

# Transmission Mechanisms of the European Union Climate Policy to the Polish Energy Policy

Rafał Matusik\*

**Purpose:** The aim of the article is to identify and describe the relationship between climate policy of the European Union and energy policy of Poland.

**Design/methodology/approach:** The main research problem is to understand the mechanisms of policy transmission from the European Union level to Poland and to evaluate these transmission mechanisms from the point of view of energy policy coherence. The article rests upon the results of qualitative research based mainly on official documents and the law.

**Findings:** The article is a synthetic presentation of the policy transmission mechanisms. It points out methodological problems in the fundamental policy assumptions.

**Research limitations/implications:** The study is limited by the potential bias of some lobbying sources, as well as the fact that energy policy development is a process. Programs are constantly being developed, which in turn means that some assumptions may be modified due to changing circumstances.

**Originality/value:** The originality and value of the article manifests itself in a context-free diagnosis of the goals, effects and methods of implementing the tasks adopted in the climate and energy policies of the European Union and Poland.

**Keywords:** energy policy, climate neutrality, coal energy, European Union law.

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## Mechanizmy transmisyjne polityki klimatycznej Unii Europejskiej do polityki energetycznej Polski

**Cel:** celem artykułu jest identyfikacja i opisanie relacji pomiędzy polityką klimatyczną Unii Europejskiej a polityką energetyczną Polski. Głównym problemem badawczym jest zrozumienie mechanizmów transmisji polityki energetycznej z poziomu Unii Europejskiej do Polski oraz ocena tych mechanizmów z punktu widzenia koherencji polityki energetycznej.

**Metodologia:** artykuł opiera się na wynikach pochodzących z badań jakościowych opartych przede wszystkim na dokumentach urzędowych i źródłach prawa.

**Wyniki:** artykuł stanowi syntetyczne przedstawienie mechanizmów transmisyjnych polityki. Wskazuje na metodologiczne problemy w jej fundamentalnych założeniach.

**Ograniczenia/implikacje badawcze:** badanie limitowane jest potencjalną stronniczością niektórych źródeł o charakterze lobbingsowym, jak również faktem, że rozwój polityki energetycznej jest procesem. Programy są ciągle rozwijane, co z kolei sprawia, że niektóre z założeń mogą ulec zmianie w wyniku zmiany okoliczności.

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**Oryginalność/wartość:** oryginalność i wartość artykułu przejawia się w bezkontekstowej diagnozie celów, efektów oraz metod realizacji zadań przyjętych w polityce klimatycznej i energetycznej Unii Europejskiej oraz Polski.

**Słowa kluczowe:** polityka energetyczna, neutralność klimatyczna, energetyka węglowa, prawo Unii Europejska.

**JEL:** F150, F180, F53, F550, F64, K19, K32, K33, P41, P47, P48

## 1. Introduction

European integration began with the European Coal and Steel Community. The way this concept grew into the European Union, along with the policy of decarbonization, may seem surprising. Nevertheless, climate objectives, which may be deemed a rather secondary issue, are becoming one of the most emphasized goals of European Union. While broadly understood environmental protection usually won a lot of public support, the social perception of the tool for this purpose, that is the European Union's Climate Policy (hereinafter: EUCP), varies. Leaving aside the goal of stopping global warming, its validity analysis or even value judgments, this paper focuses on the EUCP's transmission mechanisms to member states. Avoiding the issue of global warming, the need arose to write an article that would assess the coherence of the EUCP in a neutral and scientific manner without bias.

While the EUCP is interconnected with many positive economic trends (Rosiek, 2016), social movements (Jędrasik & Józefiak, 2022; Swadzyniak, 2022) and business models (Pyka & Pyka, 2021), it is also marked by problems and challenges (Prandecki, 2022). The issue of political perception of the EUCP is particularly noteworthy (Mizgajski & Mizgajski, 2022). It is related with different starting positions and exposures (Stankevičienė & Borisova, 2022) of individual member states, with the position of Poland being excessively problematic compared to other member states (Jeżowski, 2016). This is highlighted in many scientific studies. In one of them, Just Transition scenarios were developed on the basis of socio-economic and energy mix parameters. As part of its methodology, the study divided the member states into clusters. After substituting the parameters, it turned out that Poland was the only

one that deserved its own, outlying cluster (Voicu-Dorobanțu et al., 2021). Other studies show atypical economic conditions in Poland which cause poor financial performance of wind farms (Wyrobek et al., 2021), only moderate profitability of photovoltaics (Gnatowska & Moryń-Kucharczyk, 2021), not to mention the unprofitability of other sources like sugar beet molasses (Grabarczyk et al., 2019). Interestingly, a recurring element of most of those publications is the attention drawn to systemic differences, not similarities, between Poland and Western Europe.

The research problem, as understood in the paper, concerns the transition mechanisms of the EUCP to Poland's energy policy and innovation inducement mechanisms. The study seeks to answer two questions:

1. How is the EUCP transmitted to the energy policies of member states?
2. Do the transmission mechanisms affect the coherence of the EUCP?

## 2. Materials and Methods

The following methodology has been adopted. The answer to the first question will be based on the research of legal texts such as: international agreements (*Kyoto Protocol...*, 1998; Paris Agreement, 2015), working documents at the decision-making level of the EU, for example European Commission communications (e.g. European Commission, 2020b) or European Council meeting conclusions (e.g. European Council, 2020), European Union commissioned studies, e.g. *Impact of the Use of the Biomethane and Hydrogen Potential on Trans-European Infrastructure* (Fischer et al., 2020), European Union public consultation documents, e.g. Q&A on the directives (European Commission, 2021b). It is important to note the con-

ceptual separation of research data from the above “influencing type” to “being influenced type” that arose in response to the “influencing type”. The latter are: the Polish energy policy (*Polityka energetyczna państwa...*, 2021) or hydrogen strategy (*Polska strategia wodorowa...*, 2021), consultations of the Polish government (Ministerstwo Aktywów Państwowych, 2021), analyses and reports of consultants such as McKinsey & Company (Hauke et al., 2020) or the Hydrogen Council (Hydrogen Council, 2017). As the sources come from different periods and refer to different time horizons (Miciuła & Miciuła, 2018), it became necessary to present them in a temporal form. Therefore, the presentation of the EUCP will be divided into decades of: 2010, 2020, 2030, 2040. Each one will be divided into: targets and outcomes (actual and later projected). A review of the previous decades also allows for verifying the effectiveness of the changes made so far.

During the analysis, a combination of the dogmatic (logical-linguistic) method and the comparative method was used (Van Kędzierski, 2018). The dogmatic method (in the broadest theoretical approach – law, jurisprudence and widely understood literature on the subject) was used to identify the mechanics of transmission mechanisms. This resulted in the identification of legal regimes. Meanwhile, the comparative method was used by comparing the EUCP and the Polish energy policy. This resulted in an assessment of the range of transmission mechanisms.

While the first question can be answered based on hard data sources, the answer to the second question will not be so straightforward. It requires a certain amount of forecasting and speculation, as it relates to future developments. While certain premises allow us to draw conclusions to the likelihood, an unambiguous answer can only be obtained after the end of the program (in 2050).

Therefore, for the purposes of this paper, the methodological division was adopted where the answer to the first question will be given in the “results” as a data-driven element, while the answer to the second question will be attempted in the “discussion” as an assessment element.

The conducted study has the following limitations. Firstly, certain data sources

from institutions such as the Hydrogen Council (Hydrogen Council, 2017), while considered to be credible, may be subject to potential bias (in this case, towards hydrogen). Secondly, due to the dynamic changes related to the ambitiousness of the EUCP, the content of some documents may still be subject to changes, for example economic sanctions related to the war in Ukraine are already changing many previous assumptions. Thirdly, a significant part of the research data is either goals or forecasts. Therefore, prospectively, a revision of tools and policies is assumed.

### 3. Results

In line with the adopted methodology, an attempt will be made to answer the first research question: how is the EUCP transmitted to the energy policies of member states? The EUCP’s aim is to reach the goal of climate neutrality by 2050, which means an economy with net-zero greenhouse gas emissions – as a major component of the European Green Deal and the fulfillment of the EU’s commitment to the Paris Agreement (European Commission, 2016). The EUCP outlines eight possible strategies for that goal based on seven building blocks: energy efficiency, renewable energy sources, clean mobility, the European Union’s competitive industry in a circular economy, infrastructure and interconnections, bioeconomy and carbon sinks, Carbon Capture and Storage (CCS) (European Commission, 2018a, 2018b, 2019b, 2019c). In tandem with the climatically oriented EUCP, the economically oriented European Green Deal focuses on three main objectives: affordable and secure energy supply, development of renewable energy sources combined with energy efficiency, creation of the European Union energy market. These goals are to be achieved by integrating energy systems, promoting innovative technologies, increasing efficiency, empowering consumers, counteracting energy poverty, promoting European Union energy standards and technologies abroad, and using the full potential of European Union offshore wind energy (European Commission, 2019a). As indicated, the EUCP is a broader concept and includes many other scopes beyond energy policy. However, those that are not

directly covered by the transmission mechanism to the energy policy of a member state have been omitted.

The results will be presented in decades. Figures 1–4 present individual energy sources every decade and Figures 5–6 show them throughout the period with two provisos. The first two decades are historical data, the rest are projections. They are shown in relative terms, as a percentage in the overall energy mix. This can be observed in the example of onshore wind farms, where after 2020 there is a fairly slow increase in real values, but in relative

values it appears to successively fall. This is a result of the fact that Poland is now changing the concept by assigning priority to offshore wind farms, and the overall increase in the country’s energy production will be greater than the increase in onshore wind farms. Hence the decline in the percentage share in the energy mix. It should also be noted that the fundamental goal of Poland’s energy policy is to move away from coal as the dominant source of energy and heat. Therefore, the choice of sources and references below is dominated by carbon elements.

Until 2010														
<p>In the preceding period, from 1988 to 2010, an analysis was carried out in a publication (Karaczun, 2012) indicating the already strong influence of the European Union on climate issues. The model of the time was based on large coal-fired generation sources and centralized energy networks and dates back to the turn of the 19th and 20th centuries. In the author’s opinion, “the main problem of Polish climate policy is the lack of political will to effectively address energy issues and their effects on climate change” (Karaczun, 2012).</p> <p><b>TARGET</b></p> <p>The first climate agreements are: the United Nations Framework Convention On Climate Change (1992) and Kyoto Protocol to the United Nations Framework Convention on Climate Change (1998).</p> <p>At the European Union level, in 2009, the so-called 3 x 20% regulatory package was adopted which set three goals until 2020, with member states participating according to their possibilities. Poland committed to:</p> <ol style="list-style-type: none"> <li>1. an increase in energy efficiency by 13.6 Mtoe in the period 2010–2020 compared to 2007;</li> <li>2. increasing the share of RES in gross final energy consumption to 15% by 2020;</li> <li>3. contribution to the EU-wide reduction of greenhouse gas emissions by 20% compared to 1990 (Polityka energetyczna państwa..., 2021; European Commission, 2020a).</li> </ol> <p><b>OUTCOME (historical data)</b></p> <p><i>Figure 1. Polish Energy Mix – Percentage in 2010</i></p> <table border="1"> <caption>Data for Figure 1: Polish Energy Mix – Percentage in 2010</caption> <thead> <tr> <th>Energy Source</th> <th>Percentage</th> </tr> </thead> <tbody> <tr> <td>coal energy</td> <td>87%</td> </tr> <tr> <td>biomass</td> <td>4%</td> </tr> <tr> <td>gaseous fuels</td> <td>3%</td> </tr> <tr> <td>other</td> <td>3%</td> </tr> <tr> <td>hydropower</td> <td>2%</td> </tr> <tr> <td>onshore wind farms</td> <td>1%</td> </tr> </tbody> </table> <p><i>Note.</i> This figure is based on Polityka energetyczna państwa... (2021).</p>	Energy Source	Percentage	coal energy	87%	biomass	4%	gaseous fuels	3%	other	3%	hydropower	2%	onshore wind farms	1%
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## 2010–2020

### TARGET

In 2011, the European Commission presented three roadmaps with a 2050 goal (European Commission, 2011a, 2011b, 2011c).

In 2015, during COP21, the Paris Agreement was adopted. It aims to stop the increase in global mean temperature below 2°C from pre-industrial levels, with a preferred target of no more than 1.5°C (Paris Agreement, 2015).

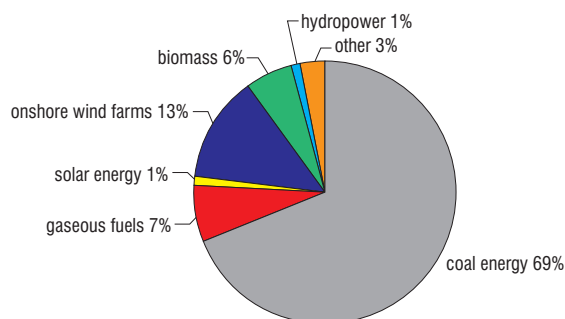
At the EU level, in 2014 and 2020, the existing targets (from the 3 x 20% package) were revised, adopting four goals for the entire EU until 2030:

1. increase in energy efficiency by 32.5%;
2. at least 32% share of RES in gross final energy consumption;
3. reduction of greenhouse gas emissions by at least 55% compared to 1990;
4. completing the EU internal energy market (European Commission, 2021a; *Polityka energetyczna państwa...*, 2021).

In 2019, the European Commission published a communication on the European Green Deal, i.e. an ambitious strategy of EU climate neutrality in 2050 – an economy with net-zero greenhouse gas emissions (European Commission, 2019a). One of its elements will be a revision of the existing legislation (Emissions Trading System – ETS and the Effort Sharing Regulation – ESR) – in terms of other greenhouse gases, like methane (European Commission, 2020c).

### OUTCOME (historical data)

Figure 2. Polish Energy Mix – Percentage in 2020



Note. This figure is based on *Polityka energetyczna państwa...* (2021).

## 2020–2030

### TARGET

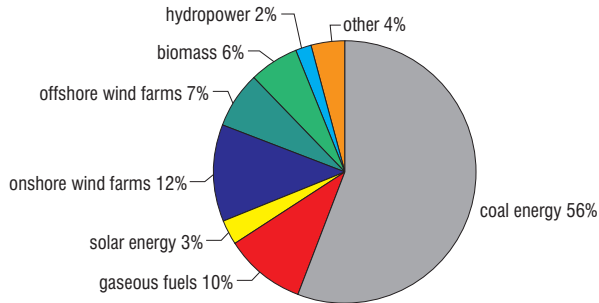
Selected targets for 2030 in Poland (*Polityka energetyczna państwa...*, 2021):

- the departure of coal heating in households in cities;
- the share of coal in electricity generation will not exceed 56%;
- the capacity of wind energy will amount to approx. 5.9 GW and photovoltaics to approx. 5–7 GW.

The infrastructure of natural gas, crude oil and liquid fuels will be expanded, with natural gas being a bridge fuel in the energy transformation.

### OUTCOME (projection data)

Figure 3. Polish Energy Mix – Percentage in 2030



Note. This figure is based on Polityka energetyczna państwa... (2021).

### 2030–2040

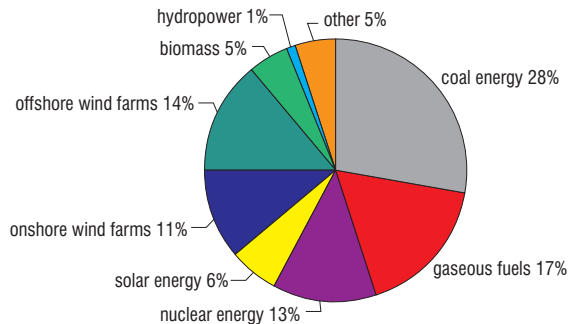
#### TARGET

Selected targets for 2040 in Poland (*Polityka energetyczna państwa...*, 2021):

- the departure of coal heating in households in rural areas that will be replaced by zero- or low-carbon individual sources;
- the capacity of wind energy will amount to approx. 11 GW and photovoltaics to approx. 10–16 GW.

#### OUTCOME (projection data)

Figure 4. Polish Energy Mix – Percentage in 2040



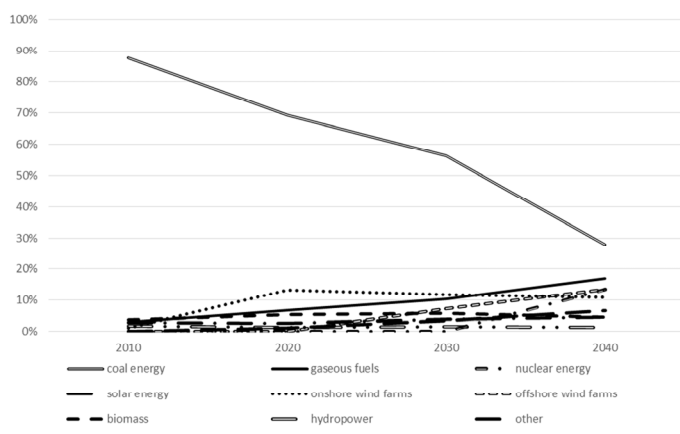
Note. This figure is based on Polityka energetyczna państwa... (2021).

In entire analysis period (Figure 5), the predominant amount of energy is obtained from coal. For clarity, the figure has also been prepared excluding this source (Figure 6).

While the functional structure of the European Union is outside the scope of this study, some observations need to be made. Legally, the European Union is not an independent state, nor is it a federa-

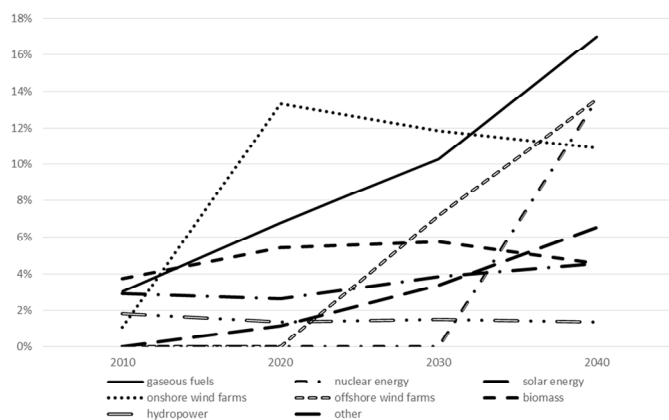
tion of nations. Therefore, when describing climate policy of the Union in general, we legally understand it as a climate policy of individual member states that have agreed to adopt an identical policy in each of the countries and that have delegated their operational planning, implementation and enforcement to international bodies. As the European Union is a voluntary organization, its competences derive either from

Figure 5. Polish Energy Mix – Timeline



Note. This figure is based on Polityka energetyczna państwa... (2021).

Figure 6. Polish Energy Mix - Timeline, Excluding Coal



Note. This figure is based on Polityka energetyczna państwa... (2021).

powers previously delegated by a member state (and commitments to honor them) or from ad hoc approvals. The European Union can therefore exercise competences and enforce its own decisions on member states only to the extent that it has previously been granted the right to do so by those member states. Thus, the strength and effectiveness of the EUCP depends more on the political determination of the member states than on the European Union itself. Even though the European Union is the face of the EUCP, in reality the EUCP is a mix of several legal regimes which, for the sake of simplicity, can be divided into three levels.

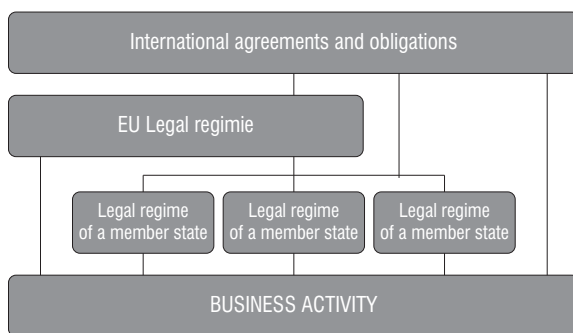
The highest tier are international agreements and obligations. Although they also apply to countries outside the EU, they give the fundamental direction to the EUCP. The first climate agreements are: the United Nations Framework Convention on Climate Change (1992) and Kyoto Protocol to the United Nations Framework Convention on Climate Change (1998). In 2015, during COP21, the Paris Agreement (2015) was adopted. It aims to stop the increase in global mean temperature below 2°C from pre-industrial levels, with a preferred target of no more than 1.5°C (Paris Agreement, 2015). International agreements of this type are voluntary. They contain general

obligations, often presented in a somewhat pompous way, without sufficiently specific obligations. Even when they contain enforcement mechanisms, they take the form of negotiation or mitigation mechanisms. A country dissatisfied with a given agreement may freely terminate it (Pavone, 2018), as was the case with Canada, which withdrew from the Kyoto Protocol in 2011 (United Nations, 2014) or the United States, which was absent from the Paris Agreement for several months (Chestnoy & Gershinkova, 2017).

The middle tier is the European Union legal regime. In 2009, the so-called 3 x 20% regulatory package was adopted (European Commission, 2020a), which was revised in 2014 and 2020. Also in 2019, the European Commission published a communication on the European Green Deal, i.e. an ambitious strategy of European Union climate neutrality in 2050 – an economy with net-zero greenhouse gas emissions (European Commission, 2019a). Unlike the higher tier, this legal regime contain specific obligations. Its provisions are technical in essence, and there are also mechanisms for its enforcement. It is rather strategic in nature and it may be introduced either through regulations directly binding in the member states or through European Union directives (which set the direction and purpose of the changes, leaving the detailed implementation to the member states).

The lowest tier is the legal regime of the individual member state. It contains strategies and plans. In the case of Poland, it is mainly Poland’s Energy Policy until 2040 (*Polityka energetyczna państwa...*, 2021), among others. It is also supported by the law resulting from those strategies or the implementation of European Union directives. Generally, at this level, there is no problem with the enforcement of the EUCP since as a national law, it is on an equal footing with tax law, highway code, civil law, etc. It is rather operational by nature and specific solutions may differ from one member state to another. This is a deliberate feature of the system that allows for selecting best solutions for individual member states. While undoubtedly such a tier system has many advantages, it also unintentionally provokes internal contradictions of the EUCP. Member states very often have conflicting economic interests and competitive advantages that they wish to maintain or undermine.

Figure 7. Legal Regimes of the European Union’s Climate Policy



#### 4. Discussion

In line with the adopted methodology, an attempt will be made to answer the second research question: do the transmission mechanisms affect the coherence of the EUCP?

Starting the discussion, one should note the surprising consistency of the actions of the European Union. Although slogans such as European Green Deal, Just Transformation, Climate Neutrality in 2050 seem relatively new, in fact the EUCP dates back more than a decade ago when the European Union published three roadmaps (European Commission, 2011a, 2011b, 2011c) with a date target of 2050, already set.

While the EUCP goals might seem to be based on social sentiment, it is in fact not a grassroots initiative but legally imposed obligations which must be enforced on and limit free market mechanisms. When creating such a legal regime, it must be remembered that the vague idea of “climate neutrality” depends heavily on the legal understanding of concepts such as “green/gray/blue” energy (Howarth & Jacobson, 2021), on how to define “neutrality” or count emissions. This remark is especially apt in the case of the European Union legal system, which is riddled with exceptions, exclusions and opt-outs. One such example is also the Polish negotiating position, which led to a rather peculiar legal loophole. In the early pledges, the documents contain a stipulation that one member state, at this stage, cannot commit to implement this objective as far as it is concerned (European Council, 2019, point 1). In following declarations, it seems that Poland acceded to the pledges, but with a notable distinc-



tion – that the entire European Union, not individual member states, would achieve climate neutrality (European Council, 2020, point 100). Poland, in fact, did not make a self-declaration as such. One can speculate that since the EUCP will contain mechanisms that can take the form of “positive CO<sub>2</sub> emissions” (one postulated example are forests), a scenario is plausible where countries with “positive CO<sub>2</sub> emissions” might compensate for negative Polish CO<sub>2</sub> emissions for overall neutrality. Considering that, the European Union Emissions Trading System (European Parliament & Council, 2003) is nothing new (Czaplicki, 2017) while its assessment ambiguous (Borys, 2017). An example of this approach can be found in the recent presentation of the Volkswagen group where the spokesman announced a spectacular reduction of CO<sub>2</sub> emissions in new diesel engines varying between 70 and 95 percent thanks to the use of paraffinic fuels (Reeves, 2021). Nevertheless, one of automotive journalists points out that such a large reduction of CO<sub>2</sub> emissions is not the result of a new, revolutionary technology, but the accounting subtraction of CO<sub>2</sub> absorbed previously by the plant (which has been converted into paraffinic fuels) from the CO<sub>2</sub> emissions produced by the engine (Balkan, 2021). Overall, this causes differentiation in the effect achieved by the EUCP transmission mechanisms across member states.

While praise cannot be denied as to the consistency with which the European Union introduces the EUCP, doubts can be expressed on its coherence. The scientific approach of the EUCP cannot be denied but the problem lies with its assumptions, not the execution. Undoubtedly, such a long-term strategy must be based on certain assumptions. Nevertheless, the whole EUCP can be simplified as a plan providing for tax incentives (Ptak, 2016), quotas and subsidies (Opala, 2014) that will drive the private sector to develop, by 2030–2035, a series of new technologies that, by 2050, will be commercialized and made lucrative, with lower technology costs. Thus, the energy transformation will occur through free market mechanisms (Kudelko, 2022). Until then, the energy mix of the member states will be based on transition fuels. Until recently, natural gas was supposed to be the main transition fuel. However, these are fairly bold

assumptions that compound one another (an assumption is based on an assumption that is also based on another assumption). In addition, the European Union policy combines a social goal of the EUCP with an economic goal of the European Green Deal (Miszczuk & Miszczuk, 2022), proverbially trying to kill two birds with one stone. This raises the question of whether this approach confuses the end goal with the means for that goal or whether these two concepts are even compatible, since social programs tend to burden, not help the economy. The goals of the social program are different from those of the economic program, and they lead to divergent results. Another aspect is the often contradictory economic and social goals of the member states and pressure groups (Tarnawska, 2012). The effectiveness of heavy subsidies, taxes, and quotas to boost free market also remains to be explored and proven, while scientific dispute between supporters of interventionism and those of the free market is age-old and often paradigmatic (Poliński, 2021). For this study, it is sufficient to point out that the EUCP, which is advertised as a flywheel for European Union competitiveness on the global market, may well turn out to be an anchor holding it back. There are also reservations that the goal is known, but the path to it remains elusive. There is no consensus on fundamental issues such as the target energy mix and whether there is room in it for nuclear power and natural gas. The outbreak of the war in Ukraine and economic sanctions against Russia are shifting the fundamental assumptions of the EUCP. At the moment, it is difficult to forecast the course of the war, not to mention its consequences. The only thing that can be said with certainty is that the European Union has no intention of abandoning its goal of climate neutrality, even at the cost of abandoning the underlying assumptions of the policy. This situation does not, however, encourage the private sector to invest more in innovation (Markowska, 2021). This seems to be a major drawback of the EUCP. It has a very clear-cut goal, but the means to achieve it remain vague. Therefore, prospectively, a revision of tools and policies is assumed, which may take place in both directions – acceleration of transformation or unintended slowdown due to sluggish R&D, deficiencies in infrastructure or components shortages. It is therefore nec-

essary to express a rather skeptical opinion about the internal coherence of the EUCP. Undoubtedly, the potential can be enormous, but there are too many uncertainties, too many internal contradictions to give a positive answer. From the point of view of the European Union, it is important to achieve climate neutrality, while the individual stages (the so-called milestones) are of secondary importance. From the point of view of enterprises, only precisely defined milestones allow the economic calculation to assess the profitability of investing in a given innovation (Sokur, 2022).

## 5. Conclusion

The EUCP is a fairly sensible legal model with solid foundations. Its legal implementation should not bring any significant problems. Meanwhile, Poland is a special and exceptional case in the European Union. Its energy transformation requires the creation of a completely new energy system in place of coal-based energy.

From a purely methodological point of view, on the other hand, the EUCP contains many shortcomings and logical contradictions. It is a goal-oriented model, leaving the individual stages to the free market. At the same time, the achievement of these stages is legally enforced by extensive state interventionism. Moreover, the EUCP tries to be both a social program and an economic program, which seems to be questionable in terms of goals and results. In addition, the EUCP tries to reconcile the conflicting goals of the member states. Even the reality of 2050 goal seems to be more of a declaration of intent than a point on the schedule, or even a clearly defined goal. Nevertheless, it is an important promise embedded in the law with great political significance. Meanwhile, for a business to invest in R&D projects, this ambiguity reduces the attractiveness of incentives.

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