4i TRACTION
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National case study report #6

Evaluation of the impact of the EU ETS revenues and derogation under Article 10c on investment and infrastructure in Poland

An ex-post analysis

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Abstract

This report is a final report on Polish national case studies performed in the 4i-TRACTION project. It is based on the early final outcomes of the task 2.3 'Evaluation of 4i dimensions at the national level – case study analysis' performed for the case 'Evaluation of the impact of the EU ETS revenues and derogation 10c on investment and infrastructure in Poland'.

This case study investigates the effects of two forms of funds in the EU Emissions Trading System (EU ETS), derogation under Article 10c and auction revenues, on Poland's infrastructure development and investment levels in relation to the country's goals for the energy transition and sustainable development. The first of the two channels is represented by auction earnings, and, in accordance with the Directive's rules, 50% (or equivalent) of these funds must be used for energy transition initiatives. The ability to disclose a wide range of activities that did not adhere to the additionality principle was made available by the widely defined catalogue and non-earmarked income. However, several of the actions recorded by Poland cast doubt on the Directive's compliance.

The derogation mechanism, which represents the other source of funds examined, was not future-proof since the generating market was consolidated despite promises that this would not harm competition. Its stated goal was to diversify the energy mix as well, but a study of reported investments, the majority of which were focused on upgrading conventional production capacity, shows that this goal was already disregarded during the approval stage.

Main findings:

It was appropriate to give up derogation under Article 10c for the fourth phase of the EU ETS given that Poland had used it ineffectively. The Modernization Fund received none of the money made accessible by Article 10c, which instead was added to Poland's auction pool. Changes should be made to the way these funds are used because auction pool revenues were also used inefficiently.

Considering the above, the distribution of auction revenues should be improved to become more effective. The proposed Energy Transformation Fund, which would be funded exclusively by ETS auction proceeds and would be used to make investments and support initiatives for the energy transition, must be introduced in order to achieve this goal. By designating these funds, more openness and hence more control would be possible. Also, sufficient focus should be placed on attracting private investment in support of the goals of the energy transition.

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CBAM	Carbon Border Adjustment Mechanism
cPPA	Corporate Power Purchase Agreement
CSRD	Corporate Sustainability Reporting Directive
EC	European Commission
EEA	European Energy Agency
EED	Energy Efficiency Directive
EEX	European Energy Exchange
ESR	Effort Sharing Regulation
ETF	Energy Transformation Fund (pol. Fundusz Transformacji Energetyki)
ETS	Emissions Trading System
EU	European Union
EUA	European Union Allowance
GHG	Greenhouse Gas
KOBiZE	Krajowy Ośrodek Bilansowania i Zarządzania Emisjami (The National Centre for Emissions Management)
NAP	National Allocation Plan
NIP	National Investments Plan
PSE	Polskie Sieci Elektroenergetyczne (eng. Polish Electricity Grids, Polish Transmission System Operator)

Executive summary

The report presents a case study developed around two main research questions: How did Poland benefit from the derogation laid down in Article 10c of Directive 2003/87/WE? How were the revenues from the sold emission allowances invested in decarbonisation?

This case study sheds light on the Investment "I" by examining how Poland utilised the two EU ETS funding streams between 2013 and 2020. The research pointed up improvements that can be made to instruments that are intended to promote the phase-out of coal and a wider energy transition, including but not limited to things like internal processes, governmental frameworks, or financial regulatory requirements. This case study can serve as the foundation for a future, more thorough assessment of the efficacy of initiatives connected to the energy transition that are funded by EU ETS funds. Infrastructure "I" will also be taken into account in relation to the kinds of infrastructure in Poland that are paid for with auction proceeds.

Presented study Evaluation of the impact of the EU ETS revenues and derogation 10c on investment and infrastructure in Poland' focuses on conducting an ex-post analysis of policy measures, utilising a methodology consisting of three main elements:

1. Conceptual analysis, defining the goals and objectives of the measure in question. This will establish a clear understanding of what was ought to be achieved.
2. Empirical analysis, examining actual outcomes and effects based on data. This will allow us to assess what occurred. Extended by the Polish media and trade journal monitoring.
3. Evaluation, assessing the extent to which the measure achieved its intended goals.
4. Recommendations, providing recommendations on analysed policy measures.

Summarising the case finding we can say that the derogation mechanism was not future-proof due to its focus on upgrading conventional producing capacity. The EU ETS should give up the derogation under Article 10c for the fourth phase of the EU ETS due to Poland's ineffective use of it. Changes should be made to the way auction proceeds are used, and an Energy Transformation Fund should be introduced to attract private investment in support of the energy transition.

Task 2.3 focusing on the practical operationalisation of the EU's climate policies and their interactions with the initiatives implemented at the national level performed by WiseEuropa – the Polish partner provided an analysis of Polish approaches within one of the 4i's - Investment.

The case studies covering was based on a common structure for all 7 involved countries to facilitate a comparative assessment of national approaches towards the 4i dimensions.

Additionally, technical findings on each of the 4i dimensions from Tasks 2.1-2.3 will be synthesised in the final report (Task 2.4).

1. Introduction

This case study enquires into the impact of two types of funds available under the European Union Emissions Trading System (EU ETS), Derogation Article 10c and auction revenues, on the level of investments and the development of infrastructure in Poland in the context of the energy transition and sustainable development objectives.

The European Union (EU) 2020 targets were set by Member States' leaders in 2007, including:

- 20% cut in greenhouse gas emissions (GHG; from 1990 levels);
- 20% share of EU final energy consumption from renewable energy sources (RES);
- 20% improvement in energy efficiency referring to forecasts for the year 2020;
- 10% increase in biofuels share in total transport fuels consumption.

In December 2008 an agreement between the European Parliament and the EU Council was reached and the EU climate and energy package was adopted (the documents were published in the Official Journal of the European Union on 5 June 2009). The key elements of the package concerning GHG emission included:

- Directive 2009/29/EC of the European Parliament and of the Council of 23 April 2009 amending Directive 2003/87/EC to improve and extend the greenhouse gas emission allowance trading scheme of the Community (i.e., EU ETS directive), and
- 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 (i.e. non-ETS decision) (KOBiZE, 2014).

The EU ETS is the cornerstone of EU climate policy – a key tool in the fight against climate change and simultaneously the largest carbon market in the world. The EU ETS ensures an effective reduction of greenhouse gas emissions, and at the same time redirects financing toward low-carbon innovation and energy sector modernization (Marcu et al., 2020). Throughout its existence, the system has undergone various phases and modifications aimed at strengthening its performance and credibility. As part of the Fit for 55 package, the EU ETS is currently undergoing another reform, which includes an increase in the reduction targets and constructing a separate system to cover buildings and road transport.

The EU ETS puts a price on GHG emissions, which provides an incentive for affected industries to reduce them. It is based on a "cap and trade" principle, in which a maximum limit is set each year (the cap) that indicates the total amount of greenhouse gases that can be emitted. The cap has been reduced each year in order for total emissions to fall over time. Emitters must have a European Emission Allowance (EEA) for every tonne of CO_2-equivalent emissions produced within a calendar year. Permits are traded – depending on the total amount of emissions, they are

received or bought. The EU ETS covers a range of energy-intensive industry sectors, electricity and heat generation, and commercial aviation within the European Economic Area. Historically, installations covered by the EU ETS reduced emissions by about 35% in the years 2005-2019 (European Commission, n.d.).

Table 1: Phases of the EU ETS

Phase	Description	Legislative act
Phase 1 (2005-2007)	Phase 1 was a 3-year pilot, in which almost all allowances were given for free. Member States could decide on the number of allowances through National Allocation Plans (NAPs). Importantly, caps were set based on estimates due to the absence of reliable emissions data. Phase 1 was crucial in establishing the infrastructure needed to monitor, report, and verify emissions.	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
Phase 2 (2008-2012)	Phase 2 was concurrent with the first commitment period of the Kyoto Protocol. For this period the cap was reduced, and the proportion of free allocation fell to around 90%. The 2008 economic crisis heavily impacted the functioning of the system, leading to a surplus of allowances and a low price of EUA.	Directive 2008/101/EC of the European Parliament and of the Council of 19 November 2008 amending Directive 2003/87/EC to include aviation activities in the scheme for greenhouse gas emission allowance trading within the Community
Phase 3 (2013-2020)	Phase 3 was considerably different from the two previous ones. Firstly, the impact of the 2008 economic crisis undermined the reliability of the EU ETS. Secondly, the system had not been generating substantial movement towards renewable energy generation and low-carbon production. To tackle this issue there have been significant changes, including: EU- wide cap in place of national caps, the scope of gases has been expanded, and the scope of sectors has been expanded, universal auctions were introduced, free allocations based on benchmarks.	Directive 2009/29/EC of the European Parliament and of the Council of 23 April 2009 amending Directive 2003/87/EC to improve and extend the greenhouse gas emission allowance trading scheme of the Community
Phase 4 (2021-2030)	Phase 4 introduced a further tightening of the system, increasing the linear reduction factor, and benchmarks, and introducing changes in preventing carbon leakage by the progressive withdrawal of free allowances and introducing the Carbon Border Adjustment Mechanism (CBAM, in the separate directive). It also includes the maritime sector into the market scope from 2023 and a separate fuel ETS for buildings and road transport. In addition, the fourth phase introduces new mechanisms to support the transformation: Modernization Fund and Innovation Fund.	Directive (EU) 2018/410 of the European Parliament and of the Council of 14 March 2018 amending Directive 2003/87/EC to enhance cost-effective emission reductions and low-carbon investments, and Decision (EU) 2015/1814

Source: WiseEuropa based on the European Commission and Trauffler, 2019

2. Case study design

2.1 Background

In the analysed period the EU ETS Directive foresaw two main mechanisms that could have a substantial impact on investments and infrastructure. Article 10c of the Directive provided a derogation from the general rules on no free allocation for electricity production, in which ten lower-income Member States (including Poland) could grant free allocation to electricity producers covered by the EU ETS to help finance projects aimed at the modernisation and decarbonisation of the energy mix. Article 10c was introduced in phase 3 and continues in phase 4. Under Article 10c, Member States concerned were obliged to submit a national plan for investments, which "contribute to decreasing greenhouse gas emissions in a cost-effective manner", and more specifically "contribute to diversification, and reduction in carbon intensity, of the electricity mix and the sources of energy supply for electricity production" (European Commission, 31 March 2011; ClientEarth, 2022).

Another notable mechanism is the use of auctioning revenues for climate and energy-related purposes. According to Article 10(3) of the EU ETS Directive, Member States are required to allocate at least 50% of auctioning revenues (or the national equivalent in financial value) to a range of outlined measures that, among others, aim at: reducing GHG emissions, developing renewable energies, avoiding deforestation, and increasing energy efficiency (Directive 2003/87/EC). Importantly, EU countries are obliged to report annually on the amounts and use of the revenues generated. An analysis by Ecologic (Haase et al., 2022) demonstrates that Poland spent about half of its auctioning revenues on climate action in each year between 2013 and 2020 – a share consistently below the EU average. According to an analysis by ClientEarth (2022), Poland did not meet this requirement in the years 2013-2020. In each of Poland's yearly reports submitted to the European Commission, ClientEarth (2022) found inconsistencies between the reported amount of revenues allocated to climate goals and the total cost of all individual activities recorded. These findings raise reasonable doubts as to Poland's compliance with the 50% requirement. Discrepancies in the findings presented by Ecologic (Haase et al., 2022) and ClientEarth (2022) may result from the fact that, on top of analysing the total amounts reported to the Commission, ClientEarth (2022) also conducted a qualitative analysis of activities that the ETS revenues had been allocated to and found that some of them did not align with the objectives outlined in the Directive – while Ecologi (Haase et al., 2022) only did the former.

In their 2015 report on the implementation of the EU ETS in Poland, the Supreme Audit Office (*Najwyższa Izba Kontroli*) negatively assessed several of the government's decisions regarding the transposition of EU ETS law. Among other things, the Office pointed out that the administration was wrong in rejecting a project proposed by the National Centre for Emissions Management (KOBiZE), which outlined a transparent set of rules for designing a national plan for investments (under Article 10c). Moreover, the report found that the government was wrongly

reporting any national funds spent for the purposes listed in Article 10(3) of the EU ETS Directive under the requirement to allocate at least 50% of ETS revenues to said purposes.

2.2 Research questions / main hypothesis

The case study was developed around two main research questions:

- How did Poland benefit from the derogation laid down in Article 10c of Directive 2003/87/WE?
- How were the revenues from the sold emission allowances invested in decarbonisation?

The overarching objective of the case study is to investigate how the two revenue streams, from Article 10c and emission allowances, have impacted investments in decarbonization and the development of energy infrastructure in Poland. The research questions are embedded in the context of the effectiveness of climate and energy policies and low-emission energy transition. The main hypothesis is that the above-mentioned revenue streams were not used efficiently and, if these circumstances prevail, this may negatively impact Poland's pace of decarbonization.

2.3 Relevance for transformative climate policy

The EU ETS is one of the pillars of EU climate policy and it facilitates an effective reduction in the GHG emissions of the covered sectors. In the case of Poland, where most electricity is still generated from coal, the EU ETS covered not only industrial installations (whose free allocations fully or mostly covered the costs) but also most of the electricity generation. Carbon-intensive generation and a small share of RES in final energy consumption persisted in Poland, mainly due to the lack of adequate regulation and the lack of incentives for energy transition action including energy efficiency. Therefore, when introduced, the EU ETS constituted one of the few substantial sources of financing that would, in theory, be allocated to an effective energy transition. Moreover, the surge in the price of emission allowances in the last years of the analysed period multiplied the pool of financing available for said objective.

By analysing how the two streams of funds from the EU ETS were used in Poland in the years 2013-2020, this case study can provide insights into the Investment "I". The study can help identify ways to improve the design of instruments aimed at supporting the phase-out of coal and the broader energy transition, including but not limited to aspects such as: internal procedures, government structures, or mandates of financial regulators. This case study can form the basis of a more elaborate investigation into the effectiveness of energy transition-related investments financed by EU ETS revenues in the future. Additionally, Infrastructure "I" will also be considered with regard to the type of infrastructure financed using auction revenues in Poland.

2.4 Methodology used in the case study

This study focuses on conducting an ex-post analysis of policy measures, utilising a methodology consisting of three main elements:

1. Conceptual analysis, defining the goals and objectives of the measure in question. This will establish a clear understanding of what was ought to be achieved.
2. Empirical analysis, examining actual outcomes and effects based on data. This will allow us to assess what occurred. Extended by the Polish media and trade journal monitoring.
3. Evaluation, assessing the extent to which the measure achieved its intended goals.
4. Recommendations, providing recommendations on analysed policy measures.

The research will primarily rely on desk research (secondary research), which will provide a comprehensive overview of what was ought to be done and how things resolved. Complementing the desk research will be expert interviews, which will serve as a validation against the desk research. Together, these methods will allow us to provide a thorough analysis of the policy measures and their outcomes.

2.4.1 Data collection, analysis, and literature review

In this study, the methodology of secondary research (desk research) was employed. The sources searched included official documents between Poland and the European Commission, parliamentary interpellations, official reports, and official notes. Additionally, data were accessed from identified databases and data repositories, including The National Centre for Emissions Management (KOBiZE), the National Audit Office, the European Commission, and the European Union Transition Log. In the second step, reports and analyses produced by scientific institutions, think tanks, and non-governmental organizations, as well as media reports, articles, and news stories. This approach enabled the definition of objective, data-based fundamentals, as well as insights into the attitudes, opinions, and perspectives of different stakeholders and experts in the field.

The findings will serve to determine the characteristics, objectives, implementation, and ultimately, the effects and outcomes produced by the mechanisms under investigation.

2.4.2 Polish media monitoring and analysing Trade Magazines/Journal Articles

Media monitoring was performed using Google trends. The search was executed to reveal if the topic of the EU ETS derogation under Article 10c was in the scope of broad interest, confirming that it was not in the centre of public discourse in Poland. Moreover, even whole EU ETS system is mostly an object of interest of the Mazovia region, and most searches were connected to the

law and administration and financing. Which can indicate that the social awareness and the transparency of the investing process were low.

The articles regarding the EU ETS and Article 10c were searched for in trade magazines, both in the ones with open access (OA) and behind the paywall.

2.4.3 Expert survey

In this study, expert input was planned to be gathered during the interviews and in the final phase of concluding. Through an online survey, the experts were asked questions regarding the outcomes, factors, and barriers that influenced the implementation of EU ETS in Poland, in particular in terms of the two revenue streams assessed in this study. The experts were also asked about their opinions regarding the primary sources and technologies necessary to take into account achieving the goals mentioned in the previously mentioned area.

To collect experts' input, an online survey was prepared and sent to persons mapped as experts on the topic. The survey included questions about the two revenue streams and Delphi theses about the EU ETS. The results of the survey have been anonymised to ensure the provision of unbiased opinions of those involved in the process. A lack of anonymisation could affect the opinions of survey respondents since EU ETS spending has always been a highly political matter in Poland.

3. Results

3.1 Case findings

Media monitoring was performed to see what information regarding Article 10c and revenues from the auctions were released to the broad public and readers of the Trade Magazines interested in the energy market. The number of the publication was limited and could be classified in a few categories – see details in Type of content in Table 2. Interestingly, people often asked why the EU ETS failed (Figure 1).

Figure 1: Visualisation of queries performed in answerthepublic

24 webpages publishing information regarding the EU ETS and article 10c were found. Most of the published information (37,5 % of all webpages) came from portal of NGOs or analytics with environmental or energy focus, second source were regulators (16,65%; The National Centre for Emissions Management (KOBiZE) and Energy Market Information Centre (CIRE) and public administration (16,65%; including parliamentary team). Information was also available on legal portals (12,5%), in daily business news (12,5%) and once communicated by polish press agency (4,2%).

Table 2: Overview of key features of derogation under Article 10c and auction revenues in the EU ETS

Date of publishing	Type of portal	Type of content	Source URL
nd	legal acts	updated act on the greenhouse gas emission allowance trading scheme	https://sip.lex.pl/akty-prawne/dzu-dziennik-ustaw/system-handlu-uprawnieniami-do-emisji-gazow-cieplarnianych-18218715
May 2010	CZYSTA ENERGIA - monthly magazine on the	General information about EU ETS and art.10	https://portalkomunalny.pl/plus/artykul/narodowy-

	publishing market entirely devoted to issues related to environmentally friendly energy, non-conventional including renewable sources of energy		program-redukcji-emisji-gazow-cieplarnianych-pregc/
17/03/2011	Undersecretary of the Ministry of Economy	Response on free greenhouse gas emission allowances	http://orka2.sejm.gov.pl/IZ6.nsf/main/30C01D79
25/10/2011	Legal portal	Draft allocation of emission allowances for 2013-2020	https://www.prawo.pl/biznes/projekt-przydzialu-uprawnien-do-emisji-w-latach-2013-2020,155323.html
25/03/2012	Specialized legal portal on climate change.	Guidelines for the optional application of Article 10c of Directive 2003/87/EC	https://www.ochronaklimatu.com/?start=72
2013	Webpage of an analytical and consulting company specializing in advisory services for the regulated sectors of the economy incl. energy, coal mining, oil and gas,	Conference CBE Polska: EU ETS - New regulations and market strategies in the light of climate change and the prospects for emissions trading	https://cbepolska.pl/ii-european-emission-trading-summit.html
24/11/2014	The National Centre for Emissions Management (KOBiZE)	general information Legal basis of the EU ETS auction system	https://www.kobize.pl/pl/article/aukcje/id/392/informacja-ogolna
29/01/2015	Green Energy website	Ministry of Environment communication on The first auction of Polish emission allowances under the European Emission Trading Scheme (EU ETS)	https://www.gramwzielone.pl/trendy/14488/polska-sprzedala-darmowe-uprawnienia-do-emisji-co2-za-193-mln-euro
21/02/2017	Energy Market Information Centre (CIRE)	The Polish Electricity Association (PKEE) about The most important changes adopted by the EP in terms of ETs	https://www.cire.pl/artykuly/opinie/120956-komentarz-pkee-na-temat-proponowanej-reformy-eu-ets
01/03/2017	Ecological EKO-UNIA Association website	General information about EU ETS	http://eko.org.pl/index_news.php?dzial=2&kat=20&art=1865
22/05/2017	Ngo.pl (a non-governmental website)	Poland took the first place of the EU countries infamous first place was taken by the Polish authorities, for the misuse of EU concessions for the energy sector, granted since 2013 under the Directive on the European Emissions Trading Scheme (EU ETS). Article 10c	https://publicystyka.ngo.pl/subsydia-weglowe-jak-rak

14/07/2017	The National Centre for Emissions Management (KOBiZE)	list of free allowances, information on the number of emission allowances issued in subsequent years in accordance with Article 10 c of Directive 2003/87/EC can be found in the "Derogations for installations"	https://www.kobize.pl/pl/article/krajowy-plan-inwestycyjny/id/323/informacja-ogolna_14.07.2017
26/11/2018	Atmoterm webpage – company specialized in implementation of IT systems to support the management of environmental protection	Draft amending the Act EU ETS law and allowance allocation	https://www.atmoterm.pl/przydzial-uprawnien-do-emisji-dla-instalacji-objetej-eu-ets-na-lata-2021-2025/
2018	Financial Supervision Authority	Legal information about ETS and art.10	https://www.knf.gov.pl/knf/pl/komponenty/img/petycja_17_09_2018_63324.pdf
13/06/2019	Biznesalert.pl (a webpage focused on the energy sector, environment, security)	According to the EC, Poland has notified the Commission that it intends to auction in 2020 49.52 million CO2 emission allowances that were not allocated for free in 2013-2018.	https://biznesalert.pl/polska-ke-uprawnienia-emisje-co2-aukcje/
30/07/2019	The Chancellery of the Prime Minister of Poland	EU ETS after 2020. - Recommendations	https://www.gov.pl/web/premier/dokument-system-eu-ets-po-2020-r--rekomendacje
19/12/2019	Wysokienapiecie.pl (a webpage focused on renewable energy, climate and energetics)	On CO2 emission rights sold to companies at auctions, the Polish budget gained 11 billion PLN this year	https://wysokienapiecie.pl/24780-fiskus-zarobil-kolejne-miliardy-na-co2/
29/04/2020	Puls Biznesu - daily newspaper dedicated to business, economy, and the stock market	Since the beginning of the auctioning of greenhouse gas emission allowances, about PLN 20.5 The ministry estimates that in the next 10 years, revenues from EU ETS mechanisms will exceed 100 mld zł	https://www.pb.pl/okolo-205-mld-zl-w-budzecie-ze-sprzedazy-uprawnien-do-emisji-gazow-cieplarnianych-989744
29/04/2020	Polish Press Agency (PAP)	Benefits of the EU Emissions Trading Scheme	https://pap-mediaroom.pl/nauka-i-technologie/mk-korzysci-z-unijnego-systemu-handlu-uprawnieniami-do-emisji-komunikat
29/04/2020	Money.pl (a website dedicated to economy issues	Poland's revenues from the EU ETS may exceed PLN 100 billion in the next. 10 years	https://www.money.pl/gielda/mk-wplywy-polski-z-systemu-eu-ets-moga-przekroczyc-100-mld-zl-w-nast-10-latach-6505078720714369a.html

17/05/2021	Energy Market Information Centre (CIRE)	The National Centre for Emissions Management (KOBiZE): Poland's EU ETS-covered CO2 emissions in 2020 fell by 6.84 percent.	https://www.cire.pl/artykuly/serwis-informacyjny-cire-24/184903-kobize-objete-systemem-eu-ets-emisje-co2-polski-w-2020-r-spadly-o-6,84-proc
06/09/2021	Parliamentary Team Member's Report. Energetic Sovereignty	Balance of allowances in the years 2013-2020 for Poland based on official data	https://januszkowalski.pl/raport-specjalny-luka-eu-ets/
18/05/2022	ClientEarth Fundation – environmental organization	Report: Poland does not fulfil the ETS requirements	https://www.clientearth.pl/najnowsze-dzialania/dokumenty/kreatywna-ksiegowosc-jak-polska-marnuje-srodki-z-eu-ets/

In 4 of the OA magazines: nowa Energia, Energia – Gigawat, ELEKTROinstalator, Kierunek energetyka 15, 2, 2, and 6 pages were found with content on the topic, respectively.

In the *Energia* magazine most of the entries concern the general description of allocations in the EU ETS and the reaction of the business community and NGOs to the decisions regarding them in this matter. In *Energia-Gigawat* the ETS is mentioned in the legal text and energy prices. *ELEKTROinstalator* mentions ETS due to events that it describes – international energy conference and BREXIT. *Kierunek energetyka* focuses on legal aspects and energy prices and coverage of 2022 event promoting the report on the ETS reform.

In *wnp.pl* and *wysokienapiecie.pl* with paid access to archives, there were 10 articles in each of them regarding derogation 10c. These portals more often presented expert opinions and the position of professional groups and stakeholders involved in the transformation of the energy sector.

Table 3: Overview of articles in Polish Trade Magazines and Journals regarding derogation under Article 10c and auction revenues in the EU ETS

Date of publishing	Type of content	Source URL
Nowa Energia		
27/09/2013	Free CO2 emission allocations for the energy sector	https://nowa-energia.com.pl/2013/09/27/bezplatne-uprawnienia-do-emisji-co2-dla-energetyki/
04/11/2013	Derogations for the energy sector - a template of the material and financial report	https://nowa-energia.com.pl/2013/11/04/derogacje-dla-energetyki-wzor-sprawozdania-rzeczowo-finansowego/

05/02/2014	Continuation of the increase in prices of allowances on the carbon market in January	https://nowa-energia.com.pl/2014/02/05/kontynuacja-wzrostu-cen-uprawnien-na-rynku-carbon-w-styczniu/
26/03/2014	Companies can pay over PLN 1.5 billion for the lack of a government regulation	https://nowa-energia.com.pl/2014/03/26/za-brak-rzadowego-rozporzadzenia-firmy-moga-zaplacic-ponad-15-mld-zl/
10/04/2014	Regulation on free emission allowances for the energy sector adopted by the Council of Ministers	https://nowa-energia.com.pl/2014/04/10/rozporzadzenie-dot-bezlplatnych-uprawnien-do-emisji-dla-energetyki-przyjete-przez-rade-ministrow/
05/11/2014	October: EUA, CER quotes rise at historically low levels	https://nowa-energia.com.pl/2014/11/05/pazdziernik-wzrost-notowan-eua-cer-na-historycznie-niskim-poziomie/
30/01/2015	First auction of emission allowances in 2015	https://nowa-energia.com.pl/2015/01/30/pierwsza-aukcja-uprawien-do-emisji-w-2015-r/
28/10/2016	EURELECTRIC meets with MEPs to discuss the reform of the EU ETS	https://nowa-energia.com.pl/2016/10/28/spotkanie-eurelectric-z-europarlamentarzystami-w-sprawie-reformy-eu-ets/
08/11/2016	Common position of NGOs from Central and Eastern Europe on the implementation of the Paris Agreement	https://nowa-energia.com.pl/2016/11/08/wspolne-stanowisko-organizacji-pozarzadowych-z-europy-srodkowej-i-wschodniej-dotyczace-wdrozenia-porozumienia-paryskiego/
14/12/2016	Common position on the reform of the EU CO2 emissions trading system - EU ETS	https://nowa-energia.com.pl/2016/12/14/wspolne-stanowisko-nt-reformy-unijnego-systemu-handlu-uprawnieniami-do-emisji-co2-eu-ets/
22/02/2017	PKKE comment on EU ETS	https://nowa-energia.com.pl/2017/02/22/komentarz-pkee-na-temat-proponowanej-reformy-eu-ets/
28/06/2017	The final of the ETS negotiations - EURELECTRIC calls for increased compensation and thus support for the position of the Polish electricity sector	https://nowa-energia.com.pl/2017/06/28/final-negocjacji-ets-eurelectric-wzywa-do-zwiekszenia-kompensacji-i-tym-samym-wsparcia-stanowiska-polskiego-sektora-elektroenergetycznego/
27/11/2017	Assessment of the result of the negotiations on the revision of Directive 2003/87 / EC establishing a system for greenhouse gas emission allowance trading	https://nowa-energia.com.pl/2017/11/27/ocena-rezultatu-negocjacji-dotyczacych-rewizji-dyrektywy-200387we-ustanawiajacej-system-handlu-

		przydzialami-emisji-gazow-cieplarnianych/
06/03/2018	emissions allocations in 2018	HTTPS://NOWA-ENERGIA.COM.PL/2018/03/06/PRZYDZIAL-UPRAWNIEN-DO-EMISJI-W-ROKU-2018/
17/12/2018	New auction calendar for Polish EUA and EUAA allowances for 2019 published by the EEX exchange	HTTPS://NOWA-ENERGIA.COM.PL/2018/12/17/NOWY-KALENDARZ-AUKCJI-DLA-POLSKICH-UPRAWNIEN-EUA-I-EUAA-NA-2019-R-OPUBLIKOWANY-PRZEZ-GIELDE-EEX/
Energia – Gigawat		
22/12/2014	Law and energy production in Poland	http://gigawat.info/artykul/items/prawo-a-produkcja-energii-w-polsce.html
27/02/2017	Will CO2 allowances become more expensive?	http://gigawat.info/artykul/items/uprawnienia-co2-zdrozeja.html
ELEKTROinstalator		
25/10/2012	XVI International Energy Conference EuroPower - general information and sessions on 3 Phases of ETS	http://www.elektroinstalator.com.pl/index.php/artykuly/z-zycia-i-pogranicza-branzy/423-xvi-midzynarodowa-konferencja-energetyczna-europower?highlight=WyJldHMiXQ==
27/06/2016	ETS in the context of tightening or relaxing energy policy	http://www.elektroinstalator.com.pl/index.php/aktualnosci/branza/2217-co-brexit-oznacza-dla-polskiego-sektora-energetycznego?highlight=WyJldHMiXQ==
Kierunek energetyka		
07/03/2016	CEEP urges European Commission to review emissions trading scheme (ETS)	https://www.kierunekenergetyka.pl/artykul,25363,ceep-apeluje-do-komisji-europejskiej-o-rewizje-systemu-handlu-emisjami-ets.html
22/03/2018	Information on the Revised EU ETS Directive, which came into effect on April 8, 2018.	https://www.kierunekenergetyka.pl/artykul,54389,zmieniona-dyrektywa-ue-ets-wkrotce-wejdzie-w-zycie.html
02/11/2021	Rising energy commodity prices and the unprecedentedly high cost of purchasing CO2 emission allowances in the EU ETS system are the main factors behind the record increases in energy prices on European markets.	https://www.kierunekenergetyka.pl/artykul,88010,ceny-energii-rosna-w-calej-europie.html
12/01/2022	J. Steinhoff: Poland earned 25 billion PLN last year from trading CO2 emission rights. It is not the ETS that is the problem, but dependence on coal	https://www.kierunekenergetyka.pl/artykul,89233,j-steinhoff-na-handlu-prawami-do-emisji-co2-polska-zarobila-w-zeszlym-roku-25-mld-zl-to-nie-system-ets-jest-problemem-ale-uzaleznienie-od-wegla.html

13/04/2022	PGE: How to change the EU ETS system to support the energy transition?	https://www.kierunekenergetyka.pl/artykul,91057,pge-jak-zmienic-unijny-system-ets-aby-wspieral-transformacje-energetyczna.html
Wnp.pl economic portal		
31/03/2011	Free CO2 emission allocations for the Polish energy sector, information on legal base and positive decision regarding Article 10c	https://www.wnp.pl/wiadomosci/136445.html
16/07/2012	Announcement that the European Commission accepted on July 13, 2012, Poland's application for the allocation of free emission allowances under the EU Emissions Trading System (EU ETS) for the Polish energy sector after 2012. Allocations for over 404 million tonnes of emission permits CO2 relates to the period 2013-2019. In experts' opinion such an allocation is a success for Polish negotiators.	https://www.wnp.pl/energetyka/sukces-polski-ws-przydzialu-uprawnien-do-emisji-co2,174587.html
21/07/2014	Opinion that the misunderstood, isolated European ideology of climate protection and Polish fiscal and energy policy detached from European standards are a deadly threat to energy-intensive producers in Poland	https://www.wnp.pl/energetyka/smiertelne-zagrozenie-dla-przemyslu-energochlonnego,230572.html
03/08/2015	information that in order to organize the system of greenhouse gas emission permits, all the operators of installations who currently have such permits will have to apply for a new permit for greenhouse gas emissions from installations within 12 months from the entry into force of the Act	https://www.wnp.pl/energetyka/beda-potrzebne-nowe-zezwolenia-na-emisje-co2,254935.html
20/06/2017	In 2013-2016, Poland obtained revenues from trading in CO2 emission allowances, which already have to be counted in billions of zlotys, and estimates indicate that in the period 2017-2020 the national budget can earn more than twice as much from the sale of these allowances as in 2013- 2016.	https://www.wnp.pl/energetyka/panstwo-na-rynku-co2-ile-zarabia-polska,300524.html
29/05/2018	The opinion of the secretary of the Management Board of the Polish Electricity Association (Polski Komitet Energii Elektrycznej PKEE) on the proposed by the Commission obtaining funds for the EU budget from the EU ETS system is a dangerous precedent for countries with a higher share of emissions in the EU than contributions to the EU budget (also Poland). There is no guarantee that the proposed contribution from the EU ETS will not be significantly increased in the future. Therefore, we evaluate this idea critically -	https://www.wnp.pl/energetyka/komisja-europejska-chce-siegnac-po-pieniadze-z-rynku-co2,324022.html
07/12/2018	The maximum possible allocation of CO2 emission allowances to support the domestic	https://www.wnp.pl/energetyka/na-wsparcie-modernizacji-energetyki-

	energy sector in 2021-2030 is approximately 720 million EUA (allowances to emit one ton of carbon dioxide). The final decisions on the overall scale of support for the energy sector in Poland will have to be taken by the government by the end of September 2019 at the latest due to the requirements of the EU ETS Directive - says Maciej Burny, director of the International Relations Department at PGE Polska Grupa Energetyczna.	moze-byc-nawet-ponad-700-mln-eua,335854.html
05/08/2019	The authorities resign from allocating free CO2 emission allowances to the energy sector for the period 2021-2030, but not from financing the modernization of the sector with funds from the EU emissions trading system EU ETS. It is expected that a special purpose fund for the modernization of the energy sector will be created, financed with funds from the sale of some CO2 emission allowances that will be at the disposal of Poland.	https://www.wnp.pl/energetyka/fundusz-celowy-na-modernizacje-energetyki-zamiast-bezplatnych-uprawnien-co2,350588.html
07/08/2019	Opinion of the president of the energy forum - Currently, the revenues from the sale of CO2 emission allowances by the state are budget revenues. However, for Poland to finally start the much-needed modernization of the energy sector, all revenues from the sale of CO2 emission allowances should be allocated to investments in clean air and low-emission energy	https://www.wnp.pl/energetyka/beda-miliardy-na-inwestycje-w-czyste-powietrze-i-niskoemisyjna-energetyke-o-ile-nie-trafia-gdzie-indziej,350702.html
29/04/2020	In the next ten years, the state budget revenues from the CO2 trading system will exceed PLN 100 billion. According to the Ministry of Climate, the CO2 trading system does not work well, but instead of abolishing the entire system, it should be modernized, and the funds will go where they are most needed and where the investments will bring the greatest reduction effects.	https://www.wnp.pl/energetyka/ministerstwo-klimatu-system-handlu-co2-jest-potrzebny-ale-wymaga-zmian,390546.html

For this analysis, we identified the key features and assumptions behind the two investment mechanisms (see Table 2). It should be noted that auction revenues and Article 10c are substantially different: they have different direct beneficiaries (the state and electricity producers respectively), differently defined catalogues of activities, and are also differently managed at the EU level. However, they are interdependent, as the use of Article 10c reduces the pool of auction allowances, which would otherwise be increased by the number of allowances used under Article 10c. Although separate, the two catalogues of activities overlap, as auction revenues can be used to support the decarbonization of the electricity sector, which tends to account for the bulk of the economy's emissions, especially in a country like Poland, where electricity is carbon intensive.

Defining the objectives behind the two investment mechanisms, as laid down in the ETS Directive, is crucial to the analysis – although the validity of the objectives itself could also be subject to an assessment in the context of the overarching goal of optimally using the funds to support the energy transition. However, the objectives do fit the broader context of EU climate and energy policy, as well as global sustainable development goals, and it is beyond the scope of this case study to contest them.

Table 4: Overview of key features of Article 10c and auction revenues in the EU ETS

Name	Beneficiary	Provision	Objective	Governance
Derogation 10c	Electricity producers in transitional free allocation to installations	Article 10c	The derogation of Article 10c was a mechanism dedicated to countries with lower incomes[1]. Free allocation if equivalent will be spent on retrofitting and upgrading of the infrastructure and clean technologies. The diversification of Member State energy mix and sources of supply.	Member States shall submit to the Commission a national plan that provides for investments. The Member State concerned shall submit to the Commission, every year, a report on investments made in upgrading infrastructure and clean technologies.
Auction revenues	State (as budget revenues)	Article 10	At least 50 % of the revenues generated from the auctioning of allowances (or the equivalent in financial value of these revenues) should be used to: (a) reducing GHGs emissions (b) developing RES to meet 20% target by 2020 and other technologies contributing to low carbon economy (c) to meet energy efficiency target 20% by 2020 (d) measures to avoid deforestation and increase afforestation (e) forestry sequestration (f) capture and geological storage of CO2 (g) encourage a shift to low-emission and public forms of transport	Member States shall inform the Commission as to the use of revenues and the actions taken pursuant to this paragraph in their reports submitted under Decision No 280/2004/EC.

[1] The eligibility criteria have been described in Article 10c (1) of EU ETS Directive.

			(h) finance R&D in energy efficiency and clean technologies (i) measures intended to increase energy efficiency and insulation or to provide financial support to address social aspects in lower- and middle-income households;	

3.1.1 Number of allowances, revenues, and conditionality

Auction revenues

Use of the revenues from auctioning the national pool of allowances is rather straightforward, with non-earmarked revenues going into the budget and their direct use depends on possible regulations and arrangements left to the discretion of the Member State. The state was only required to submit a report documenting the spending of the appropriate amount for the actions outlined in the article.

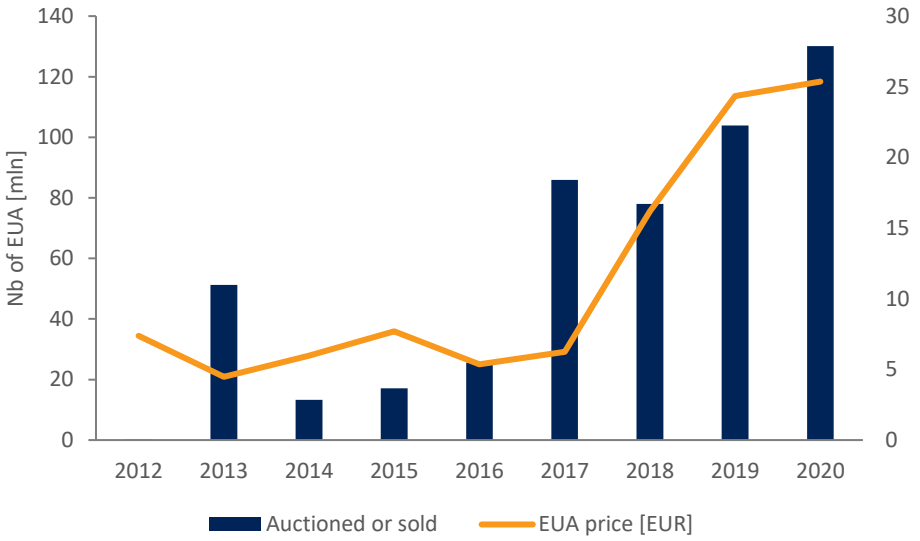

Figure 2: Number of auctioned allowances from Polish auction pool 2012-2020
Source: IEA EU ETS Data viewer

Significant increases in the EUA price at the end of the third period have contributed to an equivalent increase in revenues in recent years (Figure 2). Poland also sold more allowances in these years than at the beginning of the 3rd period, which also translated into significantly higher budget revenues. Total revenue from the sale of allowances amounted to more than €8 billion, with more than 85% of these revenues accumulated in 2018-2020.

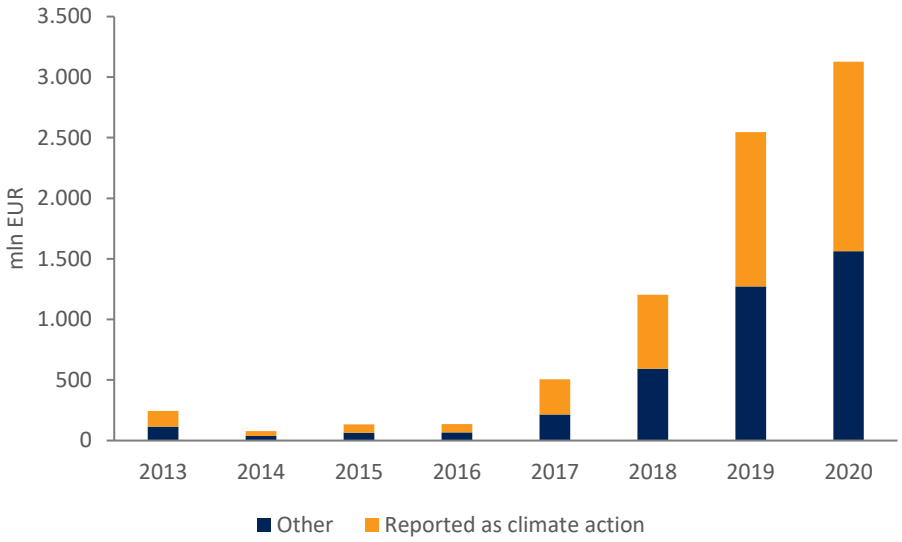

Figure 3: Revenues from auctioned Polish allowances in 2013-2020
Source: WiseEuropa based on Polish reports

Based on Poland's reports to the European Commission (Eionet, n.d.), each year about 50% was reported as climate protection spending (Figure 3) – which is the minimum required by the Directive and totals 4 billion EUR over the eight years reviewed.

Derogation 10c

A completely different mechanism is Derogation 10c, the direct beneficiary of which was not the State, but specific electricity producers. However, the State had to submit a national investment plan, in which they presented tasks that were in line with the scope of the derogation (KOBiZE, 2016). The approved plan allowed for the allocation of the appropriate number of free allowances only after demonstrating the execution of investments and obtaining the relevant characteristics. This approach caused some investments were not completed, and so free allowances were not issued (Figure 4).

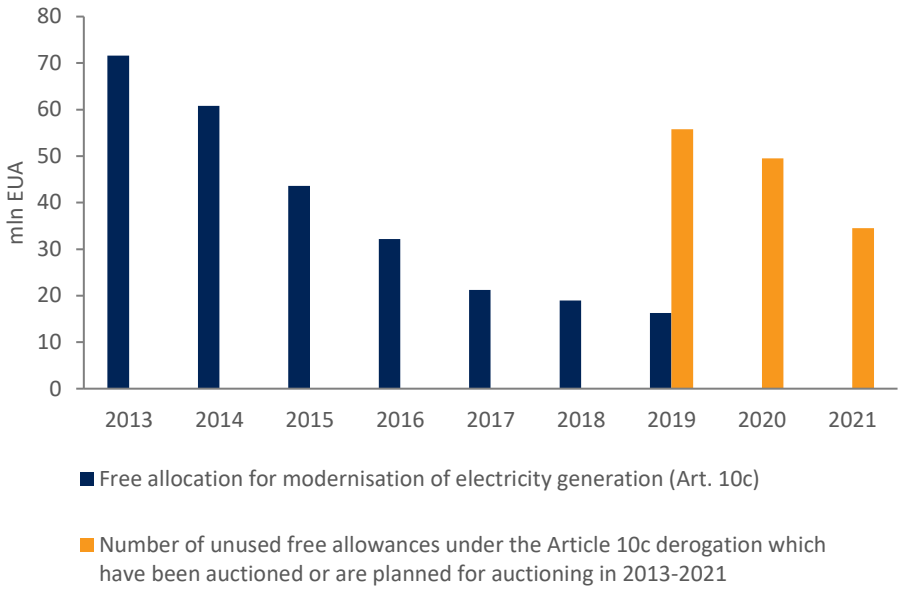

Figure 4: Free allocation under Article 10c and unused allowances in Poland in 2013-2020
Source: European Commission

Thus, throughout the period, more than 1/3 of the allowances planned to be issued under the derogation were not used and were sold at auctions, mostly at the end of the third period, and some allowances in 2021 (more in-depth later in the section). Due to the increase in the price of EUAs, the amount obtained from their sale is far greater than the estimated value of allowances issued in this mechanism (Figure 5).

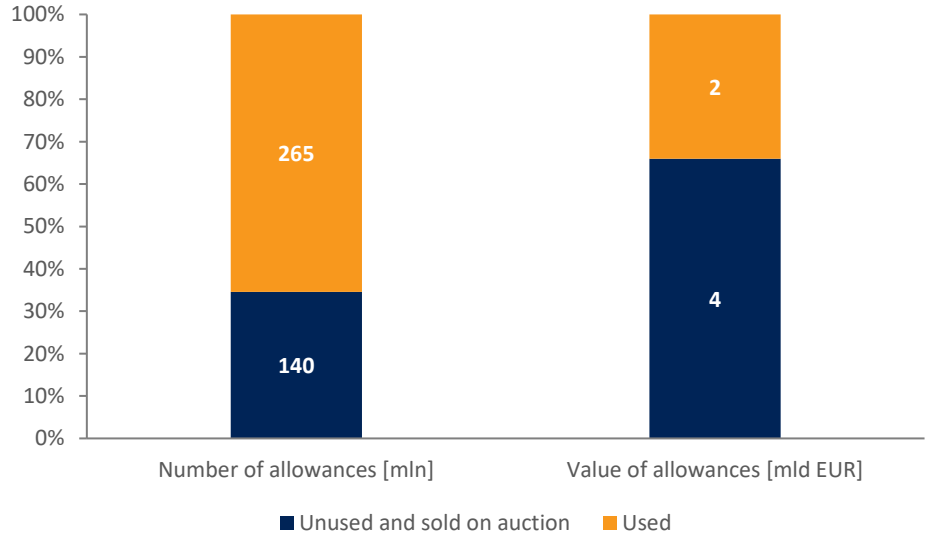

Figure 5: Number of allowances and estimated value under Article 10c and unused allowances in Poland in 2013-2020
Source: WiseEuropa based on European Commission, EEX

Poland was eligible to receive the most financial support under Article 10c out of all Member States, but it gave up a substantial part of it (Figures 5 & 6). The reason given by the Polish government is that some of the activities reported as part of the National Investment Plan were never completed, thus eliminating the possibility to balance the emission allowances planned to be issued with costs incurred for eligible investments. According to the public administration, companies would often give up the investments listed in the NIP due to their unprofitability, which then led to auctioning the emission allowances that had not been issued to electricity producers. Two main resulting problems have been cited: firstly, the possibility of clearing allowances only after the investment, and secondly, a lower than the projected price of EUAs at the beginning of Phase 3.

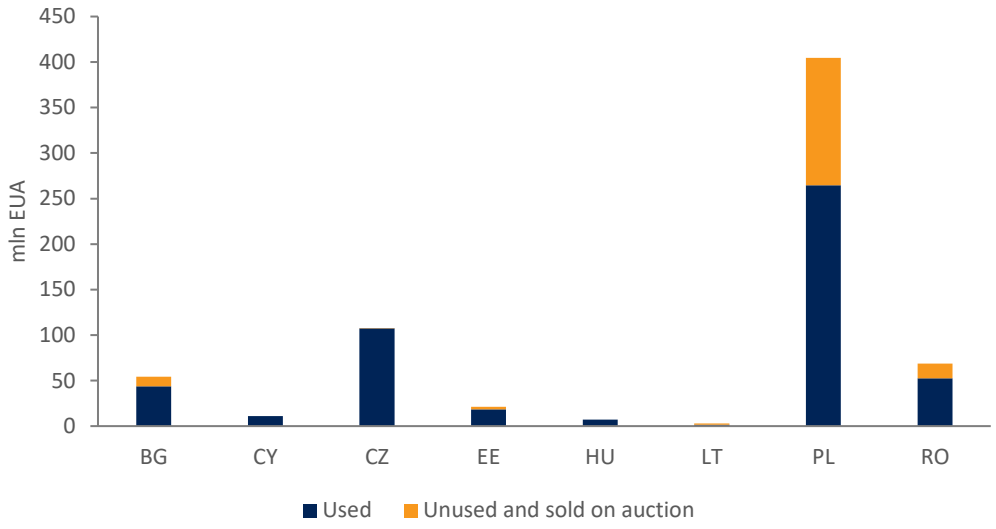

Figure 6: Number of allowances and estimated value under Article 10c and unused allowances in eligible countries in 2013-2020

Source: WiseEuropa based on European Commission

A report by Poland's Supreme Audit Office (2015) revealed irregularities in the implementation of the National Investment Plan (NIP). Among them were 1) failure to provide transparent rules for the eligibility of investment activities report under the NIP and 2) a lack of clearly defined objectives to be achieved because of the NIP. Implementers failed to verify the feasibility of individual investment projects submitted, creating the risk that not all reported activities would be implemented. According to Supreme Audit Office, the draft NIP was also prepared by a private entity, without any agreement with the then-Minister of the Economy. All the above-mentioned factors may have impacted both the reliability, as well as the feasibility of the NIP.

3.1.2 Use of revenues, eligibility, and conditionality

Auction revenues

Although most of the revenues are not earmarked, the Act on the GHG emission allowance trading scheme of 12 June 2015 implementing the EU ETS in Poland (Dz. U. 2015 poz. 1223) includes an article (Article 49) in which a portion of the funds is earmarked. In later amendments, further provisions were added to the article. Currently, some provisions refer only to phase 3, some allocate an absolute amount of funds, some in percentages, and some refer to specific years, contributing to the lack of transparency and clarity of the regulations.

More information can be found in the reports required by the Directive. In reports submitted each year to the European Commission for the period 2013-2020 (Eionet, n.d.), Poland reported allocating €4 billion for environmental and climate goals. This constitutes roughly 50% of the €8 billion received in revenues – which is a minimum required to share.

Due to substantial discretion in spending and allocating these funds, countries have used different approaches. As Ecologic (2022) points out in its report, some countries such as Germany, France, Portugal, and Greece have allocated far more funds than the required minimum of 50%, and some of these countries have chosen to earmark these revenues up to half of those revenues or more.

One of the main issues with reported activities is uncertainty about their additionality. The possibility of reporting the revenue equivalent allows reversing the causal sequence - i.e., EU ETS funds do not have to cause additional activities and investments, but one can report on already implemented programs that happen within the framework of state budgets. Such soft earmarking provides greater flexibility to Member States in how they use those revenues, but it also reduces transparency and affects the ability to assess additionality. This creates challenges in monitoring and evaluating the effectiveness of the funded activities.

As a result, Poland has reported a total of almost 1,000 programs in its reports, with the majority disbursed in a handful of activities concentrated in the last four years of Phase 3 (2018-2020). Figure 7 indicates the activities that made up most of the reported programs which have also been identified as questionable for qualification in ClientEarth's (2022) assessment. The authors point out that support for the auction system and the green certificate system does not involve an additionality effect, and that according to provisions of the RES act, it should be financed by a RES fee added to the electricity bill. Authors also consider tax cuts to be questionable – the auction revenues covered the difference between the theoretical amount of additional tax revenues, after which they dissolve in the budget. In ClientEarth’s opinion, tax cuts alone do not give adequate support to eligible activities specified in the ETS Directive. Another indicated action was the Indirect Emission Cost Compensation Fund, which compensated for the increased price of electricity by the ETS (indirect emission costs). According to the authors, this Fund does not meet the objectives listed in Article 10 of the Directive.

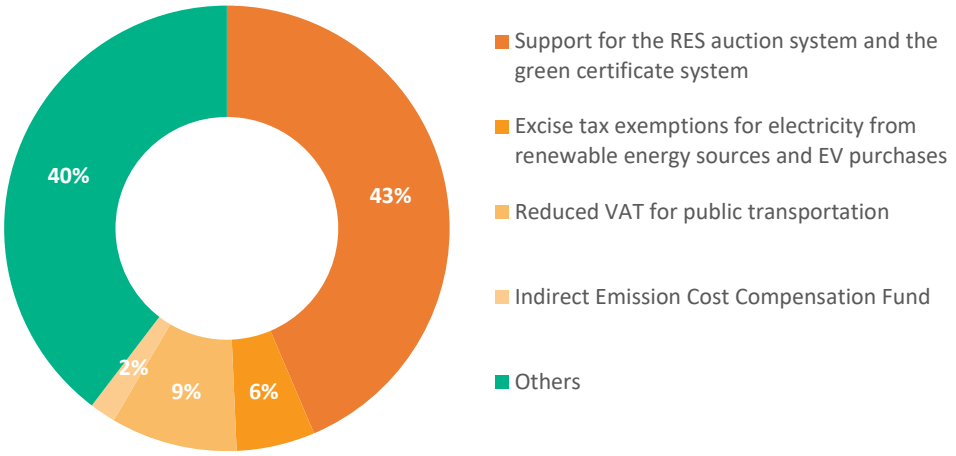

Figure 7: Share of main controversial activities reported as climate action in 2013-2020

Source: WiseEuropa based on ClientEarth

Further analysis of the activities reported in Poland's reports to the European Commission shows that investments in infrastructure did not constitute a significant share of the reported activities. In the listed activities there are relatively small local projects related to smart metering or modernization of the heating network, but they do not hold a significant share of the total number of allowances. Other activities reported include numerous thermomodernisation measures, including those under the "Clean Air" program, which is the backbone of the Polish support system for energy efficiency and replacement of heat sources in individual buildings, as well as support for the development of RES (e.g., support for the construction of biogas plants or support for the "My Electricity" program, which facilitates the development of prosumer installations – mainly photovoltaic). These measures are in line with the provisions of the Directive.

Derogation 10c

The investments that were to be financed under Article 10c derogation were presented by Poland with the required National Investment Plan. Poland also submitted a derogation application approved by the Commission (KOBiZE, 22 January 2014).

According to the Directive, derogation under Article 10c may be granted for the following five types of eligible investments: retrofitting of infrastructure, upgrading of infrastructure, clean technologies, diversification of energy mix, or diversification of sources of supply. Infrastructure is defined more broadly than just transmission and distribution grids – it also includes generation units.

Projects submitted under the NIP were focused on improving the energy efficiency of conventional sources of energy, which accounted for the vast majority of the energy mix. Authors of the report point out that out of all 378 investments, about 82% of them focused on activities related to coal-

fired power plants, while 7% concerned co-combustion of biomass in conventional units. Moreover, only 12% referred directly to investments in energy infrastructure. Modernization activities, such as network expansion or modernization of substations, were reported by distribution companies and by *Polskie Sieci Elektroenergetyczne* (the Polish Transmission System Operator). Gas infrastructure-related investments were reported by *GAZ-System*. As shown in Figure 8, a mere 1% of investments reported under the NIP was devoted to renewable energy sources. Despite a fall in their capacity factor, coal-fired plants maintained high available capacity, even slightly greater than in 2012. According to the derogation decision, the Polish government forecasted a decrease in available capacity to 28,9 GW, which is 1 GW lower than the actual value.

The report by CAN Europe and WWF (2014) indicates similar issues in Czechia and Romania, where investments listed under the NIP mainly supported conventional power sources. These three countries accounted for nearly 84% of all allowances under Derogation 10c, as illustrated in Figure 6.

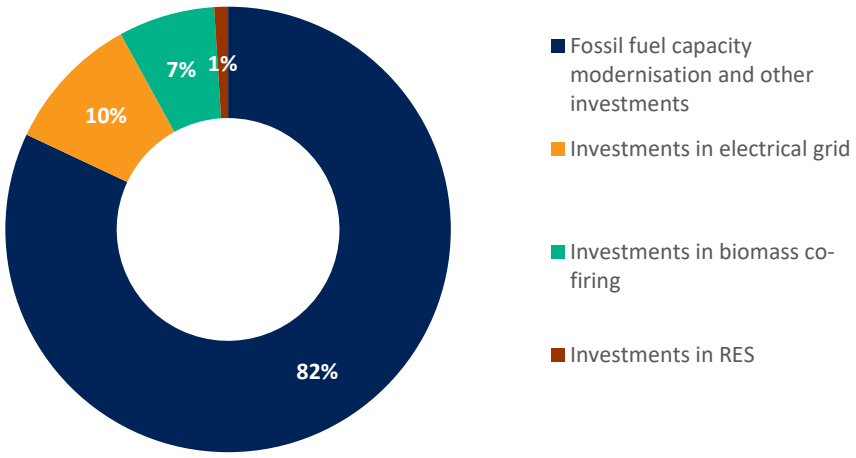

Figure 8: Share of different types of investments in the Polish National Investment Plan

Source: WiseEuropa based on CAN Europe

In the analysed period, despite consistent year-over-year increases in electricity consumption (except for the years 2019 and 2020, when consumption fell, in the latter due to the pandemic), production from coal decreased – due to an increase in RES installed capacity (especially in photovoltaics), an increase in imports (Poland became a net importer in 2017) and because of the pandemic (Figures 9 & 10). Although diversification of Poland's electricity generation mix can be observed in the analysed period, it was mainly dictated by the increase in RES and gas capacities, as well as the increase in imports, to which investments made under Article 10c did not contribute. Hence, it should be noted that, while the derogation proposal approved by the Commission confirmed that the investments would contribute to diversifying the mix, this data

alone demonstrates an opposite effect – a strengthening of the role of conventional sources (carbon lock-in).

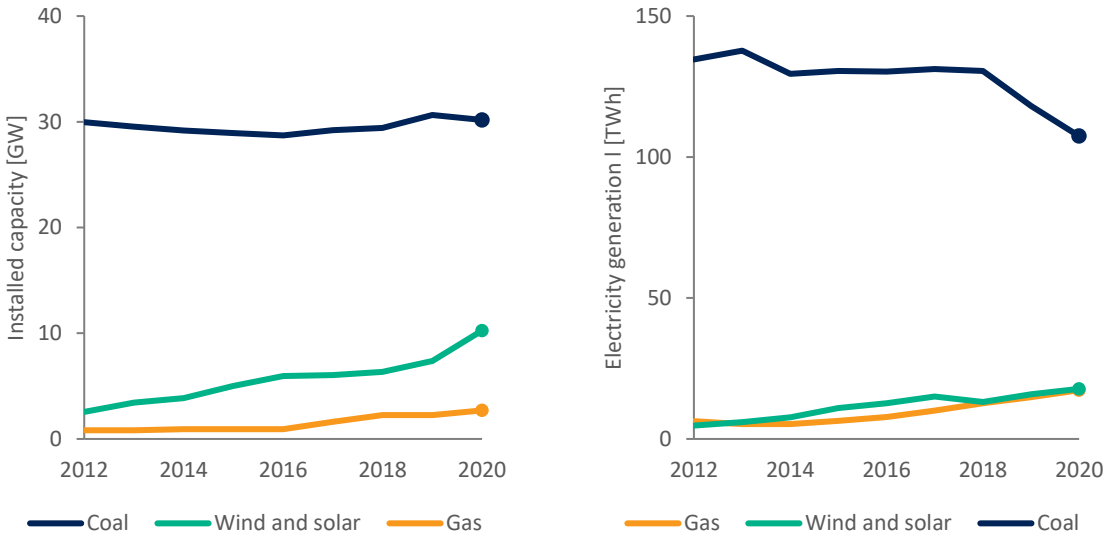

Figure 9: Installed capacity in coal, gas, wind, and solar in 2012-2020 in Poland and Figure 10: Electricity generation from coal, gas, wind, and solar in 2012-2020 in Poland

Source: WiseEuropa based on Ember

Another issue that requires particular attention is competition in Poland's electricity generation market. In the process of approving a derogation request, potential distortion of competition and trade are considered. According to the provision of Article 10c (3), the requesting Member State should provide information ensuring that the granting of the derogation will not create undue distortion to competition. Poland demonstrated a lack of such a potential distortion by presenting a forecast that predicted a reduction in the ownership share of the largest state-controlled companies in electricity production. However, recent years brought a further increase in the role of state-owned companies in the market (Table 4), which is also one of the reasons for the lack of sufficient action in the transformation of the energy sector. Thus, it should be noted that consolidation has increased, proving there has been a lack of mechanisms to enforce the principles of avoiding distortion of competition.

Table 5: Share of key state-owned companies in electricity generation in Poland

Company	Share in 2011	Forecast for 2020 from derogation decision	Actual share in 2021
PGE	37.7	33.4	40
Enea	7.7	8.3	15
Tauron	14.7	14.7	9
Energa	2.8	3	2

PKN Orlen	1.2	1.9	7
Total	64.1	61.3	73

Source: WiseEuropa based on the European Commission and the Energy Regulatory Office

The allocation under Article 10c could contribute to the indirect support of investments in low-carbon energy sources. However, an analysis of the performance of state-owned enterprises, which received most of the derogation allowances (as they concentrated the vast majority of conventional power plants in Poland, as well as a large part of combined heat and power plants), demonstrates they did not invest in low-carbon energy sources during the given period, and most of the RES market was developed by non-public companies and prosumers (Figure 11).

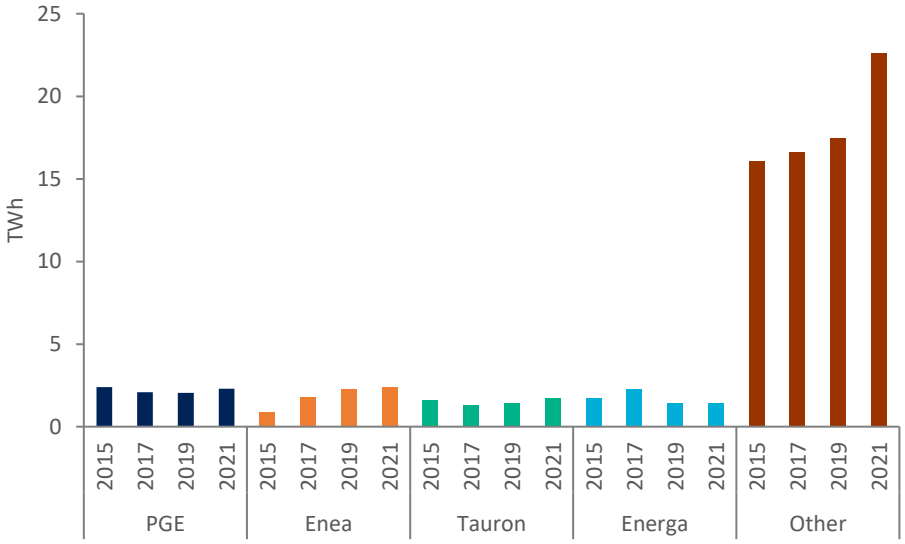

Figure 11: Electricity generation from renewable sources by state-owned vs other companies in 2015-2021

Source: WiseEuropa based on company reports and PSE data

Another important aspect is the multitude and volume of subsidies that were allocated to support conventional and renewable sources (Figure 12). According to a report by WiseEuropa and ClientEarth (Stoczkiewicz & Śniegocki, 2019), an analysis of support measures available for electricity generation at the time demonstrates they were not cost-effective. Although sizeable, considering the size of the Polish economy, the funds committed did not translate into lasting systemic change that would support the energy transition. Examples of such ineffective, and even counter-effective policies include the introduction of the "10H rule" which stunted onshore wind power development or the extensive support for co-firing biomass and coal. ETS funds, both those available under Article 10c and those from auctioning of allowances, accounted for much of this support.

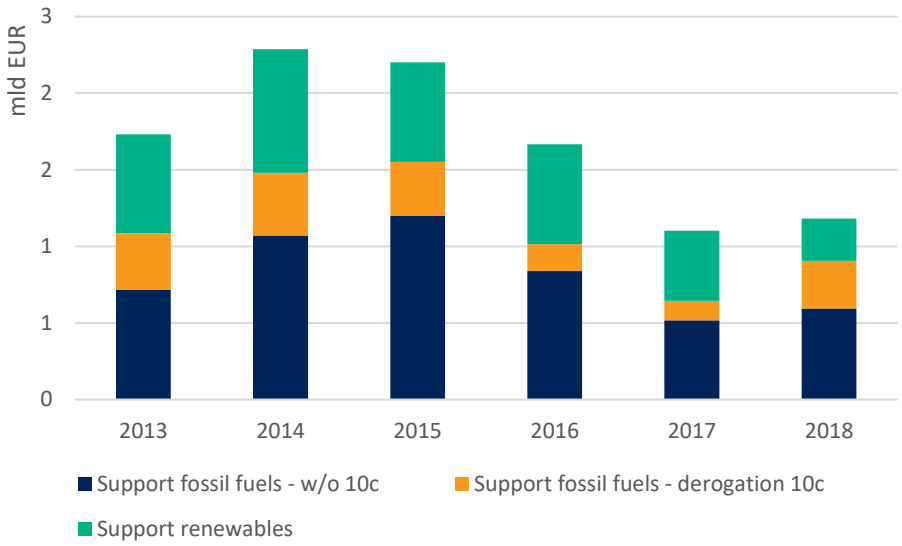

Figure 12: Estimated subsidies amount for fossil fuel generation and renewables in the 2013-2018 period in Poland

Source: WiseEuropa based on WiseEuropa and ClientEarth

3.1.3 Expert survey findings

Four experts with expertise and/or professional experience related directly to the functioning of the EU ETS in Poland gave responses to the drafted questionnaire and their inputs were comparable in terms of the number of details given. Moreover, all surveyed experts gave similar levels of in-depth and sound argumentation in their answers. A summary of their input is given below.

Table 6: Summary of expert survey findings

	No.	Question	Summary of the findings
Auction revenues	1	According to your knowledge, to what extent did the funds from the auction pool of allowances sold give support to effective decarbonisation mechanisms in Poland? What should be improved?	According to the respondents, the funds in question did not give sufficient support to effective decarbonisation mechanisms. Reporting of measures that would exist independently of the EU ETS or measures that contradict the purpose of the directive was indicated as reasons. The earmarking of most measures, which would be characterized by additionality, was indicated as solutions. Another recommended solution is to use measures to mobilise private capital.
	2	In what ways do you think revenues from the EU ETS auctions have contributed to decarbonisation in Poland?	Two respondents assessed that they contributed to a small degree, with one response indicating that they supported decarbonization. One respondent pointed to the lack of transparency in the spending of ETS revenues as making it difficult to give an assessment.

	3	What recommendations do you have for future activities in this area?	Earmarking of funds, mobilisation of private capital, the introduction of an Energy Transformation Fund, improving transparency of how the funds are spent, programs based on support progression, and targeted programs for energy poverty reduction were identified as recommendations in this area.
Derogation under Article 10c	4	From your point of view, what were the objectives of derogation under Article 10c?	Shifting away from fossil fuels, providing support to the decarbonisation of energy companies, modernising energy equipment and infrastructure, and building new low-carbon energy sources were identified as the objectives of derogation under Article 10c.
	5	In your opinion, was derogation under Article 10c a good alternative to the EU ETS auction system? What could be improved?	Among the responses, it was pointed out that derogation could have been a good alternative but only under the condition that it was treated as a bridging mechanism in the decarbonization process and if better-defined and more enforceable criteria for reducing emissions were introduced.
	6	In your opinion, how has Poland benefited from the derogation outlined in Article 10c of Directive 2003/87/EC?	Respondents indicated that, in principle, Poland benefited from the derogation by modernising its power generation sector. One respondent pointed out that a significant share of the allowances had not been used.
	7	In your opinion, what were the main facilitators of the successful execution of the derogation under Article 10c?	It was pointed out that the funds were saved for the purchase of allowances, which allowed for transformation activities to take place. Designating funds available under the derogation for operating installations or those in the investment process constituted facilitation. Access of smaller installations to funds under the derogation was also pointed out to be one.
	8	In your opinion, what were the main barriers to the successful application of derogation under Article 10c?	Not executing a significant share of the investments (low prices of allowances), inflexibility in implementing the derogation, as well as weak links between the investments made and progressive decarbonisation were pointed out as the main barriers. As an additional example, it was pointed out that despite facilitating the access of already operating installations and those at the investment stage to the derogation, this was also subject to restrictions (only available to installations in operation before the end of 2008 or if the investment process started before that date).
	9	What lessons can we learn from the use of derogation under Article 10c in Poland?	As lessons learned, it was pointed out that the mechanism was used to support state-owned companies rather than to decisively shift away from fossil fuels. In addition, according to one respondent, this type of action can only be effective if it is based on specific project requirements, indicating the achievement of exact reduction targets. One respondent indicated that the derogation supported the EU's long-term objective. As an additional conclusion, he pointed to the relationship between the derogation under Article 10c and the auction pool (the former reduced the amount of the latter).
	10	How has the implementation of derogation under Article 10c affected the pace of decarbonisation in Poland (accelerated/slowed it down)?	Respondents indicated both (i) a slowing down of the pace of decarbonisation through the consolidation of coal units (operated by state-owned companies) and the lack of support for the RES sector and (ii) an acceleration, as funds were directed to the expansion of transmission infrastructure

			and improvement of energy efficiency, support for energy entities, and support for the development of decentralized energy generation (iii) as well as it has no significant impact on the rate of decarbonisation.

The results of the expert online survey mostly align with the conclusions drawn in the secondary data analysis. In consideration of the auction pool of allowances, problems with additionality, eligibility, and transparency of the measures were indicated. It was also indicated that the measures did contribute to decarbonisation, but two respondents indicated that they did so minimally, and one indicated that it was not possible to answer this question accurately. In the case of the derogation under Article 10c, the lack of implementation of many investments and the reasons for this were indicated. The derogation was indicated as a mechanism whose purpose and objectives were adequate in the context of long-term climate policy objectives, but it was not properly implemented (one respondent had a different opinion, assessing the derogation as generally accelerating decarbonisation).

3.2 Transformative character of the studied case

The Polish case study provides insights into the application of transformative climate policies related to the use of funds available to Poland under the two streams of revenue available under the EU ETS. Throughout Phase 3 (2012-2020), Poland had a minimum of 6 billion EUR (4 billion EUR accounted for 50% of auction revenues and 2 billion EUR was available under Article 10c) available to support its energy transition efforts. The EU ETS is a crucial component of EU climate policy, and the volumes of funds available to Member States make it a potent tool for transformative change.

Despite Poland being a country with relatively low ambitions for emissions reduction during the analysed period, its use of the ETS funds provides valuable lessons that other countries can learn from. This case study offers insights into how such funds can be effectively utilised in such circumstances.

Additionally, the findings suggest that there is a need to re-evaluate what solutions have not worked and what steps need to be taken in Phase 4 and under further reforms of the system, but also to allow for the energy transition to be supported through other financial frameworks.

In Phase 4 (2021-2030) Poland gave up derogation under Article 10c and chose to sell all allowances on auctions. Poland will also have at its disposal most of the funds provided under the Modernization Fund. With EUA prices being substantially higher in Phase 4, the potential funds available for the low-carbon transition will be much greater than in Phase 3, thus having greater potential for transformative impact. This means that the findings of this study provide insights into the performance of these kinds of mechanisms and can support designing adequate measures in future reforms of the system, but also in other related financial frameworks.

3.3 Validity of findings

The assessment of an ex-post study is associated with several biases that need to be taken into consideration, including hindsight bias, confirmation bias, and recency bias. To ensure the objectivity, validity, and robustness of the case study, these biases were taken into account when designing the methodology and executing the study.

Data on the number of allowances and derogations or allowance prices are highly reliable, as they are published by entities such as the European Commission, in the European Union Transaction Log (EUTL), EEX, and in official documents of the Polish government. Documents from different stakeholders also gave insight into different perspectives.

It must be acknowledged that due to the lack of available data regarding performance indicators, it was not possible to perform a detailed analysis of the impact of the investments on GHG emissions reduction. Both the National Investment Plan and reports on the disbursement of auction funds do not provide enough details nor do they include environmental indicators. However, a qualitative analysis of investment areas did provide insights that allowed for a more indirect, yet still valuable, assessment of their impact on GHG emissions reduction.

The performed analysis led to the conclusion that although the investments reported under both streams of ETS funds did reduce emissions in absolute terms, it can be inferred that they could have been utilized more efficiently if the investments had been selected differently. Moreover, it is crucial to keep in mind that the two mechanisms are interrelated (whereas giving up derogation under Article 10c affects the volume of auction revenues). These interdependencies and the broader contexts of climate policy, market mechanisms, and societal determinants make it difficult to isolate the effects of the ETS mechanisms alone. A counterfactual analysis along with a synthetic control group could yield more detailed results but the performed analysis alone gives a substantial indication that the measures undertaken in Poland did not significantly affect the pace of transition. Moreover, they may have led to carbon lock-in – demonstrated by not only maintaining but even expanding coal's installed capacity in the analysed period.

The reliability of the results is strengthened by the fact that the results of this case study are conclusive with the results of other research on the matter. Finally, the results of the secondary data research are mostly consistent with the results of the expert survey conducted as a part of this study.

4. Conclusions and future work

4.1 Conclusions on the methodology

The energy transition is a highly dynamic, multi-level, and multi-objective process. Even though it is one of the cornerstones of EU climate policy, it must be recognized that the EU ETS operates in a complex legal environment that exerts transformational pressure in all areas of the EU economy (e.g., RED II, ESR, EED, Taxonomy, CSRD, etc.), as well as the national legal environment in Poland. Moreover, the energy transition is also impacted by market forces (e.g., decreasing costs of RES), as well as by social and political factors. Hence, isolating the effects of EU ETS mechanisms is not a straightforward task.

The case study was based on an analysis of available data: the regulatory environment surrounding the two mechanisms, official documents exchanged between the European Commission and Poland, as well as government documents and independent analyses carried out to date. Delphic theses were posed and were initially supposed to constitute part of the research but were later abandoned due to a change in the direction of the research.

Given the responses received, the questionnaire could have contained more detailed questions and could have contained multiple-choice questions to facilitate and speed up the process. This would have led to more standardized results and would have allowed for more responses. However, it would have also introduced a bias related to the answers provided.

Nonetheless, findings from the desk research performed to provide a sufficiently clear answer to the questions posed and indicate the areas of the mechanisms that negatively affected their effectiveness. It is possible to take a more detailed approach to the study by conducting a broad counterfactual analysis of this intervention or creating a control group. A comparable analysis (focused specifically on lignite generation) was undertaken by Müller and Teixidó (2021). The results of their study indicate that derogation under Article 10c did not have a diversifying effect on the mix and that not using the derogation and including the allowances in the Polish pool would not have had this effect either. These conclusions are in line with our findings, which indicate inadequate government action and inefficient spending under both mechanisms.

As already indicated in section 3.2, in the context of achieving climate neutrality, Poland is a particular Member State with singular circumstances. Apart from Germany, which is an economy several times larger than Poland, it has the most emissions under the EU ETS and at the same time receives the second largest number of allocations (in its different forms). It also has the second emissions intensity of the electricity generation sector and an unambitious climate policy (compared to other Member States). The ineffective use of funds within these two streams has a degree of national context, and the lessons from Poland are not necessarily applicable to all other EU countries. However, the case study does provide a general conclusion that greater discretion in the spending of funds can lead to different outcomes depending on the political line of the

country, overall economic development, social and historical circumstances, market and regulatory preparedness, and administrative conditions (such as the ability to plan and uptake such funds).

In conclusion, the chosen methodology allowed us to examine these streams with acceptable rigor and provided valid and reliable answers to the questions. The performed analysis, conclusions, and recommendations given can serve as valuable input for the design of future public policies supporting related investments.

4.2 Conclusions and recommendations for transformative climate policies

This case study constitutes an analysis of two streams of funds for investment in low-carbon transformation, including investments in energy infrastructure, under the EU ETS. Findings demonstrate that the mechanisms themselves had several shortcomings that affected the possibility of optimal and efficient spending.

Auction revenues represent the first of the two mechanisms and, according to the provisions of the Directive, 50% (or equivalent) of these funds should be spent on energy transition activities. The broadly defined catalogue and non-earmarked revenues made it possible to report a wide range of activities that did not meet the additionality principle. Moreover, some of the activities reported by Poland raise doubts about compliance with the Directive.

The derogation mechanism which represents the other stream of funds analysed was not future-proof – despite assurances that competition would not be affected, consolidation in the generation market occurred. Its intended purpose was also to diversify the energy mix – but an analysis of reported investments, most of which were related to the modernization of conventional generating capacity, demonstrates that this objective was defied already at the stage of approval.

Neither of the two mechanisms gave a substantial support for the development of low-carbon energy sources. This is evidenced by the low amount of funds allocated to this purpose or the fact that the funds disbursed from auction revenues were used for investments in existing support systems (without the additionality effect). The funds also gave minimal support to the energy transition, e.g., through infrastructural upgrades and expansions.

It should also be noted that for the years 2021 – 2030, the European Commission has introduced new mechanisms supporting the energy transition under the EU ETS: namely, the Modernization Fund and the Innovation Fund. The funds are controlled centrally by the EU, can be used for the objectives specified in the Directive, and are more closely monitored (in the case of the Modernization Fund, for example, there exists a distinction between priority and non-priority investments and there is an Investment Committee that assesses the legitimacy of non-priority investments). In addition, the European Commission, together with the European Investment Bank, provides countries with technical support throughout the process. Therefore, the

mechanism addresses some of the conclusions we arrived at in our analysis, such as insufficient control over how the funds are spent, or insufficient specification of investment areas.

In addition to the new mechanisms that have been introduced, the two mechanisms that constitute the subject of our analysis have been reformed. Countries that were previously eligible for derogation under Article 10c can still use it but now have the additional possibility of not only transferring eligible allowances to the auction pool but also transferring them to their Modernization Fund. Out of the ten eligible Member States, only Bulgaria decided to use its derogation under the 10c pool in this mechanism, Hungary decided to use only part of this allowance under Article 10c and transfer the remaining part to the auction pool, whereas Romania decided to use only a small portion of its eligible allowances under Article 10c and transfer the rest to Modernisation Fund. Czechia, Lithuania, and Slovakia decided to transfer all their eligible allowances to the Modernisation Fund, while Croatia split its pool to MF and auctioning. Estonia, Latvia, and Poland decided to auction all these allowances (European Commission, n.d.b).

As for auction revenues, the latest revision of the EU ETS introduced a requirement to allocate 100% of these funds or their equivalent to climate change goals. While this is a significant improvement over the 50% under Phase 3, it still does not address the additionality and transparency, and eligibility problems associated with these activities. However, given the significantly higher revenue from these auctions (due to the high price of EUAs) and the fact that all the funds will be earmarked for this purpose, it may force countries (including Poland) to program new mechanisms.

Moreover, Poland has now for several years been planning to implement a special fund called the "Energy Transformation Fund," which would be financed by ETS allowances. However, the bill introducing the ETF remains on hold at the opinion stage of the legislative training (Government Legislation Centre, 2022).

In conclusion, given the findings of our case study and considering recent changes in the regulatory environment:

- Considering that derogation under Article 10c was utilized ineffectively by Poland, it was reasonable to abandon it for the fourth phase of the EU ETS. However, funds available under Article 10c were not allocated to the Modernization Fund and became part of Poland's auction pool. Considering the fact that revenues from the auction pool were also not effectively spent, appropriate changes regarding the use of these funds should be ensured.

- Given this, the disbursement of auction revenues should be reformed to make it more efficient. To this end, it is necessary to introduce the planned ETF which would be financed entirely by auction revenues and would be devoted to investments and programs supporting the energy transition. The designation of these funds would allow for greater

transparency and thus greater control over them. Moreover, adequate emphasis should be given to mobilizing private investment supporting energy transition objectives.

4.3 Future work

As already indicated, to assess the impact and effectiveness of these mechanisms more thoroughly, a more detailed counterfactual analysis of various synthetic scenarios can be performed. However, in the authors' opinion, the analysis conducted allows for sufficiently nuanced answers to the research questions posed.

Given the substantial changes made to the EU ETS support mechanisms, in the future the reformed support environment can be analysed: the Modernization Fund, the Innovation Fund, and disbursement of 100% of auction funds or their national equivalent for energy transition-supporting activities.

Recent years have brought both an increase in auction revenues from the EU ETS and several other money streams that will be earmarked for the energy transition and climate protection, such as the Just Transition Fund, NextGenerationEU, or the Social Climate Fund (the latter being financed by revenues from the new EU ETS for transport and buildings). The emergence of new financing mechanisms may make it more difficult to analyse them individually. Rather, they should be treated holistically, and they should complement each other. Moreover, substantial market changes are also taking place and are causing a gradual shift in emphasis regarding the areas of financing and their priority. Renewable energy is an example – it was not yet economically feasible during phase 3, but in the late 20s and early 30s of this century it may already be financed profitably with private capital only (or with low subsidy and regulatory incentives), and various private models of RES (e.g., cPPAs, energy communities) are developing in Europe. This means that countries may want to invest more in infrastructure that will enable the uptake of large amounts of privately financed RES sources. The appropriate proportions depend on the country, and its legal environment, and certainly need to be studied further.

The impact of the EU ETS on the level of investment in Poland through derogation under Article 10c and auction revenues will not be studied in further detail within the framework of this project. Within the 4i-Traction project we do, however, examine the transformative impact of the European Union's energy and climate policies, and as one of its cornerstones, the EU ETS remains in our focus.

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About the project

4i-TRACTION – innovation, investment, infrastructure, and sector integration: TRAnsformative policies for a ClimaTe-neutral European UnION

To achieve climate neutrality by 2050, EU policy will have to be reoriented – from incremental towards structural change. As expressed in the European Green Deal, the challenge is to initiate the necessary transformation to climate neutrality in the coming years, while enhancing competitiveness, productivity, employment.

To mobilise the creative, financial, and political resources, the EU also needs a governance framework that facilitates cross-sectoral policy integration and that allows citizens, public and private stakeholders to participate in the process and to own the results. The 4i-TRACTION project analyses how this can be done.

Project partners

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