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REPowerEU IS AN EU TOOL FOR OVERCOMING ENERGY CHALLENGES

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Domashenko M. D., Troian M. Yu., Domashenko V. S. REPowerEU Is an EU Tool for Overcoming Energy Challenges

In response to challenges in the global energy market caused by Russia's invasion of Ukraine, the European Commission presented the REPowerEU plan. This REPowerEU plan provides actions aimed at saving energy; production of clean energy; diversification of energy supplies. The article considers a number of measures proposed and implemented by the European Commission to quickly reduce dependence on Russian fossil fuels and accelerate the transition to a green energy system. Among the main measures considered: the diversification of the EU's energy supply, which will be ensured by concluding agreements with third countries on pipeline imports, investing in the purchase of liquefied natural gas, partnership with Namibia, Egypt, Israel and Kazakhstan; development of alternative energy sources; saving energy by voluntarily reducing natural gas consumption in the EU by 15%; accelerating the transition to clean energy by investing in renewable energy sources. The main energy-saving measures proposed by the European Commission are considered, namely: lowering the heating temperature and reducing the use of air conditioning; regulation of boiler parameters; work at home; economical use of a car; speed reduction on highways; not to use a car on Sunday in big cities; short trips on foot or by bike instead of a car trip; use of public transport; choose the train instead of the plane. The article presents a market-based mechanism to limit excessive natural gas price spikes, which will limit episodes of extremely high natural gas prices in the EU and thus reduce the impact of price increases on citizens and the economy. In addition, the EU plan envisages investing in renewable energy sources, namely: increasing the production and capacities of electricity from wind and solar sources.

Keywords: *REPowerEU, energy market, energy challenges, alternative energy sources, natural gas prices, EU tools.*
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Домашенко М. Д., Троян М. Ю., Домашенко В. С. REPowerEU – інструмент ЄС для подолання енергетичних викликів

У відповідь на виклики на світовому енергетичному ринку, спричинені вторгненням Росії в Україну, Єврокомісія представила план REPowerEU. Цей план передбачає дії, спрямовані на енергозбереження, виробництво чистої енергії, диверсифікацію енергопостачання. У статті розглядається ряд заходів, запропонованих і реалізованих Європейською комісією для швидкого зниження залежності від російського викопного палива та прискорення переходу до «зеленої» енергетичної системи. Серед основних заходів розглядаються: диверсифікація енергопостачання ЄС, яка забезпечується шляхом укладення угод з третіми країнами щодо трубопровідного імпорту, інвестуванням у закупівлю скрапленого природного газу, партнерством з Намібією, Єгиптом, Ізраїлем і Казахстаном; розвиток альтернативних джерел енергії; енергозбереження шляхом добровільного скорочення споживання газу в ЄС на 15%; прискорення переходу до чистої енергії шляхом інвестування у відновлювані джерела енергії. Розглянуто основні заходи з економії енергії, запропоновані Єврокомісією, а саме: зниження температури опалення та зменшення користування кондиціонером; регулювання параметрів котла; робота вдома; ощадливе користування автомобілем; зниження швидкості на автомагістралях; відмова від користування автомобілем у неділю у великих містах; короткі подорожі пішки або на велосипеді замість поїздки автомобілем; використання громадського транспорту; обирання потяга замість літака. У статті представлено ринковий механізм обмеження надмірних стрибків цін на газ, який обмежить епізоди надзвичайно високих цін на газ в ЄС і таким чином зменшить вплив підвищення цін на громадян та економіку. Крім того, план ЄС передбачає інвестування у відновлювані джерела енергії, а саме – у збільшення виробництва та потужностей електроенергії з вітрових і сонячних джерел.

Ключові слова: *REPowerEU, енергетичний ринок, енергетичні виклики, альтернативні джерела енергії, ціни на газ, інструменти ЄС.*
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In response to the difficulties and disruption of the global energy market caused by Russia's invasion of Ukraine, the European Commission presented the REPowerEU plan.

REPowerEU is a plan to save energy, produce clean energy, and diversify energy supplies. Thanks to REPowerEU, the EU protected EU citizens and businesses from energy shortages, supported Ukraine, and accelerated the transition to clean energy. The new realities of the geopolitical and energy market demand a sharp acceleration of the transition to clean energy and an increase in Europe's energy independence from unreliable suppliers and unstable fossil fuels.

REPowerEU is the European Commission's plan for Europe's independence from Russian fossil fuels well before 2030 in light of Russia's invasion of Ukraine.

The problems and prospects of energy conservation, clean energy production, diversification of energy supply and the development of renewable energy sources are considered in the works of such scientists as Vakal S., Vakal V., Artyukhov A. et al. [2; 3], Shkola V., Prokopenko O., Stoyka A. et al. [5], Sotnyk I., Kurbatova T., Romaniuk Ya. et al. [10], Kurbatova T. O. [9; 10] Skibina T. [9], Sala D., Bashynska I., Pavlova O. et al. [11], Prokopenko O., Kurbatova T., Khalilova M. et al. [12], and others.

However, the issue of REPowerEU as an EU tool for overcoming energy challenges in Ukraine needs to be studied.

The *aim* of the article is to study REPowerEU as an EU tool for overcoming energy challenges.

85% of Europeans believe that the EU should reduce its dependence on Russian natural gas and crude oil as soon as possible in order to support Ukraine. By acting as a Union, Europe can achieve this faster [1].

The REPowerEU plan sets out a number of measures to rapidly reduce dependence on Russian fossil fuels and accelerate the transition to a "green" system while increasing the sustainability of the pan-European energy system. It is based on:

- *diversification* – the EU works with international partners to find alternative sources of energy. In the short term, alternative supplies of natural gas, oil and coal are needed as soon as possible, and renewable hydrogen will also be needed in the future;
- *conservation* – every citizen, business and organization can save energy. Small changes in behavior, if followed by everyone, can make a big difference. Measures will also be required in case of supply interruptions;
- *clean energy acceleration* – renewable energy is the cheapest and cleanest energy available and can be produced domestically, reducing the need for energy imports. REPowerEU will accelerate the transition to green energy and stimulate large-scale investments in renewable energy sources. In addition, industry (particularly energy-intensive industries [2]) and transport must be allowed to switch more quickly to fossil fuels to reduce emissions and dependency. As the study [3] showed, it is the energy supply sector that is the most significant environmental polluter in the EU.

Diversify energy supplies [4]

Since the adoption of the REPowerEU Plan, the EU has drastically phased down Russian fossil fuel imports and successfully diversified energy supplies.

The EU sanctions have banned seaborne imports of Russian crude oil and refined petroleum products as well as Russian coal.

As regards natural gas, imports of Russian gas (pipeline & LNG) dropped from a 45% share of overall EU imports in 2021, to only 15% in 2023. These are significant achievements, setting the EU on track to phase out imports of Russian fossil fuels by 2027 (*Fig. 1*).

To compensate, the EU replaced Russian natural gas supply with imports from other international suppliers. Norway and the U.S. have become the largest natural gas suppliers, representing 34% and 20% of EU natural gas imports respectively in March 2024.

Thanks to the REPowerEU plan, the EU has succeeded in diversifying its energy supply mainly due to:

- conclusion of agreements with other third countries regarding pipeline imports;

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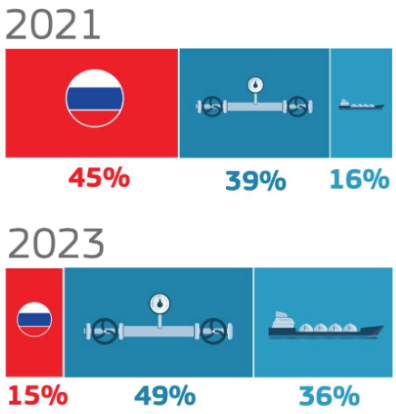


Fig. 1. Fossil fuel imports (left to right: Russian natural gas imports (LNG and pipeline), other pipeline imports, other LNG imports) [4]

- investing in the joint purchase of liquefied natural gas (LNG);
- ensuring a strategic partnership with Namibia, Egypt and Kazakhstan to ensure a safe and sustainable supply of renewable hydrogen;
- signing agreements with Egypt and Israel on the export of natural gas to Europe.

The EU must ensure its energy supply not only for next winter, but also for years to come. That is why EU partnerships are focused on building a greener future, on the path to climate neutrality.

The infrastructure that the EU uses for natural gas today could be used for clean hydrogen in the future. Today's investments are also investments in the decarbonization of the economy in the future [1; 5].

EU countries have taken significant actions to optimize existing infrastructure, for example by putting into operation, or updating, cross-border interconnections allowing gas to flow to where it is needed.

To accompany the increase of liquefied natural gas (LNG) supply to Europe, EU countries made major infrastructure investments: a record total of 7 new LNG terminal projects have been commissioned over the past 2 years. They have increased the EU's LNG import capacity to 50 bcm per year as of May 2024. This capacity is expected to reach 70 bcm at the end of the year.

The first Union list of Projects of Common Interest (PCIs) and of Projects of Mutual Interest (PMIs), was adopted by the Commission in November 2023 to help build an infrastructure network across Europe that is fit for a decarbonized future.

The list features among others:

- 85 electricity projects, including 5 smart grids projects and 12 offshore infrastructure projects;
- 64 hydrogen and electrolysers projects;
- 14 CO_2 network projects;
- 10 PMIs, including electricity interconnections with the United Kingdom, the Western Balkans and North African countries.

Two calls for proposals for financing from the Connecting Europe Facility for Energy (in 2022 and 2023) have been designed with the REPowerEU objectives in focus. Through these calls, the Commission awarded €1.2 billion to cross-border electricity projects ranging from facilitating the integration of renewable electricity, to natural gas storage projects in South-Eastern Europe, and the first building blocks of a future Europe-wide CO_2 value chain.

21 EU countries have included investments in energy infrastructure in their Recovery and Resilience Plans, supporting the REPowerEU objectives [4].

Belgium's RRP supports the construction of an artificial energy island in the North Sea. This offshore energy hub has 2 objectives: to connect at least 3.15 GW of future offshore wind energy to the onshore electricity grid, and to facilitate the integration and import of more renewable energy from the North Sea by connecting to other countries.

Italy will improve the resilience of at least 4 648 km of power grid, with Recovery and Resilience Facility support. In addition, 514 km of submarine cables between Eboli and Caracoli and the 'East interconnection line' between Sicily and Campania will be constructed to integrate renewables from the south.

Poland will construct or modernize 880 km of electricity distribution networks in rural areas, including the necessary stations and integrating smart grid functionalities, to enable the connection of new renewable energy sources in these areas.

Securing affordable energy [1]

Energy prices in Europe have declined substantially compared to the peaks in 2022, thanks to the coordinated European response and the REPowerEU Plan. Europe is investing in producing clean and affordable energy and securing its energy independence.

Following Russia's full-scale invasion of Ukraine, the EU proposed joint natural gas purchases to ensure Europeans have access to affordable energy and avoid any disruptions in energy supply. This system made it possible to start buying a share of natural gas needs together, like Europeans, instead of competing with each other for scarce supplies.

In May 2023, the EU managed to attract applications from a total of 25 supplier companies, which is equivalent to more than 13.4 billion cubic meters of natural gas (billion cubic meters). This significantly exceeds the 11.6 billion cubic meters of joint demand that EU companies submitted to the first tender (under

the AggregateEU mechanism). 5 short-term tendering rounds have been organized since April 2023, covering 25 delivery points and 2 LNG virtual points (North-West, and South-East). During these 5 rounds, more than 43 bcm of European demand have been matched with competitive offers.

Energy saving [1]

Energy conservation is the cheapest, safest and cleanest way to reduce our dependence on fossil fuel imports from Russia.

At the EU level, the Member States agreed to the Commission's proposals to voluntarily reduce natural gas consumption in the EU by 15% last winter.

From August 2022 to March 2023, natural gas demand fell by 18%, exceeding the target.

According to the Commission's proposal, in March 2023, the Member States extended the voluntary natural gas demand reduction target for another year.

Together with energy efficiency measures, individual actions will have a positive impact on prices – directly reducing electricity bills, making the EU economy more sustainable and accelerating the EU's clean energy transition.

There are many ways to reduce energy consumption in everyday life, including [1]:

- decrease in heating temperature or less use of air conditioners;
- use household appliances more efficiently;
- savings on transport;
- transition to public transport and active mobility;
- turning off the light.

The Commission will support citizens with targeted information to help them make informed choices and energy-efficient purchases.

There is collaboration with organizations such as the International Energy Agency [2], the Member States and local authorities to identify and promote the most effective energy saving actions.

26 EU countries have included investments in energy efficiency in their Recovery and Resilience Plans (RRPs) [4].

France supports the energy renovation of 1 750 000 households, 40 000 social housing units, and 5 000 small and very small enterprises. It further supports the thermal renovation of over 6 750 public-sites, over 28 million m^2 of State-owned public buildings, and more than 680 schools.

Austria is combating energy poverty by allocating support to the thermal renovation of 1 079 dwellings, at least 375 projects for the connection to high-efficiency district heating and at least 15 roof and façade greening projects.

Greece aims to improve the energy efficiency of 11 500 residences, of which at least 2 300 are for energy-poor households. It also supports the installation of 171 700 solar water heating systems and heat pumps for households, of which 34 000 are for energy-poor households.

The main energy saving measures proposed by the European Commission include [8]:

1. Lowering the heating temperature and reducing the use of air conditioning.
2. Adjustment of boiler settings.
3. Work from home.
4. Use car more economically.
5. Reduce speed on highways.
6. Do not use a car on Sunday in big cities.
7. Short trips on foot or by bike instead of a car trip.
8. Use of public transport.
9. Skip the plane, take the train.

Natural gas prices in Europe are lower today than before the Russian invasion of Ukraine, thanks in part to Europe's coordinated response under REPowerEU.

Producing clean energy [1]

Renewable energy is: good for the climate; good for the EU's energy independence; good for the security of supply; good for creating green jobs [1; 9].

The REPowerEU Plan is speeding up the green transition and promoting massive investment in renewable energy [10].

Since 2022, there are the following steps made towards increasing production and capacity: reaching a record of almost 96 GW of new solar energy capacity installed; increasing wind capacity by 33 GW; ensuring 46% of electricity now comes from renewables.

In November 2023, the revised Renewable Energy Directive entered into force. This new legislation aims to increase the share of renewables in the EU's overall energy consumption, raising the binding target for 2030 to 42.5%, with the ambition to reach 45%. This would almost double the existing share of renewable energy in the EU [9; 10].

To support the clean transition, the EU must get better at nurturing own industry. To achieve this, the EU proposed a Green Deal Industrial Plan for Europe in February 2023. The Plan will help enable the EU's manufacturing industry to scale-up its production of the net-zero technologies and products required to meet Europe's ambitious climate targets.

Two key pieces of the Plan are the Critical Raw Materials Act and the Net-Zero Industry Act, presented in March 2023. Both will create a predictable and simplified regulatory environment, encouraging investments and the development of projects that are key to the European economy.

A market mechanism to limit excessive natural gas price spikes [6]

EU countries have agreed on a market correction mechanism which will limit episodes of extraordinarily high natural gas prices in the EU and thus reduce the impact of price hikes on citizens and the economy. A price ceiling for natural gas transactions will be applied when and if gas prices reach exceptional levels.

The agreement responds to the call by EU Heads of State and Government in the October 2022 and European Council's conclusions for the creation of a price mechanism to limit extreme gas price peaks while ensuring security of supply and market stability in the EU.

August 2022 saw an unprecedented peak in the EU natural gas prices – up by 1000% compared to prices in previous decades.

Over the last ten years, the average price of natural gas was between €5/MWh and €35/MWh. In August 2022, TTF month-ahead and day-ahead prices hit an all-time high of over €300/MWh. The highest price levels were reached over five consecutive trading days from 22 to 26 August 2022, when they were above €265/MWh (*Fig. 2*).

The long spike in August 2022 had a highly damaging impact on the EU economy increasing the financial burden on energy customers and challenging security of supply on the EU market. The ongoing military aggression by Russia against Ukraine and Russia's weaponization of natural gas supplies continue to affect markets.

The excessively high natural gas prices contributed to rising inflation which reached 11.5% in the EU in October 2022 (*Fig. 3*).

The market is expected to remain volatile and unpredictable beyond the winter of 2024/2025 as Russia's incursion into Ukraine continues. EU countries will continue to strengthen their efforts to diversify their energy supply and develop new infrastructure, such as liquefied natural gas terminals.

With the help of the market correction mechanism, EU countries want to prevent too high natural gas prices in the future to protect European citizens and businesses from economically damaging shocks.

The market correction mechanism is a regulatory tool whose function is to limit episodes of excessive natural gas prices in the EU (when prices reach levels exceeding world market prices), while ensuring security of energy supply and stability of financial markets.

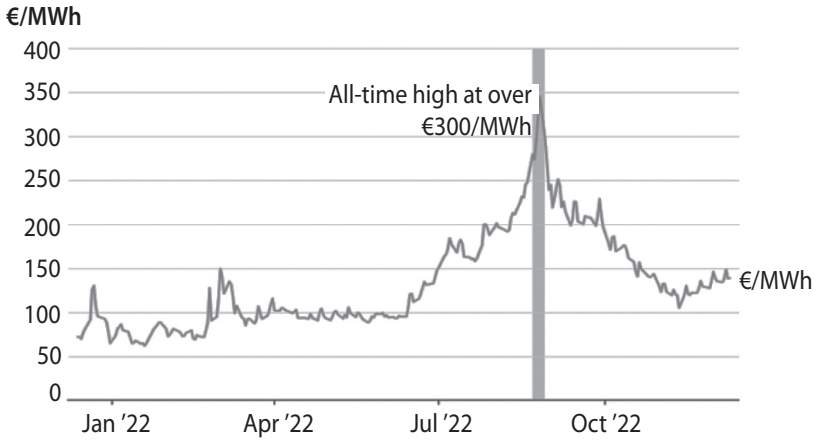


Fig. 2. Natural gas prices in the EU [6]

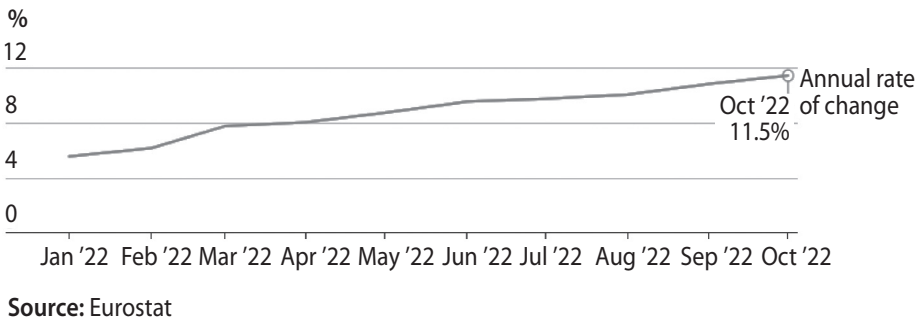
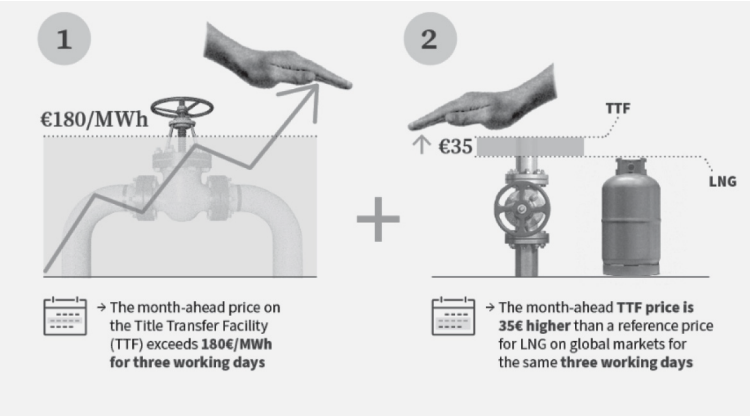


Fig. 3. EU inflation rates in 2022 [6]

The market correction mechanism applies to transactions on virtual natural gas trading platforms in the EU.

The Member States have agreed that the mechanism applies to the following derivative contracts: month-ahead; three months-ahead; a year-ahead.

The mechanism is temporary in nature and it is automatically triggered when a specific market event occurs (*Fig. 4*).



The Title Transfer Facility (TTF) is a virtual trading platform used as a reference to set the price of nftural gas in the EU.

Fig. 4. Market event triggering the activation of the mechanism [6]

The rules first applied from 1 February 2023 for a period of one year and were later extended until 31 January 2025.

The mechanism is deactivated if [6]:

- natural gas prices change according to defined parameters;
- a regional or EU emergency is declared by the Commission.

The mechanism can be suspended if:

- risks jeopardizing natural gas supply, intra-EU gas flows, demand reduction efforts or financial stability are identified.

The EU has taken measures to mitigate market volatility and help citizens and businesses by redirecting excess revenues from the energy sector to them.

Ending the EU's dependence on Russian fossil fuels will require a large-scale expansion of the use of renewable energy sources, as well as accelerating the electrification and replacement of heat and fossil fuels in industry, buildings and the transport sector. A clean energy transition will help lower energy prices over time and reduce dependence on imports.

Renewable energy is the cheapest and cleanest energy available and can be produced domestically, reducing the need for energy imports. In March 2023, as part of the European Green Deal and the REPowerEU plan, the EU tentatively agreed on stronger legislation to accelerate the deployment of renewable energy, raising the EU's binding 2030 renewable energy target to 42.5% with an ambition to reach 45%. Reaching 45%, as envisaged in REPowerEU, would almost double the existing share of renewable energy in the EU, bringing the total renewable energy generation capacity to 1,236 GW by 2030, compared to the 1,067 GW by 2030 envisaged by the Fit for 55 package [1].

Advantages of renewable energy:

- good for the climate;
- good for EU energy independence;
- good for security of supply;
- creates jobs in the EU.

The REPowerEU plan accelerates the green transition and promotes massive investment in renewable energy sources.

Over the past year, the EU managed to increase production and capacity:

- generating, for the first time, more electricity from wind and solar sources than from natural gas;
- achieving a record 41 GW of new installed solar capacity;
- increase in wind capacity by 16 GW;
- ensuring that 39% of electricity now comes from renewable sources.

The EU's solar energy strategy will promote the deployment of photovoltaics. As part of the REPowerEU plan, the strategy aims to deliver more than 320 GW of newly installed solar PV by 2025, double today's level, and almost 600 GW by 2030. This initial additional capacity replaces the consumption of 9 billion cubic meters of natural gas per year until 2027.

To support this clean transition, the EU needs to improve the development of its own industries – from

hydrogen to chemicals, from biotech to nanotech. To achieve this plan, in February 2023 the Commission proposed a Green Deal industrial plan for Europe [1].

CONCLUSIONS

So, to sum up, it should be noted that the REPowerEU Plan is quite ambitious and requires large investments and reforms. That is why the EU has mobilized about €300 billion – approximately €72 billion are planned to be allocated in grants and approximately €225 billion will be provided in the form of loans.

It also plans to attract an additional €210 billion in investment by 2027 to end Russian fossil fuel imports, which currently cost European taxpayers nearly €100 billion a year. The Recovery and Resilience Fund (RRF) is the backbone of the REPowerEU plan, providing additional EU funding. The European Commission calls on the EU Member States to add a REPowerEU chapter to their Recovery and Resilience Plans in order to direct investments to REPowerEU priorities and implement the necessary reforms. ■

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УПРОВАДЖЕННЯ ЕЛЕКТРОННОЇ СИСТЕМИ МИТНОГО ОФОРМЛЕННЯ В УКРАЇНІ: ПЕРЕВАГИ ТА НЕДОЛІКИ

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Іщук Ю. А., Шемчук А. В. Упровадження електронної системи митного оформлення в Україні: переваги та недоліки

У статті розглянуто процес упровадження електронної системи митного оформлення в Україні в контексті інтеграції до митного простору Європейського Союзу. Висвітлено ключові аспекти цифровізації митних процедур, які сприяють підвищенню прозорості, швидкості й ефективності митного контролю. Проаналізовано сучасний стан електронної митної системи, зокрема впровадження таких компонентів, як «Єдине вікно», електронне декларування, автоматизований митний контроль та електронний кабінет учасника зовнішньоекономічної діяльності (ЗЕД). Окрему увагу приділено міжнародному досвіду цифровізації митних процедур, зокрема практикам Європейського Союзу та Китаю. У статті наведено дані щодо розвитку електронної митниці в Україні, включно зі зростанням частки електронного документообігу, часом оформлення декларацій, а також упровадженням інституту авторизованого економічного оператора. Розглянуто такі переваги впровадження електронної митниці, як скорочення часу митного оформлення, зменшення корупційних ризиків, спрощення документообігу та підвищення прозорості процесів. Виявлено основні недоліки, зокрема технічні виклики, проблеми кібербезпеки та необхідність удосконалення нормативно-правової бази. Надано практичні рекомендації щодо вдосконалення електронної митної системи, включно з розвитком інформаційно-технічної інфраструктури, підвищенням кваліфікації персоналу та гармонізацією вітчизняного законодавства з європейськими стандартами. Зроблено висновок, що розвиток електронної митниці є важливим кроком у зміцненні позицій України на міжнародних ринках.

Ключові слова: *електронна митниця, цифровізація, митне оформлення, електронне декларування, кібербезпека, зовнішньоекономічна діяльність, інформаційні технології, автоматизація процесів, міжнародний досвід, авторизований економічний оператор.*
Табл.: *4.* ***Бібл.:*** *21.*

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Ishchuk Yu. A., Shemchuk A. V. Implementation of the Electronic Customs Clearance System in Ukraine: Advantages and Disadvantages

The article examines the implementation process of the electronic customs clearance system in Ukraine in the context of integration into the European Union customs space. Key aspects of the digitalization of customs procedures are highlighted, emphasizing their contribution to enhancing transparency, speed, and