій архітектуру реформування оподаткування викидів вуглецю. Окреслено потребу у виборі дизайну реформування вуглецевого оподаткування. Доведено, що дизайн реформування вуглецевого оподаткування має бути багаторівневим, тобто передбачати здійснення реформи на національному, галузевому та макрорівні. Запропоновано авторський дизайн реформування вуглецевого оподаткування з урахуванням його впливу на конкурентоздатність промислових підприємств, зокрема, підприємств металургії. Доведено, що запровадження запропонованих заходів з реформування вуглецевого оподаткування стимулюватиме економічних агентів до зміни споживчої та виробничої поведінки, що зрештою забезпечить зменшення енергоємності та вуглецевої ємності ВВП та протидіятиме зміні клімату.

Ключові слова: вуглецеве оподаткування, конкурентоспроможність підприємств, податок на викиди двоокису вуглецю, прикордонне вуглецеве коригування, система торгівлі викидами.

ДИЗАЙН РЕФОРМИРОВАНИЯ УГЛЕРОДНОГО НАЛОГООБЛОЖЕНИЯ И ЕГО ВЛИЯНИЕ НА КОНКУРЕНТОСПОСОБНОСТЬ ПРЕДПРИЯТИЙ МЕТАЛЛУРГИИ

Левченко Н.М., Антонова Л.В.

В статье констатировано, что углубление проблемы изменения климата и глобального потепления, обострение экологических рисков функционирования национальных экономик стран мира обуславливают насущность приоритизации мер по сокращению выбросов парниковых газов. Акцентировано, что наиболее действенными инструментами ограничения выбросов парниковых газов в мировой практике считаются ценовые инструменты, к числу которых прежде всего относится налогообложение углерода. Рассмотрены и кратко охарактеризованы наиболее распространенные модели углеродного налогообложения. Определены факторы влияния на выбор модели обложения выбросов углерода. Обобщена характеристика основных элементов налога на выбросы двуокиси углерода при разных моделях углеродного налогообложения. Обоснована неэффективность действующего в Украине механизма налогообложения углерода и аргументированы причины его бездействия как инструмента государственного регулирования влияния бизнеса на окружающую среду. Отмечено необходимость немедленного реформирования в Украине углеродного налогообложения. Рассмотрены и охарактеризованы альтернативные варианты реформирования налогообложения выбросов CO₂. Определена на основе мирового опыта национальных условий и исторических реалий архитектура реформирования налогообложения выбросов углерода. Обозначена необходимость в выборе дизайна реформирования углеродного налогообложения. Доказано, что дизайн реформирования углеродного налогообложения должен быть многоуровневым, то есть предполагать осуществление реформы на национальном, отраслевом и макроуровне. Предложен авторский дизайн реформирования углеродного налогообложения с учетом его влияния на конкурентоспособность промышленных предприятий, в частности предприятий металлургии. Доказано, что введение предложенных мер по реформированию углеродного налогообложения будет стимулировать экономических агентов к изменению потребительского и производственного поведения, что обеспечит уменьшение энергоёмкости и углеродоемкости ВВП и противодействует изменению климата.

Ключевые слова: углеродное налогообложение, конкурентоспособность предприятий, налог на выбросы двуокиси углерода, пограничная углеродная корректировка, система торговли выбросами.

DESIGN OF CARBON TAXATION REFORM AND ITS IMPACT ON THE COMPETITIVENESS OF METALLURGICAL ENTERPRISES

Levchenko Nataliia^a, Antonova Liudmyla^b

^a “Zaporizhzhia Polytechnic” National University, Zaporizhzhia, Ukraine

^b Petro Mohyla Black Sea National University, Mykolaiv, Ukraine

* e-mail: zntu@znu.edu.ua

Levchenko Nataliia ORCID: <https://orcid.org/0000-0002-3283-6924>

Antonova Liudmyla ORCID: <https://orcid.org/0000-0003-2975-6453>

The article states that the deepening of the problem of climate change and global warming, the aggravation of environmental risks of the functioning of the national economies of the countries of the world determine the urgency of prioritizing measures to reduce greenhouse gas emissions. It is emphasized that the most effective tools for limiting greenhouse gas emissions in world practice are price instruments, which primarily include carbon taxation. The most common models of carbon taxation are considered and briefly characterized. The factors influencing the choice of carbon taxation model are determined. The characteristic of the main elements of the tax on carbon dioxide emissions under different models of carbon taxation is summarized. The inefficiency of the current model of carbon taxation in Ukraine is substantiated and the reasons for its inaction are substantiated. The need for immediate reform of the mechanism of carbon taxation in Ukraine was noted. Alternative options for reforming the taxation of CO₂ emissions are considered and characterized. Identified on the basis of global experience, national conditions and historical realities, the architecture of reforming carbon taxation. The need to choose the design of reforming carbon taxation is indicated. It has been proven that the design of reforming carbon taxation should be multi-level, that is, it should involve the implementation of the reform at the national, sectoral and macro levels. An author's design for reforming carbon taxation is proposed, taking into account its impact on the competitiveness of industrial enterprises, in particular, metallurgy enterprises. It has been proven that the introduction of the proposed measures to reform carbon taxation will stimulate economic agents to change consumer and production behavior, which will reduce the energy intensity and carbon intensity of GDP and counteract climate change.

Keywords: carbon taxation, enterprise competitiveness, carbon dioxide tax, frontier carbon adjustment, emissions trading system.

REFERENCES

1. Vervega, T. (2021). Investytsii u stali ekolohichni rishennia ye odnym z napriamkiv transformatsii suchasnoho biznesu. Hra u perspektyvu [Investing in sustainable environmental solutions is one of the areas of transformation of modern business. Game in perspective]. *assets.kpmg*. Retrieved from <https://assets.kpmg/content/dam/kpmg/ua/pdf/2021/12/review-magazine-11.pdf> [in Ukrainian].
2. Druhyi natsionalno-vyznachenyi vnesok Ukrainy do Paryzkoï uhody (NVV2): ambitnist ta perspektyvy. (2020). [Ukraine's second nationally determined contribution to the Paris Agreement : ambition and prospects]. *Ministerstvo zakhystu dovkillia ta pryrodnykh resursiv Ukrainy – Ministry of Environmental Protection and Natural Resources of Ukraine*. Retrieved from <https://mepr.gov.ua/news/36563.html> [in Ukrainian].
3. Zakon Ukrainy Pro ratyfikatsiiu Parizkoï Uhody : pryiniaty 14.07.2016 №1469-VIII [Law of Ukraine on the ratification of the Paris Agreement from July 14, 2016 №1469-VIII]. Retrieved from https://zakon.rada.gov.ua/laws/show/995_161#n2 [in Ukrainian].
4. Postanova Kabinetu Ministriv Ukrainy Pro zatverdzhennia Natsionalnoi ekonomichnoi stratehii na period do 2030 roku : pryiniaty 03 bereznia 2021 roku №179. [On approval of the National Economic Strategy for the period up to 2030. Resolution of the Cabinet of Ministers of 03.03.2021 №179]. Retrieved from <https://www.kmu.gov.ua/npas/pro-zatverdzhennya-natsionalnoyi-eko-a179> [in Ukrainian].
5. Novitska, N., & Khlebnikova, I. (2021). *Shliakhy vdoskonalennia podatku na vykydy dvookysu vuhletsiu v Ukraini. Analitichnyi zvit [Ways to improve the tax on carbon dioxide emissions in Ukraine]*. LibMod analytical report. Modern Liberal Center [in Ukrainian].
6. Zakon Ukrainy «Podatkovy kodeks Ukrainy» : pryiniaty 2 hruzen 2010 roku №2755-VI [Law of Ukraine «Tax Code of Ukraine» from December 2, 2010. №2755-VI]. Retrieved from <https://zakon.rada.gov.ua/laws/show/2755-17#Text> [in Ukrainian].
7. Veklich, O.O. (2018). Propozytsii shchodo posylennia diievosti zastosuvannia v Ukraini podatku na vykydy dvookysu vuhletsiu. [Proposals to increase the effectiveness of the application of the carbon tax in Ukraine]. *Efektivna ekonomika – Efficient economy*. 9. Retrieved from http://www.economy.nayka.com.ua/pdf/9_2018/3.pdf [in Ukrainian].
8. Carbon Taxes in Europe. Tax foundation. (2021). Retrieved from: <https://bit.ly/3cToY0c>.
9. Chekunova, S. (2021). Prykordonne vuhletseve koryhuvannia YeS ta vyklyky dlia ukrainskoï ekonomiky/enerhetyky. [EU Border Carbon Adjustment and Challenges for the Ukrainian Economy/Energy]. *razumkov.org.ua*. Retrieved from <https://razumkov.org.ua/statti/prykordonne-vugletseve-koryhuvannia-yes-ta-vyklyky-dlia-ukrainskoï-ekonomiky-enerhetyky> [in Ukrainian].

10. A revision of Ukraine's carbon tax. Reaching Ukraine's energy and climate targets. Low Carbon Ukraine project (2021). Retrieved from https://www.lowcarbonukraine.com/wp-content/uploads/LCU_ReachingUkraines-energy-and-climate-targets.pdf [in Ukrainian].

11. Zakon Ukrainy Biudzhetni kodeks Ukrainy : pryiniaty 8 lypen 2010 roku №2456-VI [Law of Ukraine «Budget Code of Ukraine» from July 8, 2010 №2456-VI]. Retrieved from <https://zakon.rada.gov.ua/laws/show/2456-17#Text> [in Ukrainian].

12. Pashkov, M., Sidenko, V., Markevich, K., Stetsiuk, P., Gonchar, M., & Stukalenko, I. (2020). *Sektoralna intehtratsiia ukrainy do yes: peredumovy, perspektvy, vyklyky. [Sectoral integration of Ukraine into the EU: preconditions, prospects, challenges]*. Razumkov Center. Kyiv. 99 p. [in Ukrainian].

13. Chekunova, S. (2021). EU Border Carbon Adjustment and Challenges for the Ukrainian Economy / Energy Razumkov center. Retrieved from <https://razumkov.org.ua/statti/prykordonne-vugletseve-koryguvannia-yes-ta-vyklyky-dlia-ukrainskoi-ekonomiky-energetyky> [in Ukrainian].

14. Regulation (EU) 2020/852 of the European Parliament and of the Council of 18 June 2020 on the establishment of a framework to facilitate sustainable investment, and amending Regulation (EU) 2019/2088 (Text with EEA relevance). (2020). Retrieved from <https://uk.practicallaw.thomsonreuters.com/PLCCoreDocument/ViewDocument.html?comp>.

15. Taxonomy UA XBRL IFRS 2020: Decision of the Financial Reporting System Management Committee of 09.04.2021. *frs.gov.ua*. Retrieved from <https://frs.gov.ua/>.

16. Ministerstvo finansiv Ukrainy «Memorandumu pro vzaiemorozuminnia shchodo rozrobky i zaprovadzhennia systemy finansovoi zvitnosti» : pryiniaty 18 hruden 2017 roku [Memorandum of Understanding on the development and implementation of the financial reporting system dated from December 18? 2017 №102/15]. Retrieved from <https://zakon.rada.gov.ua/laws/show/v0102201-17#Text> [in Ukrainian].