

## Transitional Free Allocation under EU ETS to Modernise Electricity Generation

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### Abstract

*Investments in the modernisation of the electricity sector in certain lower income EU Member States are supported by the provisions of article 10c of the EU ETS Directive as derogation from the general rule of buying the necessary volume of EU allowances (EUA) through the auctioning method from the carbon market. Eight out of ten eligible Member States, including Romania make use of this derogation and allocate to the production of electricity a number of allowances for free if investments for modernization of the energy system are carried out.*

*The objective of the paper is to analyze the benefits and costs when implementing the ETS derogation for the power sector, across EU and in Romania, according to the EU legislation and national procedure.*

*The outcome of the paper is to set up a starting point for further debates and also the development of a point of view/analyse in the field.*

**Key words:** climate change, EU emission trading scheme

**J.E.L. classification:** Q 58

### 1. Introduction

The Climate-Energy 2020 legislative package contains measures to support the fight against global warming and promote renewable energy for the period 2013-2020. This package is designed to achieve the "EU's target of a 20 % reduction in greenhouse gases and a 20 % share of renewable energy in the EU's total energy consumption by 2020". One of the pillars of this package is represented by the EU ETS revised Directive (2003/87/EC Directive amended by Directive 2009/29/EC) .

The 20% reduction target for greenhouse gas emissions by 2020 compared to 1990 at EU level. the ETS sectors have a 21% reduction compared to 2005 , while the non-ETS sectors have a 10% reduction as compared to 2005. For the ETS sector, the 21% reduction targets is a EU-wide target. Given the differences in economic development and taking into account the need for economic growth in the new MS, the 10% reduction for non-ETS sectors was reflected by different national targets for each MS ranging from - 20% to + 20% .

In October 2014, the Heads of State and Government decided on the EU's contribution to the Paris Agreement by adopting the 2030 Climate and energy framework. The EU contribution is reflected by the commitment of Member States to achieve a "mandatory reduction target of at least 40% of greenhouse gas emissions by 2030 compared to 1990".

For this purpose, in 2030, emissions from sectors covered by the revised EU ETS will be 43% lower than in 2005.

The reduction of greenhouse gas emissions(GHG) in the most cost-effectively manner is delivered at EU level through its policy to combat climate change implemented mainly via the EU emissions trading system (EU ETS) . The EU carbon market is the first one and remains the biggest at global level .("The EU ETS stand as an EU – specific legal construction, independent from the global climate change law framework").

The EU ETS covers 31 countries namely all 28 EU countries , also Iceland, Liechtenstein and Norway.

Total GHG emissions can be separated into GHG emissions under the EU ETS and the non ETS emissions. The GHG emissions under the EU ETS are generated by the stationary installations across EU territory and international aviation.

For the total amount of "GHG that can be emitted by installations covered by the system a cap is set which is reduced over time" so that total emissions decrease in. Within the cap, companies receive or buy EUA which they can change between them considering the ETS verified emissions or trading scope. ("Limiting the total number of EUA available ensures that they have a value on market".)

specific number of EUA must be surrendered by each company to cover all its emissions from the previous year, otherwise they must pay heavy penalties. Under the scenario of a GHG emissions reduction of , it can keep these allowances either to cover its future needs or to sell them to another company for trading purpose.

Trading brings flexibility that ensures the reduction of GHG in a cost-efficient manner a robust carbon price and appropriate signal for the private sector promotes investment in low-carbon technologies and green energy.

The system covers the following sectors and gases: power and heat generation, energy-intensive industry sectors ("oil refineries, steel works and production of iron, aluminium, metals, cement, lime, glass, ceramics, pulp, paper, cardboard, acids and bulk organic chemicals), commercial aviation")- carbon dioxide (CO<sub>2</sub>); production of nitric, adipic and glyoxylic acids and glyoxal - nitrous oxide (N<sub>2</sub>O); aluminium production - perfluorocarbons (PFCs).

In the period 2013-2020 (ETS third phase) "auctioning is the default method for allocating allowances" because is the most transparent allocation method which implements "polluter pays" principle.

To stimulate the adoption of clean technologies, EU ETS provides that GHG emissions allowances will no longer be given to industry for free, but be auctioned by Member States from 2013 onwards. In order to hinder the windfall profits, the power producers do not receive free EUA are obliged to acquire by auctioning all of their emissions allowances. Based on the provisions of article 10c of the EU ETS Directive a derogation is available ensuring the transition towards green energy and low carbon economy. The eligible EU countries are those with high dependence on fossil fuel or insufficient connection to the European electricity network.

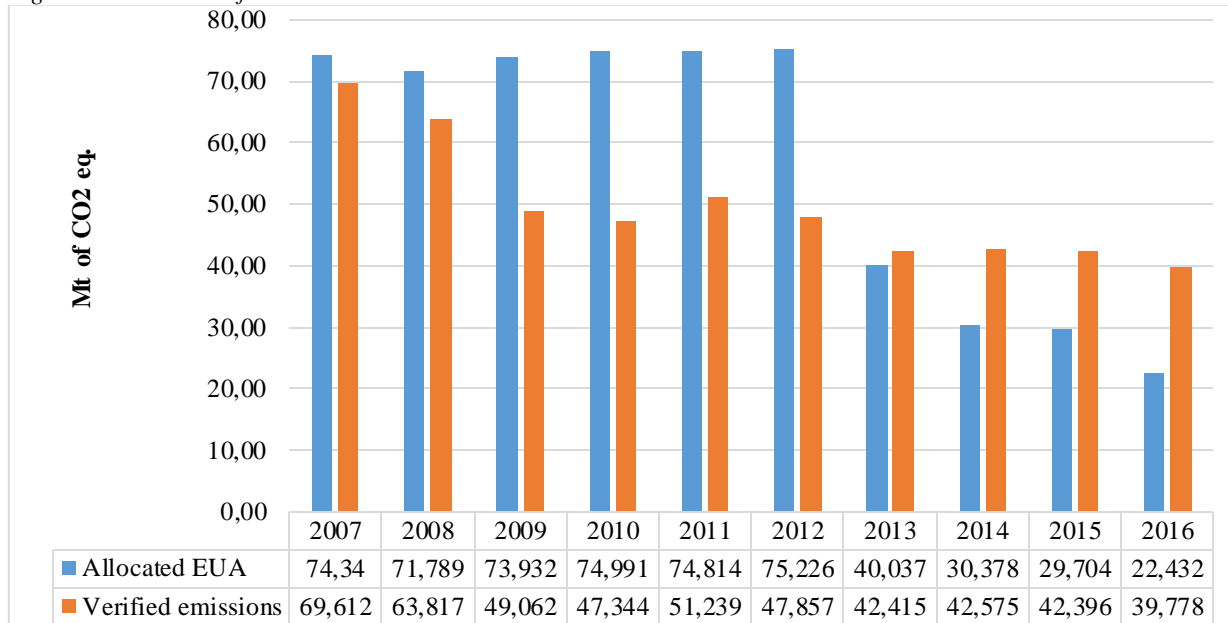
"In order to achieve the EU's 2030 emission reduction targets as agreed within the 2030 Climate and Energy Framework and as part of the EU's contribution to the 2015 Paris Agreement", the legislative framework of the EU ETS for phase 4 (2021-2030) was revised in early 2018.

The revision focuses on:

- "strengthening the EU ETS by increasing the linear reduction factor (LFR) "from its current level of 1.74% to 2.2% as of 2021 and consolidating the Market Stability Reserve. This mechanism was established in 2015 to reduce the surplus of EUAs in the carbon market, including the heavy decrease of the carbon price );
- "continuing the free allocation of allowances as a safeguard for those industrial sectors at risk of carbon leakage" while acting on the international market ;
- low-carbon funding EU ETS mechanisms designed to help the industry and the power sector achieving the innovation and investment challenges of the transition to low-carbon economy available only under EU ETS.

Starting 2007 – the year of Romania's accession to EU – Romania has successfully participated in the EU Emissions Trading Scheme, according to Alberola et al (2008).

Figure no. 1. Status of EU ETS in RO



Source: Author, data adapted from <https://www.eea.europa.eu/data-and-maps/dashboards/emissions-trading-viewer-1>, 2019

## 2. Theoretical background of EU ETS derogations and legal aspects

Transitional free allocation of EUAs to installations generating electricity is foreseen by the article 10c of Directive 2003/87/EC for those Member States whose electricity systems meet certain criteria. The need to modernise the energy system and diversify the energy mix represents the core of the criteria. Those Member States using this ETS mechanism must secure their "green investments in the energy system, such as upgrades of infrastructure, clean technologies etc., of an amount equal the market value of the EUAs allocated for free".

Considering the auctioning revenues that Member States must reduce when allocating free EUAs to power sector, it is not mandatory to use the option for those countries meeting the criteria.

"The Directive 2003/87/EC establishes auctioning as the basic principle for allocation of emission allowances. Auctioning also provides a level playing field for competition on the internal electricity market to be further developed".

The explicit exclusion of free allocation of EUAs in respect of electricity production is reflected by "the article 10c of Directive 2003/87/EC which also contains provisions derogating from a number of core principles of Directive 2003/87/EC".

The maximum number of free EUA that may be allocated in eligible Member States in 2013 is foreseen in article 10c, paragraph (2) of Directive 2003/87/EC. «The number must decline in subsequent years and result in no free allocation of emission allowances in 2020 "the total transitional free allocation ... shall gradually decrease, resulting in no free allocation in 2020" ».

In return for transitional free allocation to the power sector, a National Plan for Investments setting out investments to be financed through the free allocation must be sent to the European Commission by the Member States concerned. The purpose of this investments is also modernising the electricity sectors and diversifying their energy mix. ("They can not, however, strengthen dominant positions or unduly distort competition as well trade in the internal market and, if possible, should strengthen competition in the internal market competition").

For phase 4 of ETS (the period 2021-2030), modernising the energy sector will be supported by the optional transitional free allocation under Article 10c of the EU ETS Directive and the Modernisation Fund under the Article 10 d.

These mechanisms will be available for in the 10 lower-income Member States:" Bulgaria, the Czech Republic, Croatia, Estonia, Hungary, Latvia, Lithuania, Poland, Romania and Slovakia".

New provisions have been introduced in order to enhance the transparency of the resource allocation procedures. Projects considered small with a value below 12.5 million EUR will have a simplified selection procedure while investments over that value will have to be selected based on competitive bidding procedure. The selection results must meet public consultation. The current legislation mention that unallocated Article 10c allowances from the third trading period (2013-2020) may be allocated in 2021-2030 to investments selected through such competitive bidding, unless the Member State concerned decides not to do so in full or in part and informs the Commission. Moreover, according to the new provisions, eligible Member States may use all or part of their Article 10c allocation to support investments within the framework of the Modernisation Fund.

### **3. Research methodology**

Regarding the adequacy of the methodology, the EUA price refers to secondary market auctioning data from the EEX compared with the shorter time series of EUA prices from Commission's Communication 2011/C 99/03 "Guidance document on the optional application of Article 10c of Directive 2003/87/EC".

At the same time legislation I analyzed and assessed relevant data and documents of the European Commission, European Environment Agency, private company.

I used the "EU ETS data viewer" (available on the European Environment Agency website) to determine different indicators. The EU ETS data viewer provides an easy access to emission trading data contained in the European Union Transaction Log (EUTL). The EUTL is a central transaction log, run by the European Commission, which checks and records all transactions taking place within the trading system. The EU ETS data viewer provides aggregated data.

Data sources for greenhouse gas emissions were documents produced by different ministries, as well as European and international institutions (sites and publications), such as the Ministry of Energy, the European Environment Agency, the European Commission.

Through the process, I have created an electronic database by collecting data on the derogation for the power sector.

### **4. Implementation of 10c derogation**

#### **a. Implementation at EU level**

Ten member states can apply for for this derogation in power production: "Bulgaria, Cyprus, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Malta, Poland and Romania". Although eligible to use this derogation, Latvia and Malta chose not to. ("It was not mandatory for the Member States to use the derogation mechanism. Each of the Member States could individually decide whether it would implement it").

Romania fulfills the criterion that in 2006 more than 30% of electricity was produced from fossil fuels and GDP per capita did not exceed 50% of average GDP per capita at Community market prices.

At EU level, the modernization of the electricity generation of the eligible Member States and diversify their fuel mix was supported by the free allocation of up to 680 million allowances under Article 10(c). . More than 50% of the maximum EU budget for Article 10(c) allowances was used between 2013 and 2017. ("The total value of reported investment support during the years 2009 to 2017 is around EUR 11.3 billion"). Although should have been otherwise, the investments in clean technologies or diversification of supply represented only 20% while the rest of 80% was dedicated to upgrading and retrofitting infrastructure.

"According to the new EU ETS legislative framework, allowances not included in transitional free allocation up to 2020 could be transferred to the fourth trading period, to investments selected by competitive bidding". The nature of the investments each Member State makes to modernise its electricity generation triggers the environmental benefits resulted from the allocation under Article

10(c). ” The majority of the investments dedicated to upgrading and retrofitting infrastructure. The remaining investments supported clean technologies or supply diversification”.

Table no. 1. Maximum number of annual free EUAs requested by MS under the derogation from full auctioning for the power sector

Maximum number of EUA forecast by Member State to be allocated per year - millions EUAs -								
Member State	2013	2014	2015	2016	2017	2018	2019	Total
BG	13, 54	11, 60	9, 67	7, 73	5, 80	3, 86	1, 93	54, 16
CY	2, 51	2, 19	1, 90	1, 58	1, 25	0, 93	0, 57	10, 97
CZ	26, 91	23, 07	19, 22	15, 38	11, 53	7, 69	3, 84	107, 66
EE	5, 28	4, 5	3, 77	3, 02	2, 26	1, 51	0, 755	21, 15
HU	7, 04	0	0	0	0	0	0	7, 04
LT	0, 582	0, 536	0, 486	0, 428	0, 36	0, 28	0, 17	2, 85
PL	77, 81	72, 25	66, 70	60, 03	52, 24	43, 35	32, 23	404, 64
RO	17, 85	15, 30	12, 75	10, 20	7, 65	5, 10	2, 55	71, 40
Total	151, 56	129, 50	114, 52	98, 38	81, 12	62, 74	42, 07	679, 92

Source: Report on the functioning of the European carbon market - COM(2018) 842 final, 2018

At EU level, considering the data from Table 1. Maximum number of free allowances per year requested by MS under the derogation from full auctioning for the power sector, results that for the period 2013-2017, the amount forecast represented 575,10 millions EUA, while actually used 434,13 millions EUA for the implementation of the 10 c derogation for the power sector. As a result 140,96 millions EUA moved to the auctioning share of the MS. The mechanism was used with an efficiency of 75,48%.

The equivalent value of the abovementioned volume of EUA represents up to 3,73 billions EUR projected for the modernization of power sector while being actually used for this purpose 2,82 billions EUR; the rest of 916,28 millions resulted from the moved to the auctioning share of each Member State.

Table no. 2. Number of free allowances allocated for modernising the electricity sector

Number of free EUA allocated by Member State pursuant to Article 10c - millions EUAs -					
Member State	2013	2014	2015	2016	2017
BG	11, 00	9, 77	8, 25	6, 59	3, 81
CY	2, 51	2, 19	1, 90	1, 58	1, 25
CZ	25, 28	22, 38	20, 62	15, 83	11, 68
EE	5, 13	4, 40	3, 66	2, 93	2, 05
HU	7, 04	n.a.	n.a.	n.a.	n.a.
LT	0, 32	0, 29	0, 26	0, 23	0, 200
PL	65, 99	52, 92	43, 59	31, 62	21, 75
RO	15, 74	8, 59	9, 21	7, 18	6, 22
Total	133, 05	100, 56	87, 53	65, 99	46, 98

(Source: Report on the functioning of the European carbon market - COM(2018) 842 final, 2018)

Considering the data from Table 2. Number of free allowances allocated for modernising the electricity sector, results that for the period 2013-2017, RO forecast 63,75 millions EUA and actually used the 46, 96 millions EUA for the implementation of the 10 c derogation for the power sector. As a direct consequence 16,79 millions EUA moved to the auctioning share. The mechanism was used with an efficiency of 73%.

Taken into account the average price of EUA on the secondary market, the abovementioned volume of EUA represents up to 414,56 millions EUR projected for the modernization of power sector while being actually used for this purpose 305,25 millions EUR; the rest of 109,17 millions went to the state budget, the most of it for the modernization of Metrorex infrastructure.

## b. Mechanisms under 10c derogation

"A installation benefiting from the allocation under the article 10c of Directive 2003/87/EC needs to use the value of the free emission allowances by means of undertaking an investment identified in the national plan pursuant to Article 10c(1)".

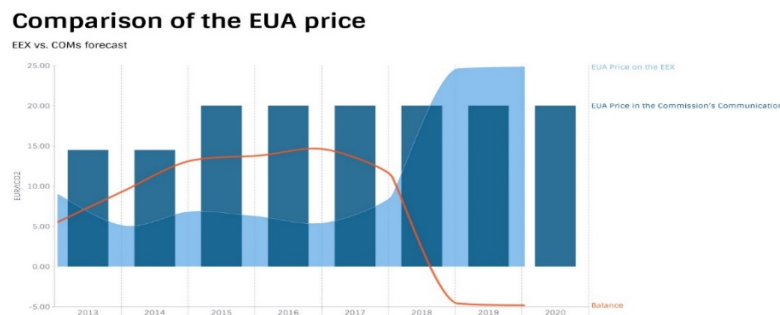
In particular, investments refers to: retrofitting and upgrading their infrastructure; clean technologies; diversifying their energy mix and sources of supply.

The overall amount invested must match or exceed The value of the free EUAs must be equal or smaller than the total investment in modernizing a power installation. . The electricity generation companies receive those EUA only if they demonstrate that they have carried out the investments. At national level, in accordance with Article 10c, paragraph 1, the investments included in the national plan must be equal to the market value of the EUA. The Member States implementing this mechanism shall use EUA's market value as the reference point when developing their national plans.

The *Figure 2. EUA price evolution 2013-2020* reflects the comparison of EUA price from Commission's Communication 2011/C 99/03 to shorter time series of EUA prices from secondary market sales at the EEX platforms.

As a direct consequence, the ETS operators who contributed to the National Fund paid the EUA at a smaller price than the one from the real carbon market. The GHG reductions were achieved at least costs and the implementation of the mechanism was efficient.

*Figure no. 2. EUA price evolution 2013-2020*



*Source:* Author data adapted from Annex VI to Commission's Communication 2011/C 99/03 and <https://www.eex.com/en/market-data/environmental-markets/spot-market/european-emission-allowances>, 2019

## 5. Implementation of 10c derogation at national level

At national level, to date from 63,75 million EUA proposed for allocation for 10c derogation, only 46,96 million EUA were used. The leftovers representing 16,79 million EUA went to the Romania's auctioning rights and not to the power sector. The equivalent amount of money went to the state budget and was largely used for the modernization of Metrorex infrastructure.

Romania initially proposed in its National Investment Plan, 29 investments representing the equivalent amount of 6.703.503.000 EURO for 71,4 millions EUA projected to be used for 2013-2020 period. At the moment, there are only 5 investments to be supported/financed under the provisions of 10c derogations and subject to the reimbursement mechanism.

### a. Mechanisms under 10c derogation

The installations under 10c derogation receive a specific volume of EUA according to the provisions of National Investment Plan. Under the payment mechanism, the operators pay (buy) these EUA. The Ministry of Energy under a specific procedure sets up the EUA price at national level. The level of the EUA price is below the carbon market price from secondary auctioning platform (EEX/PCL). The carbon market price is calculated as an arithmetic average of the closing

prices from PCL/ EEX. Thus under the reimbursement mechanism, the operators recover part of their eligible expenses (a specific share %).

### **b. Implementation of 10c derogation at Brazi installation – OMV Petrom**

The installation receiving the biggest financing under the Romanian National Investment Plan is OMV Petrom - Brazi. Investment costs after June 2009 for OMV Petrom - Brazi were estimated at 376 million euro and 25% of this investment represents up to 97 million EUR. The amount is eligible for reimbursement under the 10c mechanism in Romania. To date, although the operator requested the reimbursement for almost 87 million EUR, the national authorities had not answered/approved the request.

To date the Brazi installation received the entire allocation foreseen under 10c mechanism for the period 2013-2018 representing 8,91 millions EUA, as shown by the data from Table 3. It should be noted that Greenpeace considers that "this investment was undertaken before 25 June 2009 regardless of the existence of Article 10c provisions and Romania's eligibility for derogation and consequently it is not eligible."

*Table no. 3. Total free allocation received according to article 10 c and the number of allowances allocated annually for the period 2013 -2020 for Brazi installation*

Maximum number of millions of EUA forecast to be allocated per year								
	2013	2014	2015	2016	2017	2018	2019	Total
Brazi	2,31	1,98	1,65	1,32	0,99	0,66	0,33	9,24
ROMANIA	17,85	15,30	12,75	10,20	7,65	5,10	2,55	71,4

*Source:* Appendix 1 to the Governmental Decision no. 1096/2014, published in the Official Journal no. 37/16.01.2014

## **6. Findings**

I analyze the efficiency of the implementation of ETS derogation for the power sector, across EU and in Romania, according to the EU legislation and national procedure. My contribution to the research topic is represented by the development of literature review with relevant examples and information, especially at national level. These can be further improved and properly used for other comparisons.

The Member States justified this derogation based on the need to prevent too abrupt increases in electricity prices which affects mainly the households and small consumers. Another reason was to support the high investments needs of power sector in these countries on the path to the transition to lowcarbon electricity generation. With the exception of Latvia and Malta, all eligible Member States, including Romania submitted applications to allocate a limited number of EU allowances(EUA) to power plants for free starting 2013, in order to finance the modernization of the energy system. Romanian authorities use this derogation to upgrading and retrofitting energy infrastructure, while one investment was in clean technologies at SC OMV Petrom SA - Brazi installation. To date, the lessons learned from this process have been used to strengthen knowledge and practices exchange with other Member States. On the other hand, they were the milestone to improve by simplifying the future legislative framework for the 2021-2030 period.

One of the findings is that in terms of environment benefits the implementation of derogation for power sector ensure the GHG emissions reductions, although with limited use of clean technologies, at national and EU level.

As regards cost-effectiveness, the ETS operators who contributed to the National Fund paid the EUA at a smaller price than the one from the carbon market. So the GHG emissions in the power sector were cut at least costs. In case of Romania, the state budget have been financed with significant amount of money with the equivalent sum for the EUA which have not been used for the 10c derogation. Instead the revenues were used for the modernization of Metrorex infrastructure.

## 7. Conclusions

("In the EU context, [...] the emission trading has become a key instrument of EU climate policies").

Since the adoption of Climate and Energy Package in 2009, the European electricity sector is undergoing the process of modernisation towards a low-carbon power generation, in line with EU climate policy.

At EU level, most of the investments completed so far under Article 10(c) have not had a major contribution to the diversification of their energy mix. During the years 2009 to 2017, from the total reported amount, investments in clean technologies or diversification of supply represented one fifth from the total and the rest of the amount was dedicated to modernization and development of the infrastructure.

At EU level, as regards cost-effectiveness, the ETS operators who contributed to the National Fund paid the EUA at a smaller price than the one from the carbon market (secondary market EEX). At installations implementing 10c derogation, the GHG emissions were cut at least costs. At EU level the mechanism was used with an efficiency of 75,48% , while at national level the efficiency was 73% .

Across all MS modernization of power sector for the period 2013-2017 was supported by 434,13 millions EUA used for the implementation of the 10c derogation r, representing 2,82 billions EUR. Romania used 46,96 millions EUA for the implementation of the 10 c and the equivalent value is up to 305,25 millions. Add to this amount, 109,17 millions EUR went to the state budget, the most of it for the modernization of Metrorex infrastructure. For the period post 2020; Romania is still eligible to use this mechanism.

At Brazi installation, the investment costs were estimated at 376 million euro and 25% of this investment represents up to 97 million EUR eligible for reimbursement under the 10c mechanism in Romania. Do date, although the operator requested the reimbursement for almost 87 million EUR, the national authorities had not answered/approved the request. The installation received the entire allocation foreseen under 10c mechanism for the period 2013-2018 representing 8,91 millions EUA.

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