

Extending the Scope of the EU ETS by Including Road Transport and Shipping

Daniela Panait (Zanescu)

The Bucharest University of Economic Studies, Romania

panaitdana@yahoo.com

Abstract

This paper is organized as follows: the abstract gives an overview of the paper and its main conclusions. Section 1 provides the introduction and the background on the European Union Emission Trading Scheme as part of the climate change policy design. At the same time, it presents the latest proposed revision of ETS phase IV by including transport and buildings. Section 2 summarizes the literature review. Section 3 accomodate briefly comments on the expected results following the inclusion of the road transport in the EU ETS based on the evaluation of the climate change policy at EU and national level. It also includes a short presentation of the data used for the analysis and my contribution to the literature. Section 4 concludes.

Key words: emissions trading, climate change policy design and evaluation, non ETS

J.E.L. classification: K32, Q54

1. Introduction

In december 2019 at the European Council meeting, the EU heads of state and government, without Poland, set a target for climate neutrality by 2050, namely zero net greenhouse gas emissions at EU level by 2050. Net refers to the fact that GHG emissions from forests and the LULUCF sector are taken into account; this sector may be responsible either for emitting GHG emissions (e.g. due to deforestation) or for the absorption of CO₂ from the atmosphere (eg through afforestation or reuse of agricultural land as pasture).

In achieving the target on climate neutrality by 2050, the European Green Deal must be implemented. In other words, the GHG emissions must be reduced by 55% netⁱⁱⁱ by 2030 which means that ETS emissions must go down by 61% compared to the level from 2005 reference year. The rest of the reduction must be delivered by the non ETS sectors.

For the implementation of the European Green Deal, the European Climate Law was adopted in the first half of 2021, which make the EU's climate neutrality target legally binding,

At the same time, European Commission in 2021 proposed the "Fit for 55" legislative package.

The proposal is to update the 2030 Climate Energy Framework by reviewing legislation ⁱⁱⁱ and adopting measures related to: the emissions reduction efforts in the non-ETS sectors by updating Member State emissions reduction targets; the revision and strengthening of the EU ETS by extending its scope to road transport and buildings; the management of the GHG emissions from Land Use, Forestry and Agriculture (LULUCF); renewable energy; energy efficiency; CO₂ emissions standards for new cars and vans; energy taxation; alternative fuels infrastructure; sustainable fuels for aviation through the ReFuelEU initiative; sustainable fuels for a green maritime European space through the FuelEU Maritime initiative.

For these measures there is a new Social Climate Fund with a financial envelope of 72,2 billion euros to address the social impact. Moreover, the European Commission has proposed an EU forestry strategy.

Figure no. 1. The GHG emission reductions: targets and achievement – EU and national level

UE commitments 2020		RO commitments 2020	
Overall 20% GHG reduction compared to 1990			
ETS Reduction by 21% reference year 2005	Non-ETS Reduction by 10% reference year 2005	To contribute alongside MS to the fullfilment of EU target for ETS - Reduction 21% reference year 2005	National target – allow to increase emissions from non-ETS by 19% reference year 2005
EU EXCEEDING the 20% target – in 2019 GHG emissions already down by 28,43% vs. 1990		65,2% GHG emission reduction in 2020 vs.1990	
	Over the target with 5%		Over the target by 24,9%

Source: Author’s interpretation regarding climate change data from <https://www.eea.europa.eu/data-and-maps/data/data-viewers/eea-greenhouse-gas-projections-data-viewer>)

The Commission’s proposal for the revision of the phase IV of the EU ETS also refers to extending ETS scope by including the GHG emissions from road transport and buildings from 2025. The cap for the new system will be applied from 2026. Starting 2025 the new trading scheme will be implemented distinctly from the current EU ETS and under its scope will be fuel suppliers. They must buy from the carbon market all the necessary allowances in order to comply with the EU ETS provisions. The suppliers will be responsible for monitoring and reporting the quantity of fuels they place on the market and for surrendering emission allowances each calendar year depending on the carbon intensity of the fuels.

The Social Climate Fund will be based on the revenues from the new EU ETS. 25% of the total amount to be collected from corresponding auctioned allowances for the GHG emissions from buildings and transport must be allocated to the energy efficiency of buildings, green generation cars and can also be the support for the households when pay the energy bills with increased costs due to petrol or heating fuel.

At the same time, the new ETS will be applied for CO2 emissions from large ships with more than 5000 gross tons.

50% of the GHG emission shall be considered under the scope of ETS (for a ship going from an EU port to another non EU port or viceversa) and 100% emission shall be considered under the scope of ETS (for a ship going from an EU port to another EU port).

Regarding the aviation, the current total number of aviation allowances will be maintain and be reduced annually by 4.2%; phase-out free allocation and move to full auctioning by 2027; align with the global Carbon Offsetting and Reduction Scheme for International Aviation (CORSIA).

According to ICAO, 2021 the CORSIA has been adopted as complementary to the broader package of measures to help ICAO achieve its aspirational goal of carbon-neutral growth from 2020 onwards.

CORSIA acts like an market based mechanism which offset the CO2 emissions generated by aviation and that cannot be reduced otherwise; neither through the use of technological and operational improvements nor sustainable aviation fuels.

(<https://www.icao.int/environmental-protection/CORSIA/Pages/CORSIA-FAQs.aspx> accessed in 16.11.2021)

Table no. 1. History of the EU ETS sectors and gases covered

	PHASE III	PHASE IV
Period	2013-2020	2021 – 2030 & <i>Green Deal / Fit 4 55</i>
Sectors covered	Same as Phase II + carbon capture and storage installations, production of petrochemicals, ammonia, nonferrous and ferrous metals, gypsum, aluminum, nitric, adipic, and glyoxylic acid	Same as phase III <i>To be applied for CO2 emissions from large ships with more than 5000 gross tons.</i> <i>Buildings + Transport: the system will run separately from the EU ETS and is supposed to start in 2025, with a cap on emissions set from 2026. This new upstream system will regulate fuel suppliers.</i> <i>25% of the total amount to be collected from corresponding auctioned allowances for the GHG emissions from buildings and transport must be allocated to the energy efficiency of buildings, green generation cars and can also be the support for the households when pay the energy bills with increased costs due to petrol or heating fuel.</i>

Source: Author's interpretation regarding EU climate change policy –information from <https://ec.europa.eu/clima/eu-action/>

2. Literature review

The EU ETS is seen (Hintermayer, 2020) as a quantity based instrument which puts a cap on the allowances by reducing each year their volum.

At the same time (Baudry, Anouk and Quemina, 2021, and references therein) considers that the EU ETS is a cap and trade system where EU issue every year greenhouse gas emissions allowance (EUA) using free allocation (based on benchmarks) and auctioning; their total number represents the cap on emissions. On 30 April of each year considered t, the operators have the obligation to remit the equivalent number of EUAs equal to verified ETS emissions in the year t-1. One EUA represents one metric tone of carbon dioxide equivalent.

The EU ETS started in 2005 and it is on the final stage of the phase III of the trading period between 2013-2020 (Carlén, Dahlqvist, Mandell, Marklund, 2019 and references therein) while it has been evaluated and several reforms has been adopted by amending the Directive 2003/87/CE.

The Green Deal implies increasing the EU greenhouse gas emission reduction target from 40% to 55% net by 2030; this means tightening the targets for EU ETS and non ETS sectors. (Osorio, Tietjen, Pahle, Pietzcker, 2021 and references therein).

According to European Commission (Speeding up European climate action towards a green, fair and prosperous future, 2021) emissions from sectors not included in the ETS, such as transport, non-ETS industry, buildings, agriculture and waste, are covered by the EU effort sharing legislation. It sets national emissions targets for 2020 for all Member States, expressed as percentage changes in emissions from non ETS from 2020 compared to 2005 levels. Similarly, the non ETS legislation sets national emissions targets for 2030.

According to the European Environment Agency, EU's progress is a direct result of the implementation of EU and national policies and measures in the field of climate change. Emissions have decreased in almost all sectors. Exception is the emissions from transport which have not fallen as foreseen, despite climate policies and efforts in the field.

European Commission (November 2021) states that the emissions from transport sector (the second largest source in the EU after the energy sector) reached their 2005 level in 2019. They are expected to rebound after the pandemic and are not likely to fall without additional measures.

3. Research methodology and contribution to the literature

I begin by scrutinizing the existing legislation on the EU ETS, including Green Deal related documents and the new legislative proposals of the European Commission known as Fit 4 55 Package.

At the same time I assess the targets under the climate policy and their fulfilment at EU level, as well as at national level. Data considered for further analysis and aggregate data were taken from the European Environment Agency (accessed on November 2021, at <https://www.eea.europa.eu/data-and-maps/data/data-viewers/eea-greenhouse-gas-projections-data-viewer>) and European Energy Exchange /EEX selected as pillar of the allowances prices.

Specifically, I utilized the data to scrutinized how Romania stands regarding its targets for greenhouse gas emissions by 2020 while considering its commitments and obligations as EU Member State.

At the same time, for the period 2013-2020, I analyzed the evolution of the GHG emissions generated by the economy and the non ETS sector and the fullfilment of the targets, both at EU level and national level.

Finally, I compare the results obtain by our country to those of the EU.

My contribution to the literature is the brief summary of the Fit 4 55 package considering extending the EU ETS to transport emission and the descriptive analysis of the results of the non ETS by 2020 at EU and national level. Considering the results from by 2020 in terms of GHG total aggregate emissions, the non ETS emissions vs. targets, the forecast at national and EU level, for transport GHG emissions by 2030, I also presented the main challenges and future perspective for our country considering the future EU ETS arhitecture which includes the transport under its scope.

Based on the current research on the functioning of the non ETS sector, at national and EU level, this overview may be helpful to guide efficient implementation in the transport sector, namely in our country in the next trading period under the ETS.

4. Findings. Climate and energy policy design and evaluation considering the implementation and its results at EU and national level

In 1994, Romania ratified the UNFCCC by Law no. 24/1994 and is included in Annex I of the Convention. This is the general approach for all developed countries and those with economies in transition, which had a large contribution to greenhouse gas emissions in 1990. Romania was the first country included in Annex I of the UNFCCC which ratified by Law no. 3/2001 the Kyoto Protocol, thus committing itself to “a reduction of 8% in the period 2008 – 2012, compared to the base year (1989)”. The measure was meant to harmonize the national policy with the European Union measures which adopted the same 8% GHG reduction.

Romania was one of the 174 UN and EU Member States that signed the Paris Agreement^{iv} at the ceremony on 22nd of April, 2016 in New York. The agreement was ratified by Romania by Law no. 57/2017 and entered into force on 23 of April, 2017.

In 2019, as a result of the EU's existing climate and energy legislation and its implementation, the EU's greenhouse gas emissions went down by 25,89 % compared to 1990.

GHG emissions in the EU27+UK were estimated to be reduced by more 28,43 % in 2020 compared to 199 emissions level and thus EU will exceed its 20% reduction target. Similar to the EU path, in 2020 Romania reached a high GHG emission reduction by 65,2 % compared to the level of emissions in 1990. This figures are shown in tabel 2.

Table no. 2. GHG reduction 1990 – 2020 in EU 27+UK and Romania

GHG emissions (t CO2 equivalent)	1990	2020	Reduction since 1990
EU 27+UK	5 647 955 000	4 042 058 000	28,43%
Romania	247 994 000	116 258 000	65,2%

Source:

<https://www.eea.europa.eu/data-and-maps/data/data-viewers/eea-greenhouse-gas-projections-data-viewer>

The total EU's GHG emissions were down by almost 15% than 2005 while Romania over exceeded its target by 24,9% in 2020 compared to the 2005 level for the non ETS sector.

In the non ETS sector, the overall emissions at EU level, in 2020 by, while Romania over exceeded its target by 24,9%. The GHG emissions reduction at EU and national level in the non ETS sector is shown in Table 3.

According to the current legislation in place, for the non ETS sector Romania should have increased the emissions by 19% but in fact, the GHG emissions were cut down by 5,9% in 2020 compared to 2005 level.

Table no. 3. GHG reduction 2005 – 2020 in EU 27+UK and Romania in the non ETS sector

GHG emissions (tCO2 equivalent)	2005	2020	GHG reduction target vs. 2005	Change since 2005
EU 27+UK	2 882 848 000	2 449 396 000	-10%	-15%
Romania	79 399 000	74 710 000	+19%	-5,9%

Source:

<https://www.eea.europa.eu/data-and-maps/data/data-viewers/eea-greenhouse-gas-projections-data-viewer>
accessed in 24.11.2021

It should be noticed that the data for 2019 and 2020 are projections of GHG emissions developed by the Environmental Protection Agency based on the official reporting by Member States.

Regarding the shape of the GHG emissions from transport sector, by 2030 in Romania the trend will be opposite to one at EU level. While the Romanian GHG emissions profile shows a large increase, at EU level there will be a significant GHG reduction by 2030 compared to 1990. This is presented in the figures 2a and figure 2b, the dotted lines reflect the future trend of GHG emissions.

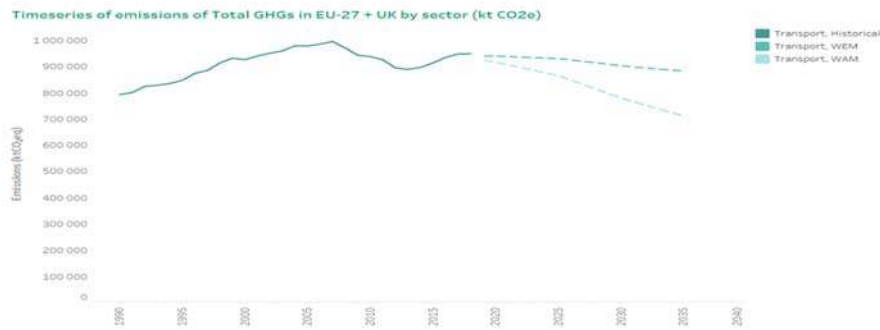
For the future trading period 2025-2030 under ETS, taking into account the data available on the European Environment Agency, the „budget” needed for the GHG transport emissions is estimated around:

- 116 374 000 tonne CO2 equivalent for Romania;
- 4 224 513 000 tonne CO2 equivalent for UE.

Considering the above figures, the allocation method based on auctioning and the average price for an allowance at 61,26 EUR^v there will be an additional costs of 258 EUR billion in EU and 7,129 EUR billion in Romania, for the transport entities to be under ETS during 2025-2030.

At the same time, according to the impact study made by the European Commission, inclusion of the transport sector under EU ETS will trigger an increase of 13 euro cent per litre of fuels.

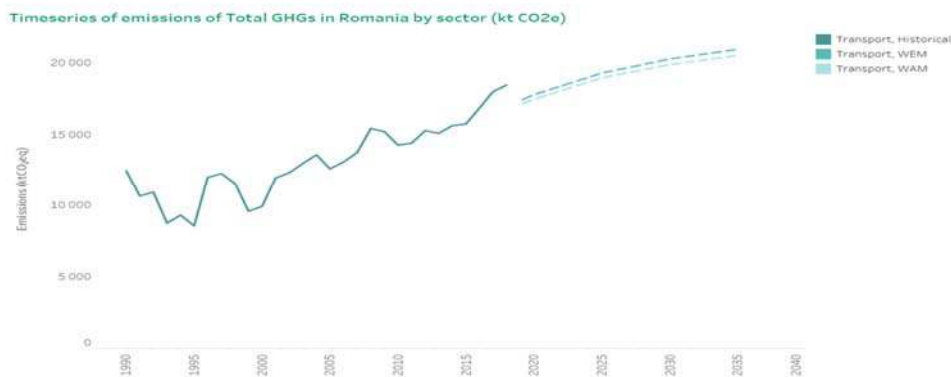
Figure no. 2a. The trend of GHG transport emissions in EU 27+UK



Source:

<https://www.eea.europa.eu/data-and-maps/data/data-viewers/eea-greenhouse-gas-projections-data-viewer>

Figure no. 2b. The trend of GHG transport emissions in Romania



Source:

<https://www.eea.europa.eu/data-and-maps/data/data-viewers/eea-greenhouse-gas-projections-data-viewer>

While the entities to be under ETS will have to bear additional financial pressure for buying the necessary allowances from the market to cover their GHG emissions, the equivalent amount will go to the national Government and Social Climate Fund to be spent on climate measures.

Considering the dynamic of EUA prices and its correspondent volatility, the equivalent amount, at least 5,34 billion EUR in Romania will go to the Government as revenues from auctioning to be spent on climate measures. 25% out of 7,129 EUR billion (the amount of 1,78 EUR billion) will go to the Social Climate Fund where it is to be invested in energy efficiency of buildings, new cars and can also be used to directly help households who are struggling with higher petrol or heating fuel costs.

It should be noted that, under the current trading period, from the total amount of 2,7 EUR billion from the auctioning of EUAs from the phase III, 139 EUR million was used by the Romanian authorities as derogation for the transport sector, namely to the subway infrastructure in Bucharest.

5. Conclusions

EU will exceed its 20% reduction target by 2020 compared to 1990. Romania has done its part and supported the EU effort with a major GHG emissions reduction by 65,2% for the same period. In this respect our country contributed to single objective at EU level which must be reached together by all its MS for the ETS sector reduction by

In the non-ETS sector the EU reduction target by 10% compared to 2005 was exceeded with 5% at EU level while Romania overreached its +19% target with 5,9%.

The data for 2019 and 2020 are projections of GHG emissions developed by the Environmental Protection Agency based on the official reporting by Member States.

While the GHG emissions from the road transport increased by 2020, despite climate policies and efforts in the field, the European Commission proposal from the Fit 4 55 package foresees the extensions of the current ETS to road and maritime emissions and heating fuels through a carbon price.

Since for the period september 2016 – november 2019 the prices had already risen rapidly as a result of the carbon market reform, deeper decarbonization will trigger additional increasing in the carbon prices which can likely be explained by the tightening of the overall EU emission targets for 2030 from - 40 to -55%. On the one hand this, considering the highest level of EUA price ever reached in the III phase, in the 2025-2030 period there will be a financial effort for the fuel suppliers who will have to buy allowances from the market for at least 258 EUR billion in EU and 7,129 EUR billion in Romania.

On the other hand, the equivalent amounts will become the main financing resource for national, EU and international climate measures including in the transport sector. Regarding the dynamic of the GHG emissions from transport sector, by 2030 in Romania the trend will be opposite to one at EU level. While the Romanian GHG emissions profile shows a large increase, at EU level there will be a significant GHG reduction by 2030 compared to 1990.

6. References

- Baudry M., Faure A., Quemin S., 2021. Emissions trading with transaction costs. *Journal of Environmental Economics and Management* 108 (2021) 102468
- Carlen B., Dahlqvist A., Mandell S., Marklund S., 2019. EU ETS emissions under the cancellation mechanism - Effects of national measures. *Energy Policy* 129 (2019) 816–825
- Hintermayer M., 2020. A carbon price floor in the reformed EU ETS: Design matters! *Energy Policy* 147 (2020) 111905
- Osorio S., Tietjen O., Pahle m., Pietzcker R., Edenhofer O., 2021. Reviewing the Market Stability Reserve in light of more ambitious EU ETS emission targets. *Energy Policy* 158 (2021) 112530
- Pietzcker R., Osorio S., Rodrigues R., 2021. Tightening EU ETS targets in line with the European Green Deal: Impacts on the decarbonization of the EU power sector. *Applied Energy* 293 (2021) 116914
- EEA, 2020a. *EEA Greenhouse Gas - Data Viewer*. European Environment Agency. <https://www.eea.europa.eu/data-and-maps/data/data-viewers/greenhouse-gases-viewer>.
- accessed 1.13.20.
- EEA, 2020b. *EU Emissions Trading System (ETS) Data Viewer*. European Environment Agency. <https://www.eea.europa.eu/data-and-maps/dashboards/emissions-trading-viewer> -1. accessed 15.11.2021
- European Commission, 2019. COMMUNICATION FROM THE COMMISSION TO THE EUROPEAN PARLIAMENT, THE EUROPEAN COUNCIL, THE COUNCIL, THE EUROPEAN ECONOMIC AND SOCIAL COMMITTEE AND THE COMMITTEE OF THE REGIONS. The European Green Deal COM/2019/640 final. <https://eur-lex.europa.eu/legal-content/EN/TXT/?qid=1588580774040&uri=CELEX:52019DC0640>. accessed 10.11.2021
- European Commission, 2020. REPORT FROM THE COMMISSION TO THE EUROPEAN PARLIAMENT AND THE COUNCIL. Report on the functioning of the European carbon market COM(2020) 740 final. <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A52020DC0740> . accessed 10.11.2021
- European Commission, 2021. *Green Deal*, Fit 4 55 package. https://ec.europa.eu/clima/eu-action/european-green-deal/delivering-european-green-deal_en . accessed 15.11.2021
- European Commission, 2021. Proposal for a REGULATION OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL amending Regulations (EU) 2018/841 as regards the scope, simplifying the compliance rules, setting out the targets of the Member States for 2030 and committing to the collective achievement of climate neutrality by 2035 in the land use, forestry and agriculture sector, and (EU) 2018/1999 as regards improvement in monitoring, reporting, tracking of progress and review. COM/2021/554 final <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A52021PC0554> accessed 24.11.2021
- European Commission, 2021. *EU Climate Action Progress Report* https://ec.europa.eu/clima/system/files/2021-11/policy_strategies_progress_com_2021_960_en.pdf . accessed 24.11.2021

- European Council, 2014. European Council Conclusions, European Council, 23 and 24 October 2014, EUCO 169/14 CO EUR 13 CONCL 5. https://www.consilium.europa.eu/uedocs/cms_data/docs/pressdata/en/ec/145397.pdf accessed 17.11.2021
 - European Council, 2020. European Council Conclusions, 10-11 December 2020, EUCO 22/20 CO EUR 17 CONCL 8. <https://www.consilium.europa.eu/media/47296/1011-12-20-euco-conclusions-en.pdf> . accessed 17.11.2021
 - European Parliament, Council of the European Union, 2009. Decision No 406/2009/EC of the European Parliament and of the Council of 23 April 2009 on the effort of Member States to reduce their greenhouse gas emissions to meet the Community’s greenhouse gas emission reduction commitments up to 2020. off. J. Eur. Union 140, 5.6.2009, p. 136–148. <https://eur-lex.europa.eu/legal-content/EN/ALL/?uri=CELEX%3A32009D0406> . accessed 24.11.2021
 - European Parliament, Council of the European Union, 2021. Regulation (EU) 2021/1119 of the European Parliament and of the Council of 30 June 2021 establishing the framework for achieving climate neutrality and amending Regulations (EC) No 401/2009 and (EU) 2018/1999 (‘European Climate Law’). off. J. Eur. Union 243, 9.7.2021, p. 1. <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32021R1119>. accessed 12.11.2021
 - European Parliament, Council of the European Union, 2018. Regulation (EU) 2018/842 of the European Parliament and of the Council of 30 May 2018 on binding annual greenhouse gas emission reductions by Member States from 2021 to 2030 contributing to climate action to meet commitments under the Paris Agreement and amending Regulation (EU) No 525/2013 (Text with EEA relevance). off. J. Eur. Union 156, 19.6.2018, p. 26–42. <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex%3A32018R0842> . accessed 24.11.2021
 - United Nation Convention on Climate Change, 2017. unfccc.int. 2017. The Paris Agreement – main page. [online].
 - <https://unfccc.int/process-and-meetings/the-paris-agreement/the-paris-agreement> accessed 10.11.2021
 - <https://www.icao.int/environmental-protection/CORSIA/Pages/CORSIA-FAQs.aspx> accessed 16.11.2021
-