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The importance of the Market Stability Reserve (MSR) for the reform of the CO₂ emission allowance trading system

ABSTRACT: The paper presents the impact of the reformed EU ETS (Emission Trading Scheme – ETS in the European Union) on the currently operating market for trading in CO₂ emission allowances. The new Directive introduced a number of changes aimed at tightening the climate policy, which the Polish energy sector based mainly on hard coal may mean an increase in the costs of electricity production, and thus an increase in the cost of the entire economy.

The main goal of the changes is to achieve one of the objectives the European Union has set for itself, i.e. the reduction of CO₂ emissions by 40% until the year 2030. These assumptions are the result of joint arrangements of the EU countries under the Paris Agreement on climate change adopted in 2015. The Directive introduces a new market stability reserve mechanism (MSR) which, according to its assumptions, is designed to ensure a demand and supply balance of the ETS. Bearing the balance in mind, it means the reduction of excess allowances, which, although their number is decreasing, it is decreasing to slowly according to EU legislators, still oscillating around 2 billion EUA.

The paper also draws attention to the rigorous assumptions adopted in the new Directive, aimed at increasing the price of CO₂, that is the costs in electricity production. Due to manually-controlled prices, are we doomed to high CO₂ prices and therefore the prices of electricity? What are its estimated maximum levels? Will the new assumptions encourage the Member States to switch to low-carbon technologies? Can they weaken the economies of countries that are currently based mainly on coal energy sources, and strengthen countries where green energy is developed?

KEYWORDS: climate and energy policy, ETS Directive, EU ETS, Market Stability Reserve, CO₂ emissions

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Introduction

Since 2005, there has been a CO₂ emissions trading scheme in the European Union, which currently covers installations that burn fuels, industrial installations and aircraft emissions. They account for the amount of greenhouse gases emitted each year, and in the case they emit and do not have enough allowances on their account, these installations are subject to high penalties – currently EUR 100 per allowance (European Commission 2017). Member States receive a pool of free allowances for industries specified by the Directive (Directive 2003/87/EC), and then allocate them to more than 11 thousand installations, covered by the ETS.

The objective of the whole mechanism is to introduce a cap on total CO₂ emissions from installations which are in the EU ETS. Within the established ceiling, companies receive or have to buy emission allowances, which they can trade according to their needs. Over time, the limits will be lowered so that overall emissions will be reduced according to the targets set by the Climate Protocols (Brussels 2014).

It is important to realize that members of the EU Council and the European Parliament have long been working on the reform of the Directive, which actually finally tightens the EU ETS emissions reduction target for 2021–2030 from 43% set by the European Council in 2014 to around 54% compared to 2005 (Chojnacki 2017). The main tool which, in practice, is aimed at reducing CO₂ emission allowances is the stabilisation reserve mechanism. It was assumed that in the years 2019–2023 24% of the volume of allowances in the market (instead of 12% originally proposed by the European Commission) would be transferred to the reserve. Following the year 2023, the allowances in the reserve will be revoked. This mechanism seems to be a very important pricing and regulatory factor for EUAs, as the decrease in the supply of emission allowances will certainly mean an increase in their prices.

1. EU Emissions Trading Scheme (EU ETS)

The European Emission Trading Scheme (EU ETS), also known as the Community carbon dioxide emission allowances market (CO₂) or, the ETS in short, is today the only CO₂ emission market based on the provisions of the Kyoto Protocol adopted in 1997 to the United Nations Framework Convention on Climate Change (UNFCCC).

Formally in Europe, the EU ETS was established by Directive 2003/87/EC of the European Parliament and of the Council of 13 October 2003 establishing a scheme for greenhouse gas emission allowance trading within the Community (Szymacha 2008). This system started operating in January 2005, imposing emission caps on approximately 12,000 installations in the energy sector and other carbon-intensive industries. Figure 1 shows the three phases of the system's operation.

Stage I 2005-2007	Stage II 2008-2012	Stage III 2013-2020
Covered 12,000 installations Covered only CO ₂ emissions from energy producers and energy-intensive sectors of industry	Covered 38 developed countries	11,000 power and production plants in 28 EU Member States, Island, Lichtenstein and Norway
Penalty for non-compliance amounted to EUR 40 per ton	Penalty for non-compliance amounted to EUR 100 per ton	Penalty for non-compliance amounted to EUR 100 per ton
Nearly 100% of free allowances	90% of free allowances	The share of free allowances will decrease up to 30% in 2020
No auctions	Auctioning was commenced	Auctioning as a primary method to allocate allowances

Fig. 1. The most important features of three EU ETS stages
Source: Own study

Rys. 1. Najważniejsze cechy trzech etapów systemu EU ETS

The third stage (2013–2020) of the EU ETS settlement system currently is implemented. The first stage implemented in the years 2005–2007 covered 12,000 installations, however the number of allowances determined on the basis of calculated needs turned out to be too high, which in 2007 resulted in the price of CO₂ allowances initially falling to zero (Olkuski et al. 2017), as well as it was caused by the inability to use the allowances in the subsequent period. The second settlement period from 2008 to 2012 extended its scope to additional States and nitrous oxide installations, and from 2012 the EU ETS also covered the aviation sector. The most important features of all three stages are shown in Figure 1. Figure 2, however, presents the sectors which have been added in each phase of the system's operation.

The fourth stage is to be implemented in the years 2021–2030. EU Directive 2018/410, approved by the European Council, introduces a number of changes for the period after 2020, which already in 2018 greatly accelerated the increase in the price of CO₂ in the EU emission allowance trading scheme.

I phase of the system	II phase of the system	III phase of the system	IV phase of the system
		Aviation sector – from 2012	Aviation sector – from 2012
	Installations emitting nitrous oxide	Installations emitting nitrous oxide	Installations emitting nitrous oxide
Power and heating industry installations	Power and heating industry installations	Power and heating industry installations	Power and heating industry installations
2005-2007	2008-2012	2013-2020	2021-2030

Fig. 2. Sectors covered by the EU ETS in each particular phase

Source: Own study

Rys. 2. Sektory objęte systemem EU ETS w poszczególnych fazach

In the initial phase of its operation, the EU ETS has produced the desired effect. Firstly, high prices of CO₂ emission allowances forced the modernization of installations which were qualified for it and encouraged investments in low-carbon technologies. However, shortly after the launch of the second phase of the EU ETS, prices started to fall. By the end of the second phase of the scheme, according to the European Parliament estimates, the surplus of allowances available on the market amounted to around 2 billion (Olkuski et al. 2017).

It is worth noting that nearly 90% of allowances in the first and second settlement periods were allocated to business operators free of charge, which resulted in a significant part of operators qualified for the scheme having surplus allowances sold on the market to operators with a deficit.

The low prices did not encourage market participants to reduce their emissions, thus distorting the market and jeopardizing the main objective of the ETS, which is achieving the ambitious emission reduction targets set by the European Union. Therefore, the European Commission, during the third phase of the scheme operation (years 2013–2020), applied a short-term remedy. It intervened in the market by introducing a so-called “back-loading” mechanism (Decision 2013/448/EU). This was aimed at counteracting the lower than expected CO₂ emission prices on the ETS market. In such a manner the volume of CO₂ emission allowances available in the market was decreased in the years 2014, 2015, 2016 by 400 million, 300 million and 200 million respectively. Initially, it was planned that the withdrawn allowances would return to the market between 2019 and 2020, but nevertheless, in view of the weak impact of the mechanism on the price the idea was withdrawn and the allowances were permanently removed from the scheme.

The next step of intervention in the CO₂ market was the approval by the representatives of the European Parliament, the Council of the European Union and the European Commis-

sion (the so-called Trilogue) of the joint text of the new Directive. After many meetings and negotiations, on April 8, 2018, the Directive of the European Parliament and of the Council of the European Union 2018/410 (of March 14, 2018) came into force, introducing changes to the scheme of greenhouse gas emission allowance trading. This document amended Directive 2003/87/EC by strengthening the effect of the costs of emission reductions and low-carbon investments, thereby introducing a number of reforms to the existing scheme. The changes refer to the fourth period of the scheme's operation in the years from 2021 to 2030. As in the previous periods, the purpose of the Directive is to set directions for activities aimed at the reduction of CO₂ emissions being the next step towards achieving the objectives of the EU's climate policy. An additional, the indirect objective of this directive is to eliminate defective provisions that were discovered during the 15 years of the previous periods of the scheme. Adoption of the new Directive is undoubtedly a major success for the supporters of the scheme's reform.

2. Provision of the new Directive concerning the fourth phase of the EU ETS

Due to low prices resulting from the surplus allowances in the scheme, business operators had low motivation to invest in clean electricity production technologies, which reduced the impact of the fight against climate change. In the years 2014–2015, for the first time, a market intervention was carried out in the form of so-called “back-loading”. This resulted in the withdrawal of 900 million emission allowances from the market, which in turn led to a significant increase in the EUA prices. This is why the new Directive introduces a number of premises which, in a way, are supposed to repeat and consolidate the back-loading effect. The main premises of Phase IV of the EU ETS are as follows:

- ◆ Launching the Market Stability Reserve (MSR) mechanism.
- ◆ Increasing the Linear Reduction Factor (LRF).
- ◆ Creation of Innovation and Modernization Funds.

In 2019 the MSR mechanism will become operational, in the first 5 years it will withdraw 24% of CO₂ emission allowances from the market from the current surplus of allowances and, according to preliminary estimates, about 400 million allowances will be withdrawn from the market. Therefore, it can be expected that the “back-loading” effect will be repeated to a certain extent. In addition, from the year 2021 the linear reduction factor (LRF) will increase from the current 1.74% to 2.2% per annum. This will be another limitation to the number of permitted emissions (Olkuski et al. 2017). These changes directly affect the speed of the transfer of allowances to the reserve and, as a consequence, determine the accelerated path of available CO₂ rights reduction, which will undoubtedly encourage price increases.

A new and also important issue are the created funds intended to replace the NER 300 fund. The Modernization Fund is an instrument which is intended to reduce the costs of reforming the ETS in poorer countries. This fund provides selected countries with an additional pool of CO₂ emission allowances for auctioning. This is to translate into billions of zlotys for investments in the modernization of the power industry. However, there is one important condition to be eligible for the fund. The support will not be granted to investments in coal power generation and the co-generation of electricity and heat from coal. Under the Modernization Fund, Poland may receive about 141 million allowances, and according to the division included in the new Directive it may become its largest beneficiary (Table 1).

TABLE 1. Distribution of funds from the Modernization Fund until December 31, 2030

TABELA 1. Podział środków z funduszu na rzecz modernizacji do 31 grudnia 2030 r.

Country	Percentage share of the Modernization Fund	Volume of available allowances in million (depending on meeting specific criteria)	Equivalent in PLN acc. to rates of 11.07.2018 (EUA = 16.32; EUR = 4.33)
Bulgaria	5.84%	18.98	1 341.23
Czech Republic	15.59%	50.67	3 580.45
Estonia	2.78%	9.04	638.46
Croatia	3.14%	10.21	721.14
Latvia	1.44%	4.68	330.72
Lithuania	2.57%	8.35	590.23
Hungary	7.12%	23.14	1 635.20
Poland	43.41%	141.08	9 969.68
Romania	11.98%	38.94	2 751.37
Slovakia	6.13%	19.92	1 407.84
	100.00%	325.00	22 966.32

Source: Own study on the basis of the Directive 2018/410.

As already mentioned, the objective of this program is to support investments proposed by the Member States and, first of all, to finance small-scale investment projects for the modernization of energy systems and energy efficiency improvement in the countries, in which GDP per capita calculated at market prices was below 60% of the EU average in 2013 (Directive 2018/410). Supporting such investments pursues the EU's climate and energy policy objective until 2030 and the long-term objectives set out in the Paris Agreement (Conference 2015).

Moreover, the provisions of the new Directive assume that beginning from 2019 the Member States will auction all allowances which are not allocated free of charge, and from 2021 the share of allowances to be auctioned is expected to amount to 57% (Directive 2018/410). In addition,

2% of the total number of allowances to be auctioned over the period 2021–2030 will go to the Modernization Fund in order to improve the energy efficiency and modernize the energy systems of certain Member States (Directive 2018/410).

The next fund to be created is the Innovation Fund. The projects in all Member States will be eligible for it. The Fund aims to support innovation, inter alia, in the following areas:

- ◆ low-carbon technologies and processes in selected sectors, including environmentally safe carbon capture and utilization (CCU),
- ◆ products replacing carbon-intensive emissions,
- ◆ to help stimulate the construction and operation of environmentally safe CO₂ capture and geological storage (CCS) projects,
- ◆ investments in innovative renewable energy and energy storage technologies.

The adopted premises are intended to make a significant contribution to mitigating the effects of climate change.

According to the Directive data, in the years 2021–2030 the Polish energy sector may count on a maximum of about 440 million free CO₂ emission allowances due to a derogation. Under the Modernization Fund, between 2021 and 2030 the EU's energy sector can use up to maximum 455 million CO₂ emission allowances, but, as it has already been said, they cannot be used for the investments in coal-fired power generation.

3. Market Stability Reserve (MSR) Mechanism

In order to address the problem of imbalances between the supply and demand, and to prevent it in the future, Directive 2018/410 provides for the adoption of a Market Stability Reserve (MSR) in 2018, which will become operational in 2019. The MSR is in line with other elements of the climate policy. It should be noted here that the improvements made to the scheme, which are aimed at combating the large supply exceeding the demand for CO₂ allowances, are at the same time a way to regulate the level of prices, and specifically to cause their increase. Since mid-2017, when the content of the Directive began to be clarified and passed the subsequent stages of acceptance at the EU level, the price of CO₂ allowances has risen by more than 100% (August 2017: EUR 5.5/Mg – March 2018: EUR 14/Mg – July 2018: EUR 16.1/Mg). The CO₂ allowances price behavior is shown in Figure 3.

Work on the reserve has already started much earlier and in 2015, by Decision 2015/1814, the European Union established a market stability reserve for the EU ETS in order to ensure a more flexible supply of allowances to be auctioned and increase the resilience of the system. This Decision provides that allowances which are not allocated to new installations by the year 2020 and are not allocated due to the cessation of activities and partial cessation of activities are therefore to be included in the market stability reserve.

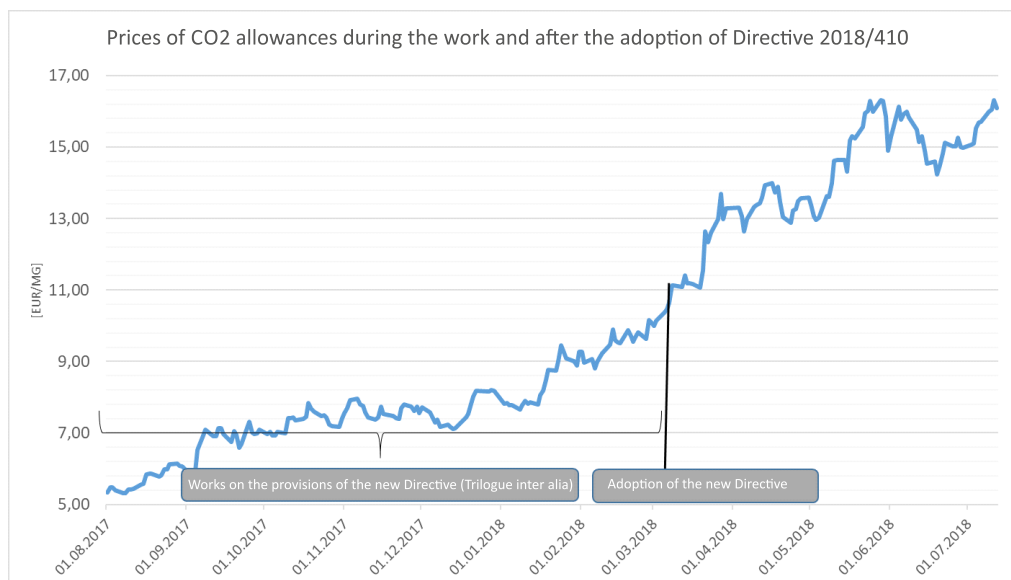


Fig. 3. Prices of CO₂ allowances during the work on the new Directive
Source: Own study

Rys. 3. Ceny uprawnień CO₂ w trakcie prac nad nową Dyrektywą

The premises for the introduction of MRS are that a well-functioning, reformed EU ETS including a market stability instrument is of key importance to achieve the agreed by the EU target for the year 2030 and to meet the obligations stemming from the Paris Agreement (Conference 2015). It means sending out a credible investment signal in terms of the reduction of CO₂ emissions.

Moreover, beginning from 2023, the allowances in the reserve and exceeding the total quantity of allowances auctioned during the preceding year will lose their validity. This would constitute a long-term measure to improve the functioning of the EU ETS. Regular reviews of the functioning of this reserve should also consider whether these increased volumes should be maintained.

To sum up, according to the main premises the reserve therefore should (European Commission 2017):

- ◆ Solve the problem of current surplus of emission allowances.
- ◆ Increase the resilience of the scheme to severe shocks by adjusting the supply of allowances to be auctioned.

The main assumptions, on the other hand, are:

- ◆ The 900 million allowances that were transferred in 2014–2016 “back loading” will not be auctioned but transferred to the reserve in the years 2019 (300 million) – 2020 (600 million).
- ◆ In 2019–2023, the number of allowances transferred to the reserve will double and represent 24% of the allowances in circulation. From 2024 onwards, a regular power supply ratio of 12% will be restored.

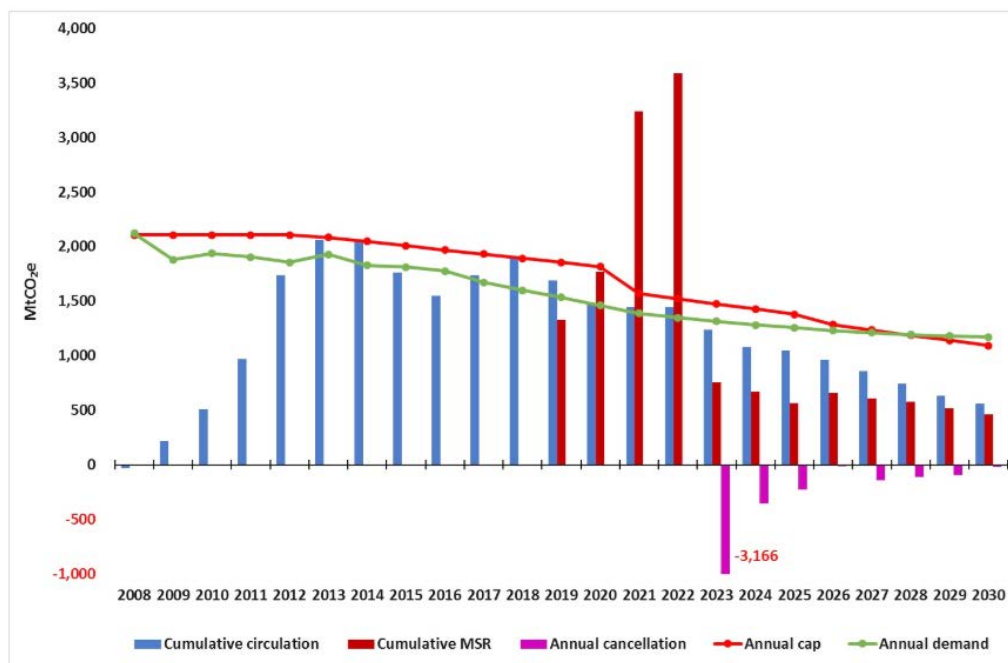


Fig. 4. Simulation of the balance after the introduction of the Market Stability Reserve

Source: Sandbag; Access date: 16.07.2018

Rys. 4. Symulacja bilansu po wprowadzenia mechanizmu rezerwy stabilności rynkowej

- ◆ Unallocated allowances will also be transferred to the reserve. Its exact volume will not be known until 2020.
- ◆ The Reserve will operate solely through pre-defined mechanisms which leave no margin of maneuver to the Commission or the Member States with regard to its implementation.

On May 15 of each year, the Commission publishes an official forecast of the total number of allowances in circulation for the preceding year. The first publication was made in 2017. If the published quantity of allowances in circulation exceeds 833 million tons, then 24% of this amount will be removed from the auctions scheduled from September 1 of a given year until August 31 of the following year (Directive 2018/410). The above means that 16% of the volume announced on May 15, 2018 will be suspended for sale at auctions from January to August, and 8% of the volume announced on May 15, 2019 will be suspended for sale at auctions from September to December. The aviation sector is not included in this calculation. The method of transfer and calculation of the volume transferred to the reserve is presented in Figure 5.

If the published number of allowances in circulation is less than 400 million tons, 100 million allowances will be released for auctioning scheduled from September 1 of year x until August 31 of year $x + 1$. If the number of allowances in the reserve is less than 100 Mt, all allowances will be released.

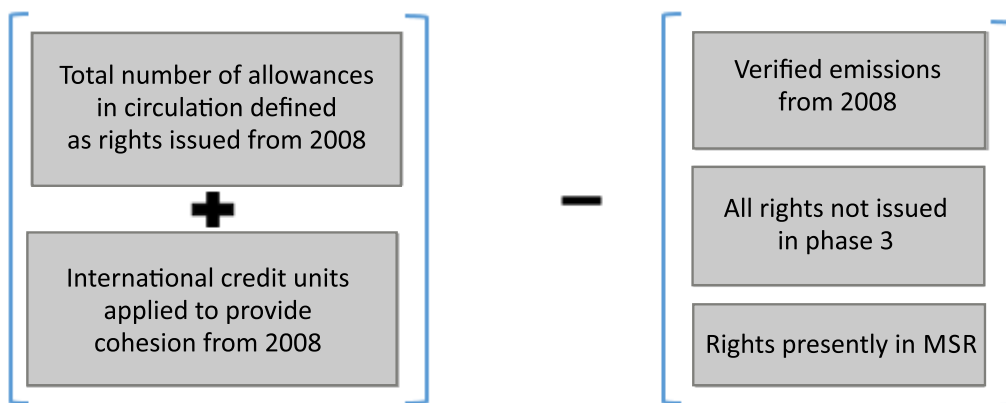


Fig. 5. The rule of rights transferring to the reserve

Rys. 5. Zasada przenoszenia uprawnień do rezerwy

Summary

Continuous work of the EU on the reform of the CO₂ emission allowance trading scheme is of great importance for the Polish economy due to the fact that in Poland coal still has one of the largest shares in electricity production, and it therefore belongs to the countries that are the biggest CO₂ emitters in Europe (Germany is the largest one). This is why the new Directive will undergo periodic reviews to assess whether the objectives of the Paris Agreement have been met and will continue to be strengthened as intended.

The proposed changes to the new Directive then set a difficult direction for Poland to meet the premises of the climate policy, which for several years has been consistently implemented by the EU. The introduction of a new mechanism aimed at blocking the possibility of CO₂ emission allowances prices going down, and in addition the lack of free allowances, as well as the limited possibility of benefiting from the Modernization Fund, imply an increase in financial risk for electricity generating companies.

It can be noted that the allowance market is still not a stable market, due to price fluctuations and relatively small “depth” of the market. Last year the volatility of daily quotations increased even to over EUR 1 per day, which shows how sensitive the price has become in correlation with other markets (especially the oil, coal and energy from Germany), as well as with the changes and reports coming from the EU legislators.

Therefore, the reason for new administrative actions taken at the EU level (aimed at increasing the prices of allowances) are the still lower than expected prices, which, in turn, decreases

the viability of investments in low-carbon technologies. Hence, the entry into force of the new Directive has already significantly contributed to the increase in the EUA allowances prices in a very short period of time, and the estimates for the coming years expect their further growth.

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Znaczenie Mechanizmu Rezerwy Stabilizacyjnej (MSR) dla reformy systemu handlu uprawnieniami do emisji CO₂

Streszczenie

W artykule przedstawiono wpływ zreformowanego systemu EU ETS (ang. *European Union Emission Trading Scheme*) na obecnie działający rynek handlu uprawnieniami do emisji CO₂. W nowej Dyrektywie wprowadzono szereg zmian mających zaostriżyć politykę klimatyczną, co dla polskiej energetyki opartej głównie na węglu kamiennym może oznaczać wzrost kosztów produkcji energii elektrycznej, a więc wzrost kosztów całej gospodarki.

Głównym celem zmian jest realizacja jednego z celów postawionych sobie przez Unię Europejską, czyli ograniczenie emisji CO₂ o 40% do roku 2030. Założenia te są wynikiem ustaleń krajów wspólnotowych w ramach globalnej umowy klimatycznej przyjętych w Paryżu w roku 2015. Dyrektywa wprowadza nowy mechanizm rezerwy stabilności rynkowej MSR (ang. *Market Stability Reserve*), który według założeń ma na celu zapewnić równowagę popytowo-podażową w systemie ETS. W rozumieniu redukcji nadwyżki uprawnień, która mimo że maleje, to według ustawodawców UE maleje zbyt wolno, nadal oscylując w okolicach 2 mld EUA.

W artykule zwrócono uwagę na rygorystyczne założenia przyjęte w nowej Dyrektywie, mające na celu zwiększenie ceny CO₂, czyli kosztów przy produkcji energii elektrycznej. Czy w związku z ręcznie sterowaną ceną jesteśmy skazani na wysokie ceny CO₂, a co za tym idzie energii elektrycznej? Jakie są jej prognozowane maksymalne poziomy? Czy nowe założenia skłonią kraje członkowskie do przechodzenia na niskoemisyjne technologie? Czy osłabią gospodarki krajów, które bazują w obecnej chwili głównie na węglowych źródłach energii, a wzmocnią kraje już rozwinięte w zieloną energię.

SŁOWA KLUCZOWE: polityka klimatyczno-energetyczna, Dyrektywa ETS, system EU ETS, MSR, emisje CO₂