



Climate policy contradictions in light of the policy paradigms - the case of the Visegrád Countries

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ABSTRACT

Observing reactions and responses to climate change worldwide, we think climate policies cannot exert their impact sufficiently. Consequently, studying the climate policy paradigms (CPPs) shaped by the dominant environmental ideas and climate objectives is essential. This paper analyses the CPPs in the Visegrad Countries (Czech Republic, Hungary, Poland, Slovakia) (V4). We investigated the strategic background and implementation related to climate policies by studying the CPPs' different levels. Our research comprises two components:

1. Analysis of national climate strategies and plans (n = 9) to reveal documented policy goals.
2. In-depth interviews (n = 58) to explore the implementation of policy goals and strategic principles. According to our results, the V4's climate strategy documents (CSDs) align with global climate policy efforts and follow EU standards. However, we have found contradictions between the policy goals and their implementation. Our findings show that CSDs are only partial indicators of the CPPs, and all four countries have gaps between ideas and the realization of climate actions. One of the main reasons is that V4 prioritizes national economic interest and energy security. Consequently, the climate policy paradigm takes a back seat. The other inhibiting factors are the lack of social will and the shortcomings of climate governance.

1. Introduction

Managing climate change's environmental and social effects is one of humanity's greatest challenges (Bulkeley and Newell, 2015; Giddens, 2009; Tollefson, 2022). In conjunction with complex climatic risks, national governments confront the consequences of natural hazards, ecosystem degradation, and social-economic transition difficulties (IPCC, 2022; Simpson et al., 2021). Many countries recognized and tried to reduce the dangers, but the European Union (EU) seemed to be the most innovative group at the forefront of environmental protection and climate governance (Cifuentes-Faura, 2022; Kern, 2019; Oberthür and Roche Kelly, 2008; Selin and VanDeveer, 2015). Several planning documents and laws point to the leading role of the EU in global climate policy. For example, the European Green Deal (EGD, 2019) and the Fit for 55 package (2021) are the most complex policy drivers regarding climate neutrality (Ringel et al., 2021; Siddi, 2020).

The EU's climate goals showed progress toward a substantial shift in

climate policy; nevertheless, doubts and concerns arose in adaptation and mitigation (Burns et al., 2020; Fujiwara et al., 2019; Salvia et al., 2021; Skovgaard, 2014). In recent years, COVID-19 had dissonant impacts on climate-conscious progression (Bloomfield and Steward, 2020; Elkerbout et al., 2020; Dupont et al., 2020). Meanwhile, another problem emerged for Europeans: the rise of energy prices, which became a shock after the Russian invasion of Ukraine (von Homeyer et al., 2022). It becomes clear that the EU's climate efforts are hampered by a series of crises (Rietig, 2021) which highlighted the EU's energy dependence and unpreparedness to transition to low-carbon societies (Carfora et al., 2022; Mišák, 2022; Osicka and Černoch, 2022; TIME, 2022). In addition, climate protection measures have reached different levels, and responses to climate change were heterogeneous among member states (Jordan et al., 2010; Fleig et al., 2017). Climate policies and their realization depend on financial resources, institutional capacity, and specific national circumstances, and these differences ultimately led to policy debates (Biedenkopf, 2021; Ringel and Knodt, 2018; Schmidt and

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Fleig, 2018; Skjærseth, 2016; Tosun and Peters, 2018). Some authors described that the enlargement of the EU in 2004 has introduced a new and increasingly problematic dimension for climate policy because of the new members from formerly socialist Central and Eastern Europe (Braun, 2014; Marcinkiewicz and Tosun, 2015). The western and northern states can be characterized by climate progressivism, while the eastern states are defined by climate skepticism (Bocquillon and Maltby, 2017; Skjærseth, 2021).

In the late 2010s, distinct contrast emerged between the Visegrad Countries (Visegrad Group, Visegrad Four – V4) and countries like Sweden, France, Portugal, and Netherlands (CAN Europe, 2018). The V4 was founded in 1991 (with the revival of historical cooperation from the 14th century) and is one of the EU's most influential political and cultural-economic alliances. Czechia, Hungary, Poland, and Slovakia became a well-defined interest coalition, which confronted the main EU climate goals in several cases led by Poland (Haug et al., 2010; Sauer et al., 2013; Wurzel et al., 2018). V4 sets their climate ambitions lower, and ad hoc national concerns shape their policies (Fischer and Geden, 2015; Rayner and Jordan, 2016; Jancarikova, 2020; Surwillo and Popovic, 2021). Moreover, Poland was called the "most outspoken opponent" of EU climate policies (Ancygier, 2013; Skjærseth, 2014, 2018; Jankowska, 2017). According to a report from the European Environmental Bureau (2019), the V4 has been slower to adopt renewable energy and decarbonization targets than other EU countries. The report notes that V4 has generally failed to adopt ambitious targets for renewables while maintaining strong support for traditional energy sources such as coal and nuclear power. The V4 has been criticized for its lack of progress in reducing greenhouse gas emissions. Some analyses have pointed to a lack of effective climate policy coordination and implementation mechanisms, which can lead to a gap between policy goals and on-the-ground results (EEA, 2019; Kochanek, 2021).

The rising energy crisis in 2022 and the natural gas dependence on Russia have brought various political responses, raising further concerns regarding the V4 (IMF, 2022; Kuzemko et al., 2022; Kryszk et al., 2023). According to some recent studies, there were encouraging signs in V4's climate policy in 2022, but "there are numerous obstacles to the green transition" (Riepl and Zavorská, pg. 5, 2023). Therefore, we believe an in-depth analysis of V4's climate policies is an important and current issue.

2. Climate policy paradigm in focus

We put the term "climate policy paradigm" (CPP) in the focus of our research. The fully comprehensive discussion of the CPP concept is not the task of this article. However, for the presented research, we applied specific frameworks of paradigm described by others. Our theoretical considerations are based on three principal starting points.

1. We find Vij and his colleagues' (Vij et al., pg. 77, 2018) wording to be very appropriate: that CPPs "refer to a comprehensive set of prevailing and institutionalized ideas and strategies," and we presume that climate strategy documents (CSDs) are one of the fundamental policy instruments of CPPs. Under this viewpoint, the strategies can be considered climate policy tools, and the documents can be comprehended as written manifestations of the existing CPPs of each country.

2. Hermwille's approach (Hermwille, 2016) to the different spirits of the paradigms also inspired the research design. This approach historically presents three stages and represents certain climate policy eras and milestones. The "first CPP" viewed climate change as "a clear-cut environmental problem". This period of the United Nations Framework Convention on Climate Change culminated in the Kyoto Protocol. The "second CPP" interpreted the climate problem as a "development issue" and prioritized emission reduction. In this period, policy planning misunderstood the goals and focused on the consequences of climate damage rather than the causes (Moomaw and Papa, 2012). However, the "low carbon competitive economy" (EC, 2010) and "green economy" as post-Brundtland political narratives (parallel with changing social

attitudes) became the guidelines of many environmentally conscious activities. The third CPP views climate change as a "broad transformation challenge" (O'Brien and Selboe, 2015). Accordingly, climate policy envisages more comprehensive governance and "a new perspective that takes the entire Earth system as an object of political efforts" (Heinrichs and Biermann, pg. 134, 2016). Concerning the third CPP, the most emblematic events were the Paris Summit in 2015 and the United Nations Climate Change Conferences. The international efforts created the "Green Recovery" (OECD, 2022) and the EGD, but many questions arose regarding their feasibility (Dupont and Torney, 2021; Shyrokykh, 2021).

3. We agree with the assumption that paradigms consist of several layers. Regarding this, we follow Hall's (1993) conceptualization, which Kern and his colleagues (Kern et al., pg. 515, 2014) further expanded: "Thus a policy paradigm consists of four interrelated levels: 1) ideas about the subject and how it should be governed (interpretive framework); 2) policy goals; 3) policy instruments; and 4) governance institutions." In our work, we differ somewhat from Kern's framework. We compare the CSDs (as the second level of paradigms) with the overall policy implementations related to climate change. This comparison partly covers but goes beyond Kern's third and fourth paradigm levels (instruments and institutions). So we compared the written policy objectives in CSDs with the policy fulfillment in reality.

Based on the theoretical starting points outlined above, the paper scrutinizes V4's climate protection efforts from the perspective of climate policy paradigms. We assume that V4's CSDs have taken an evolutionary path. But on the other hand - keeping in mind the different levels of the paradigm - we presuppose that the documents show only the paradigms' unilateral components (ideas and goals). Therefore we would like to verify that climate strategies, as administrative documents are incomplete indicators of the reigning CPP because there are contradictions between the written documents and the climate measures. So the central questions of the article are: To what extent do the climate strategies represent the country's climate policy paradigm? Do the climate policy implementations correspond to the climate strategies?

3. Materials and methods

The methodology consists of two main parts: 1. Examination of the V4s' climate strategies to determine which CPP criteria the documents meet. 2. processing in-depth interviews with experts to reveal how the strategies implementation is going. The first direction reveals the policy goals, and the second one tries to explore the implementation of the CPPs.

3.1. Document analysis

We conducted a document analysis to gain insight into the V4's CSDs, in terms of policy goals (the second level of CPP in Kern's sense). First, we reviewed the policy objectives of the climate strategies published so far. The documents were grouped according to their field of application: adaptation, mitigation, or complex (both adaptation and mitigation aims appear in one document). Secondly, we scrutinized the content of sections and subsections of the documents by country and type according to several criteria. These were the following: (1) what are their primary aims, and what is the set timeframe of climate protection goals (2) which are the key areas and sectors of proposed actions (3) what are the frameworks and possibilities of implementation and financing. Based on the updates of CSDs, we also tried to determine the paradigm periods and paradigm shifts which characterized each country.

Finally, we have reviewed the National Energy and Climate Plans (NECPs) for 2021–2030. We investigated the chapters of the plans, their objectives, the planned measures, the financing resources, and their commitments to climate change. Table 1.

Table 1
List of documents used in the analysis.

Country	Document
Czechia	Adaptation strategy to climate change in the Czech Republic, 2015
	Climate Protection Policy, 2017
Hungary	National Energy and Climate Plan of the Czech Republic 2019
	Second National Climate Change Strategy, 2017
Poland	National Energy and Climate Plan 2019
	Polish National Strategy for Adaptation to Climate Change, 2013
Slovakia	The National Energy and Climate Plan for 2021–2030
	Adaptation Strategy of the Slovak Republic, 2018
	Integrated National Energy and Climate Plan for 2021 to 2030, 2019

3.2. Interviews

The interviews were designed to explore the contradictions between climate policy documents and the realization. In addition to the quality of the strategies, we were curious about implementing climate policies, and we focused on exploring the inconsistency between principles and practices. We conducted 58 in-depth semi-structured interviews with competent persons in the four countries (13–16 in each country). The interviews were systematically conducted over four years, from 2019 to October 2022. In the first round (from April 2019 to Feb. 2020), we interviewed twelve professionals with decades of experience. Based on their recommendation (with the snowball method) and other references, we identified 46 further interviewees (from April 2021 to Nov. 2022). The interviews in 2022 reflected on the energy crisis also. We collected relevant opinions from three main groups: (1) climate and policy experts (28 people), (2) researchers and professionals (17 people), and (3) other prominent (13 people) from the fields of the energy issue, environmental management, and planning. The respondents were trustworthy, most of them with higher education. We followed the basic rules of qualitative interviewing and complied with GDPR. By preparing the interview protocol matrix, we systematized the opinions and comments expressed according to the questions (Rubin and Rubin, 2012; Castillo-Montoya, 2016). We had prepared a list of predetermined questions but offered the participants the chance to pursue essential issues.

Question group 1.: How to characterize V4's climate policy after the Kyoto protocol 1997? (Can you describe the climate paradigms in the last decades?).

How well-developed are the climate strategies and plans in V4? (How do you assess the climate strategies in your country?).

Question group 2.: To what extent were the climate policy goals achieved?

What are the gaps and contradictions between strategic ideas, policy goals, and climate actions? (What kind of inconsistencies can you see between ideas and implementation?)

Question group 3.: How to evaluate the relationship between climate and energy policies? What did the 2022 crisis result in climate policy?

We used interviews equipped with code numbers and abbreviations for the countries concerned. Interviewees in Czechia are marked with 'C', Hungary with 'H', Poland with 'P', and Slovakia with 'S'. There were cases when respondents said similar thing in all countries. In this case, we placed each abbreviation after the statements. The numeric code indicates how many people talked about the factor described.

4. Results

4.1. Characteristics of the national climate strategies and national energy and climate plans

The CSDs were created to plan how to achieve the EU-level goals set for 2020, 2030, and 2050 (short, medium, and long timeframes) at the national level. Creating CSDs was not an EU obligation, but the countries' commitment was recorded in mandatory decisions and directives (EC, 2009; EU, 2009; EU, 2012; EU, 2013). These CSDs consist of similar

elements, such as a country-specific assessment of the situation, specific measures, and brief information about implementation and financing.

Czechia and Hungary were the first of the V4 to prepare a climate strategy to achieve the objectives of the Kyoto Protocol. These strategies were renewed in 2017 and already prioritized reducing fossil fuel consumption and energy intensity and increasing the proportion of renewable energy sources. The Czech, Hungarian, and Slovak strategies aimed to adapt to climate change impacts, while the Polish document's main priority was to avoid the costs of adaptation failures (Table 2).

The country-specific goals and measures indicated in the CSDs were well developed, but there were shortcomings in the financing sections. For example, the Czech strategy did not clarify the costs, and implementation was primarily based on EU financial resources, like the Hungarian and Slovakian documents. Regarding the Polish strategy, the planners could not determine the costs of the planned activities.

To achieve the 2030 goals, EU Member States prepared the National Energy and Climate Plans (NECPs) in 2019 for 2021–2030. These documents were created in a new spirit with broader goals, but the uniformized methodology and energy considerations became emphasized. The NECPs treat the decarbonization of energy production, the diversification of the energy structure, the reduction of energy dependence, and the strengthening of energy supply and energy security as top priorities. The plans envisage goals and measures in 5 dimensions: 1. Decarbonisation 2. Energy efficiency 3. Energy security 4. Internal energy market 5. Research, innovation, and competitiveness (Table 3). The plans made in V4s comply with EU regulations.

The differences between the four countries were visible in NECPs. Hungary aims to decarbonize lignite-based energy production, replace fossil fuels (natural gas), and boost the use of nuclear and renewable energies (primarily based on biomass). Meanwhile, it also plans to exploit domestic fossil energies to reduce its dependence on energy imports. During the decarbonization process, Czechia aims to reduce the use of coal, replace it with natural gas, and increase renewables in electricity, mainly relying on biomass and hydropower. The aim is to improve buildings' energy efficiency, develop nuclear energy, and exploit domestic resources. Poland aims to reduce CO₂ emissions from transport, construction, and agriculture and increase renewables in electricity based on biomass and wind energy. In addition, reducing the share of coal and introducing nuclear power is a priority too. The Slovakian plan highlights that the country has one of the lowest emissions in its energy sectors in the EU, thanks to the high proportion of nuclear energy, hydroelectricity, and natural gas. Its goal is to replace solid fossil fuels, mainly coal, with renewable energy sources (biomass and geothermal) and further utilize nuclear and domestic energy sources.

Compared to previous strategies, the goals and measures indicated in the NECPs are more detailed and straightforward. Although the plans show the estimated sums of the actions, they emphasize that they can only implement them by drawing EU funds because they cannot finance the measures from the national budget. It is important to note that many objectives have become invalid due to energy supply problems (e.g., increasing the use of natural gas, abandoning the exploitation of available coal reserves), while some (rapid transition to clean energy) has received priority nowadays. Therefore, the REPowerEU plan (2022) calls for accelerating the implementation of the NECPs and updating the existing plans.

Based on the content analysis of the reviewed CSDs, we created a figure showing the strategies' validity period with the underlying CPPs and paradigm shifts (Fig. 1.). We identified and placed in time the CPPs for each document, and we also considered the comments of our later interviewees to confirm our assumptions. Important to note that the periods and paradigm shifts cannot be linked to exact dates, as the paradigm shifts are gradual.

The firstly reviewed CSDs fit the second paradigm and interpreted climate change as a "development issue" (following Hermwille, 2016). At that time, the V4 prioritized the competitive economy and financial

Table 2
Main goals of the analyzed climate strategies in the V4.

Country	Climate change strategy	Key areas and sectors	Main goals
CZ	Adaptation strategy to climate change in the Czech Republic 2015	(1) Forest management (2) Agriculture (3) Water regime in the landscape and water management (4) Urban landscape (5) Biodiversity and ecosystem services (6) Health and hygiene (7) Tourism and recreation (8) Transportation (9) Industry and energy sector (10) Emergency events and protection of the population and the environment	(1) to adapt to climate change while improving economic potential (2) shaping people's attitudes and public awareness (3) analyses options for amending existing legislation to ensure more effective adaptation
	Climate Protection Policy 2017	(1) Industry (2) Energy sector (3) Final energy consumption (4) Transport (5) Agriculture and Forestry (6) Waste management	(1) to achieve a low-GHG economy, it sets specific short-term and long-term reduction targets: reduce national emissions by 2020 by at least 32 Mt CO ₂ -eq and by 2030 at least 44 Mt CO ₂ -eq compare to 2005; to pursue the indicative level of 70 Mt CO ₂ -eq of emissions in 2040 and 39 Mt CO ₂ -eq of emissions in 2050
HU	Second National Climate Change Strategy 2017	Mitigation: (1) Electricity production (2) Building sector (3) Industry (4) Waste management (5) Transport (6) Agriculture (7) Carbon sequestration in forests (8) Carbon capture, storage and utilization Adaptation: (1) Health (2) Water management (3) Disaster management, security policy (4) Agriculture, rural development (5) Nature protection (6) Forest management (7) Built environment (8) Energy (9) Tourism	(1) the mitigation goal is to achieve decarbonization by 2050 while ensuring economic competitiveness and growth, creating social welfare, and reducing poverty but does not include specifics on reduction targets (2) the adaptation goal is to adapt to climate change while improving the economic potential (3) shaping people's attitudes and public awareness
PL	Polish National Strategy for Adaptation to Climate Change 2013	(1) Water management (2) Agriculture (3) Forestry (4) Biodiversity and protected areas (5) Health (6) Energy (7) Building industry (8) Transport (9) Mountain areas (10)Coastal zone (11) Spatial development and urban areas	(1) to avoid the costs of adaptation failures while reducing the social and economic risks associated with climate change (2) proposes legislative measures (amendment to the law) for adaptation, but implementation and measures are included in other documents (including shaping people's attitudes)
SK	National Adaptation Strategy 2018	(1) Geological environment (2) Soils (3) Natural environment and biodiversity (4) Water management and water regime (5) Urban environment (6) Health (7) Agriculture (8) Forest management (9) Transport (10) Energy, industry and business areas (11) Tourism (12) Disaster risk management	(1) to adapt to climate change while improving economic potential (2) shaping people's attitudes and public awareness

Table 3

The quantified objectives of the plans are in the five dimensions.

Country	Decarbonization	Energy efficiency	Energy security	Internal energy market	Research, innovation, and competitiveness
CZ	Reduction of GHG emissions: 30% (base: 2005) RES in final gross consumption: 22%	Final energy consumption: 990 PJ	Diversification of the energy mix: maintaining self-sufficiency in electricity supply; no significant increase in import dependency	Achievement of the electricity interconnection of 15%	Not set any specific quantifiable targets
HU	Reduction of GHG emissions: min. – 40% (base: 1990) RES in final gross consumption: min. 21%	Final energy consumption: max. 785 PJ	Diversification of the energy mix: Net import dependency – natural gas ~70% - oil max.85% -electricity max.20%	Share of interconnected electricity systems min. 60%	Innovation pilot projects: min.20 pcs
PL	Reduction of GHG emissions: – 7% (base: 2005) RES in final gross consumption: 21-23%	Increase in energy efficiency: 23%	Diversification of the energy mix: Deployment of nuclear power; Reduction of coal in electricity generation to 56-60%	Increase the availability and capacity of current cross-border interconnections	Increase in research and development: 2.5% of GDP in 2030
SK	Reduction of GHG emissions: – 40% (base: 1990) RES share: 19,2%	Increase in energy efficiency: 30,3%	Diversification of the energy mix: diversifying transit routes, increasing nuclear security	Interconnection of electricity systems: 52%	Not set any specific quantifiable targets

advantages, which approach remained until today in some respects. Then the "broad transformation challenge" (third paradigm) appeared in the updated strategies following the Paris Agreement, such as Slovak adaptation and Hungarian and Czech mitigation documents. We evaluate NECPs as documents belonging to the third paradigm. Since Poland had no updated climate strategy after the Paris Agreement, the 3rd paradigm appeared later - with the creation of the NECP. In this regard, Polish strategy-making was also delayed compared to the other three countries.

As a community of states, the EU is always ahead with climate progressivity (Fig. 1.). The climate protection measures following the Kyoto Protocol and multi-layered, integrative climate policies explain the leading role of the EU and the early start of the 3. CPP (the broad transformation challenge). The EU's climate commitments for 2008–2012 were outstanding at that time (with an 8% emission reduction). The progressive states (Denmark, Sweden, Germany) inspired climate directives, and most member states, including the V4, belong to the follower category and shift their national policy paradigms later.

4.2. Expert opinions about the climate strategies and their implementation

4.2.1. Summarised responses to question group 1

Most interviewees think that historical events, like the regime changes and EU accessions, had steered the policy goals towards environmental and climate issues in the V4. The recognition of climate change, parallelly with the EU's expectations, resulted in strategy planning, laws, programs, and actions in the former socialist bloc. So, the climate policy paradigms and paradigm shifts are driven by external requirements (C7, H6, P8, S6). "Climate awareness has taken place at different rates, depending on the specific past and structure of the post-socialist societies, but generally, climate policy has become a central issue." - said an experienced researcher. First, climate protection objectives were incorporated into national strategies, and then later, the climate targets were formulated in independent CSDs. Some answerers noted: that V4's CSDs are relatively well developed in European comparison, and the documents are important milestones of environmental governance. The strategies reflect a broad climate-conscious approach (the third CPP in our interpretation) (C3, H4, P5, S4). The respondents knew their countries' strategies more thoroughly and appreciated them more. However, more respondents had different opinions. Several interviewees pointed out that the CSDs so far are insufficient. As they said: Strategy-making as a governance tool alone does not show the level of climate protection, and documents merely summarize the policy goals.

Despite the statements about the goals, no complex action has been taken, and the policy objectives were born out of administrative compliance or conformity (C6, H8, P6, S9). One respondent added, "Climate strategies are one-sided; there is a time lag on certain issues, like the introduction of renewables is more cumbersome than previously expected."

4.2.2. Summarised responses to question group 2

Most respondents declared contradictions between the policy goals in the strategies and climate protection reforms, investments, administration, and actions (C9, H15, P14, S11). Ongoing doubts and counter-interests in the V4 surround climate-conscious thinking and activity. The climate-oriented governance and wide-range climate perspective only partially apply in practice. "The strategic national climate objectives are seemed to be forgotten sometimes. Distrust of renewables is a typical case; the different energy interest groups – for example, the carbon-based lobby in Poland – seeks to postpone the transition to renewable energy." said one expert.

Several respondents pointed out the presence of energy-intensive industries and investments related to the automobile industry, which determine the economy of the V4 (C7, H12, P13, S10). In addition to industrial developments, the institutional system was also mentioned as an obstacle to climate policy implementation. The interviewees agreed that the institutional background and climate policy coordination are not strong enough in the V4. "Climate policy requires long-term thinking, which is contradicted by the mosaic and often changes the institutional background. This is one of the main obstacles to implementation" - said a regional development specialist. According to a renowned climate expert, "The Hungarian example indicates the second rank of climate policy. The main offices responsible for energy and climate policy have changed three times in the last two years, and the names of the offices are dominated by energy. Currently, the State Secretariat for Energy and Climate Policy of the Ministry of Energy manages climate policy."

In each country, it was stated that the CSDs clearly show the directions and urge interventions, but in reality, the ambitions show the mandatory minimum. Undoubtedly, the EU's ambitions for climate neutrality by 2050 have led to debates in the V4 (C7, H9, P8, S10). "The severity of climate change and the need for change seems evident in these countries, but they are forced to react more slowly to preserve the environmental-economic balance delicately. Both leaders and the public are afraid of rapid change." -said a climate expert.

Most of the respondents expressed concern about the weak advocacy of climate policies. According to many, climate goals must be

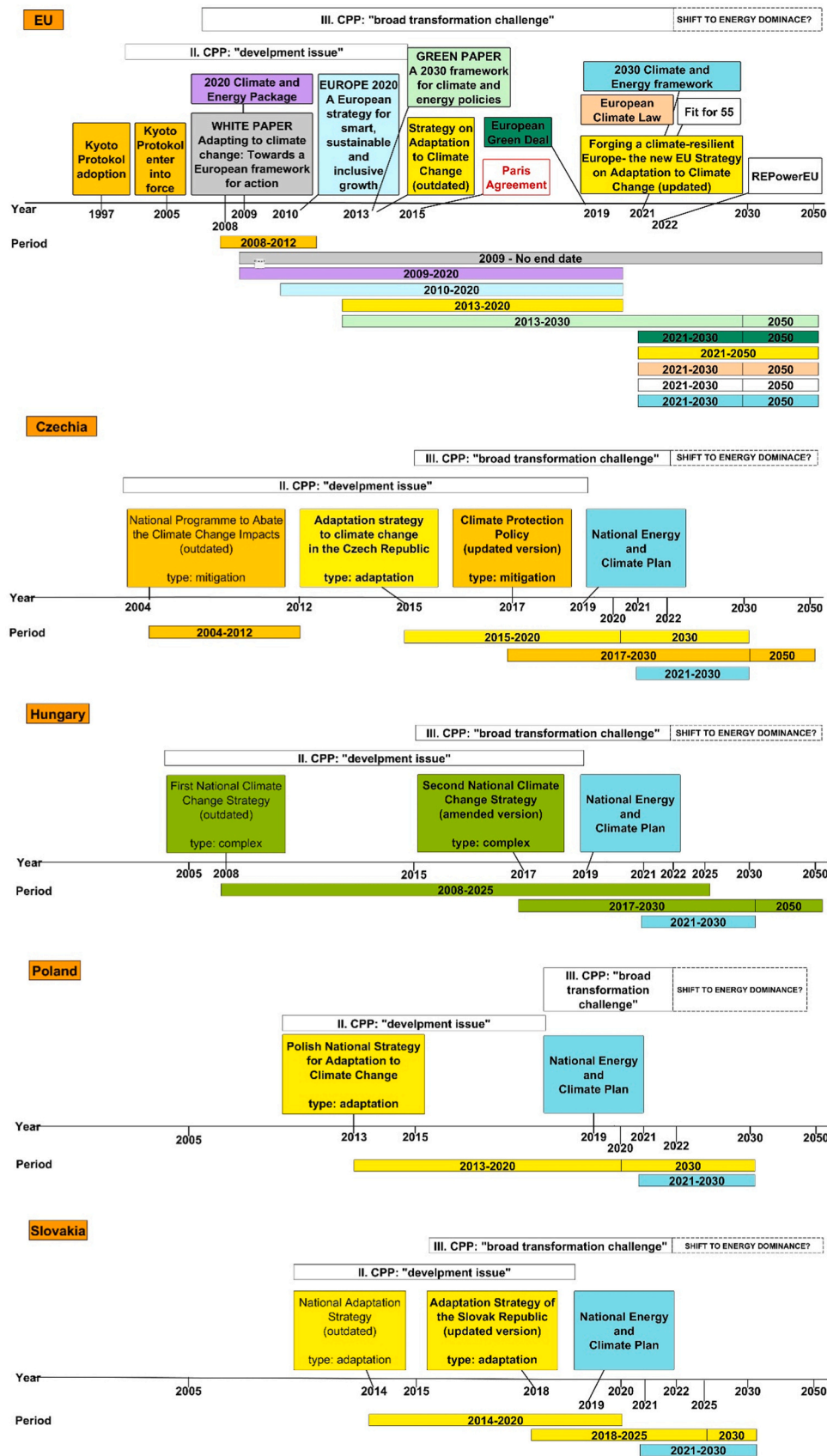


Fig. 1. Evolution of EU's and V4's climate policy paradigms.

implemented in the settlements. However, the settlements do not have the financial resources to achieve carbon neutrality or for campaigns. "In many cases, urban climate strategies have already been prepared, but the financial frameworks for planning have suffered from a lack of resources. For now, the local climate goals are only visions and are highly dependent on EU funds."

However, there are encouraging signs that can help put the climate goals into practice: "The societies concerned are becoming more climate-conscious, but the social will and activity are still weak. Voters' attitudes to environmental issues can also significantly impact governments and parties." The social forces supporting the energy transition have become stronger, more self-conscious, and more popular (C5, H7, P8, S4). Some interviewees highlighted that decision pressure on governments and people could be positive. The "painful reality can strengthen the fight for climate awareness". The energy crisis encourages people's consumption reduction and forces governments to act. According to V4 experts, the framework of the consumer society has hindered the fundamental paradigm shift. As an expert said: "The climate strategies are just the first step. Climate policy implementation requires a system change which demands a radical lifestyle change from everyone and a total economic reform on the part of the states."

4.2.3. Summarised responses to question group 3

Most interviewees think the relationship between climate and energy policies has always been unbalanced. According to the 2022 interviews, the supremacy of energy policy was further strengthened by the events of 2022. Regarding the 2022 crisis, some respondents emphasized that the crisis could bring renewables to the fore, thereby making climate policy a winner. Nevertheless, according to the majority, economic and energetic issues dominate (C9, H11, P10, S11). Although the decarbonization goals did not change, energy supply became the focus of crisis management. This is a serious challenge, as every country has dilemmas and opportunities in climate and energy governance. Some experts believe that energy security comes to the fore in uncertainty, which does not contradict the climate goals but makes them secondary. The respondents think differently about the solutions: some emphasize the advantages of nuclear energy, while others argue in favor of natural gas or renewables. Nevertheless, all agreed that the uncertainty factors require a heterogeneous energy mix (C11, H13, P12, S12). The situation of the V4 is complicated because the gas supply and the Russian nuclear investments have become unpredictable. Many factors also hamper the rapid introduction of renewables: e.g., the rapid expansion of solar energy investments is hindered by the limits of the electrical networks' capacity.

Some respondents expressed concern that the carbon neutrality negotiations brought some resistance and conflicts on the part of the V4. Some believe "the old iron curtain will be replaced by a carbon curtain," with the former socialist countries on the weaker side. Others commented that V4 should be distinguished in this respect: "Most EU countries have coal phase-out plans, and these trends are likely to continue. Nevertheless, Poland and the Czechia depend on coal and lignite and have yet to develop phase-out plans." A quarter of respondents criticized the energy policy of V4, saying there would be much greater potential in renewables. On the other hand, some interviewees welcome initiatives that promote international cooperation, such as the Visegrad + Renewable Energy Platform, which draws attention to the below-EU average share of renewable energy in V4.

Several respondents said: "We are living in contradictory times!". "Every European country wants to be greener, yet societies are increasingly hungry for energy! The lack of gas causes panic, and everyone reconsiders their consumption habits. However, the saving will probably only be temporary. The energy demand is expected to increase as the electricity demand of the industry, and the population also increases. This is the main reason there are differences between the strategic objectives and their implementation." - summed up an energy expert with decades of experience. In addition, since the plans were

written, unforeseen events (epidemic, war) have occurred, so they must be corrected. The less critical interviewees said that V4 wants to keep its long-term climate policies beyond acute crisis management, but everyone agrees that strategies need a major review. Most respondents think that V4 must define their energy self-sufficiency more clearly, and at the same time, green investments must be stimulated more strongly (C8, H11, P9, S11).

5. Discussion

Our analysis indicates that there have been noticeable efforts and aspirations toward more conscious climate policy in recent decades in the V4. The newest and valid CSDs were prepared or updated after the 2015 Paris summit and have met the current content expectations of the EU. The principles, ideas, and policy goals described largely follow the "broad transformation challenge" corresponding to Hermwille's third CPP (2016). Alongside the overall positive evaluation, it should also be noted that problems and deficiencies can be found in the strategies, and interviewed professionals have highlighted some inconsistencies. The common problem is that the documents contain the essential goals, but the tasks are not sufficiently channeled into climate and energy governance and other policy measures. It is also typical that the various territorial levels of climate planning and governance are not adequately coordinated, and the "climate platforms" are not strong enough (Fuhr et al., 2018; Jørgensen et al., 2015; Marquardt, 2017; Waisová, 2018). Another general issue is that the implementation of CSDs depends on costs and financial resources. Furthermore, the dependence on EU funds has pushed climate planning toward mandated planning which can cause further drawbacks (Reckien et al., 2018; Óvári et al., 2023). The reason for linking climate strategies to EU funds is that these countries aim to catch up with Western European countries regarding economic prosperity and standard of living after their socialist past, which is a clear expectation in these societies (Aidukaitė, 2010; Šoltés et al., 2018). Therefore, the governments try to minimize the additional costs of climate measures and always make commitments that meet EU expectations but do not affect their basic budgetary and economic maneuverability. As a result, these countries are rightfully labeled as lagging behind or, from their viewpoint, reactive (preferring a slower transition) in climate governance (Kochanek, 2021). According to our experience (similar to Skjærseth, 2018), strategic gaps may primarily arise in the case of Poland, where the strong coal sector has a significant impact on policy implementation, causing the EU's goals not to be fully reflected in the plans. Skjærseth (2014) has described this as the "Polonization" of these goals.

Based on these, we can state that some elements of the strategies do not perfectly reflect the third paradigm, not even when it comes to the paradigm's level of ideas or goals (in Kern's sense). Moreover, we declare that the CSDs, although well-developed, do not indicate the paradigm shift as a wide-range process.

Considering our results, we outline three problem groups influencing climate policy implementation. The problems listed below slow down or block the paradigm shift in the direction of the "broad transformation challenge": 1. Economic interest - industrial development path; energy security and prices. 2. Lack of will - societies fear the cost of change; socialization issues; awareness versus actions. 3. Institutional failure - instability; excessive centralization, weakness of local and territorial levels and human capacity.

1. The first reason for the delay in implementing climate strategies is economic interest. The economic constraints have several negative impacts on environmental progression (Buzogány and Cotta, 2022; Harring et al., 2019), but regarding climate policies, we highlight the role of the automotive industry. This industry is heavily affected in the fight against climate change because of the enormous energy usage, emissions, and manufactured products. The automotive industry and its supplier networks have become so crucial in these economies (Török, 2022) that these governments even stood up for the interest of these multinational

corporations at EU forums as recently as the second half of the 2010 s. The commitment to the auto sector has put these countries on an energy-intensive development path. With the rise of electric vehicles, significant FDI investments are now coming in for battery production (currently, Hungary is in third place in Li-ion battery manufacturing capacity with 28 GWh, and Poland is fourth with 22 GWh, but in 2025 the latter will have 70 GWh and the former 47 GWh manufacturing capacity) (S&P Global Market Intelligence, 2021). Battery manufacturing is a resource-demanding process so more energy will be needed in the future.

These current affairs lead us to the second point of economic interest: energy security and prices. This is important in two ways, for the industry and the households. Both compete for energy since all four countries need to import electricity. This is particularly true for Hungary, where imports account for 28.2% of its consumption, but also for Poland, where this proportion may significantly increase with the expansion of battery manufacturing capacities (currently, it is 8.9%) (Eurostat, 2020 data). In addition, household perspectives are also critical, as energy expenses constitute a larger share of household income in these countries with lower per capita incomes than in Western Europe. Therefore, it is no coincidence that Hungary insists on building a Russian nuclear power plant and gas supplies and Poland on cheap domestic coal. The energy security and price issues permeated political thinking and significantly influenced V4's policy actions in the 2010 s (Dostál et al., 2016). Our analysis reinforces this statement, showing that climate policy was pushed into the background. Due to energy dependence, the NECPs for 2021–2030 represent energy issues more prominently than climate goals. According to Zapletalova and Komínková (2020): "Most of these states continue to be heavily dependent on fossil fuels, have complicated energy relations with Russia, and struggle with the EU's market liberalization policy." While the V4 tried to reduce energy dependence with a firm policy, climate actions are only an afterthought, and there is a risk that they will soon turn into an energy-dominated era.

2. The lack of political and social will is the second main reason the V4 countries have taken less ambitious actions to address climate change. This can be attributed to politicians and societies being primarily concerned about the costs of transitioning to renewable energy sources. This is because large-scale infrastructure investment is required due to the needed capacity enhancement of electricity grids, as our respondents also mentioned. Since societies do not pressure governments, they are not compelled to take action on climate change and only need to meet the minimum requirements of Brussels. Interestingly, although these societies are aware of climate change and the necessary climate actions, their support is still slightly below the EU average (Special Eurobarometer 513, 2021). In our opinion, one reason for this is that environmental consciousness is not yet fully developed in these societies. Nowadays, it is the first time after the regime change that there is broad social support for cancelling a planned investment in a city due to environmental reasons. People now feel how significantly a plant built a few hundred meters away from their home can affect their quality of life and health.

3. The third hindering factor of the V4's policy implementation is the instability, small capacity, and advocacy of the institutional system for climate governance. Otherwise, this is a worldwide phenomenon (Haring et al., 2019). The ever-changing governmental structure and organizations mean no one is ultimately responsible for implementing CSDs. This practice (or solution) benefits governments, which lack the genuine will to carry them out. Another crucial institutional reason is the weakness of local municipal levels, which is due to centralization efforts that took place in these countries after the crisis of 2008 (Pálné Kovács, 2020). It is also typical that the various territorial levels of climate planning and governance are not adequately coordinated (Sorensen, 2015; Dawson and Hanley, 2019), which our interviews also confirmed. Consequently, local governments have partly lost their planning autonomy and financial independence and rely on central guidelines and

databases (Óvári et al., 2023). The resulting strong dependence prevents the planning and implementation of location-specific climate actions or the emergence of climate innovations. Thus, the local territorial level, considered by many to be most important in climate protection, cannot significantly contribute to implementing CSDs, and the slogan "Think globally, act locally" cannot be realized. In addition, the lack of experts, which is present in both local and central governments, exacerbates the problem. A good indicator of this problem is that while almost all major Hungarian cities have joined the Covenant of Mayors initiative, none significantly participate in the organization's work due to the lack of language-speaking experts.

Finally, we would like to draw attention to the fact that besides the above reasons and the Ukrainian-Russian conflict, other risk factors also primarily threaten the Hungarian and Polish implementation of CSDs (Kryszk et al., 2023). We are referring to the fact that both countries are undergoing EU constitutional process, and until their completion, the European Commission withholds funds. The partial or complete loss of these funds could significantly impact the two countries' climate ambitions for the future.

Despite the weaknesses in climate policy, we claim that V4 cannot be seen as the total opposition to the EU's thinking. We live in turbulent times (Christou, 2021; Dobbs et al., 2021), where Visegrad Countries try to balance their economic and environmental policies and promote their national interest as much as possible. Here, we are talking about the self-identity of nation-states, the search for socio-economic development pathways, and the "Eastern" way of climate policy. We agree with Wurzel and colleagues (Wurzel et al., 2018), who said that V4 plays a crucial role in shaping intergovernmental climate views. All in all, though, the countries concerned should take climate goals more seriously.

6. Conclusion

Our findings show that the evolution of climate policy paradigms has reached a period of "broad transformation challenge" – the third climate paradigm – in the V4. However, these countries did not adopt a comprehensive climate-conscious practice and multi-level climate governance, which belongs to the third paradigm. Our results show that adaptation and mitigation efforts ran into economic and energy constraints even before the third paradigm could be strengthened and completed. The third CPP unfolded to a different degree in the V4. Overall we share Streimikiene's opinion (Streimikiene, 2020) opinion that climate goals can be considered better in the Czech Republic, Slovakia, and Hungary, while the coal sector significantly worsens the climate efforts in Poland.

Due to the last few years, the climate documents have lost their relevance, and most climate protection aspects have been subordinated to energy policy decisions. We agree that the four countries must reconsider climate policies and renew strategies (Kobyłka et al., 2022). However, for the success of climate policy, it is not enough to rewrite the strategies. Fundamental changes are necessary for all the listed hindering factors, as climate policy permeates the entire state and social system. Therefore, reforming multi-level climate governance and planning is a severe challenge for the Visegrad Countries and the world.

The limitation of our research is that we live in a turbulent period in which climate policy decisions are surrounded by unpredictable processes (war events, energy crises, and unstable economic situations). As a consequence, some results and findings can quickly lose their actuality.

Continuing our research, we would like to examine the social factors of local climate governance in the V4. We want to focus on participatory governance mechanisms and good practices. We believe local climate governance is crucial to strengthen the climate policies' implementation in the V4.

CRediT authorship contribution statement

András Donát Kovács, Jenő Zsolt Farkas, Emőke Kiss: Conceptualization, Methodology. **András Donát Kovács, Emőke Kiss:** Writing-Original draft preparation. **András Donát Kovács:** Investigation. **Emőke Kiss, Dániel Balla, András Donát Kovács:** Visualization. **Jenő Zsolt Farkas, Gábor Vasárus:** Supervision. **András Donát Kovács, Jenő Zsolt Farkas, Gábor Vasárus, Dániel Balla, Emőke Kiss:** Formal analysis, Writing- Reviewing and Editing.

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Data availability

Data will be made available on request.

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