Sustaining the “black gold”

Examining coal narratives in the Bełchatów Basin Area and their impact on carbon lock-in

Paulina Rudnik

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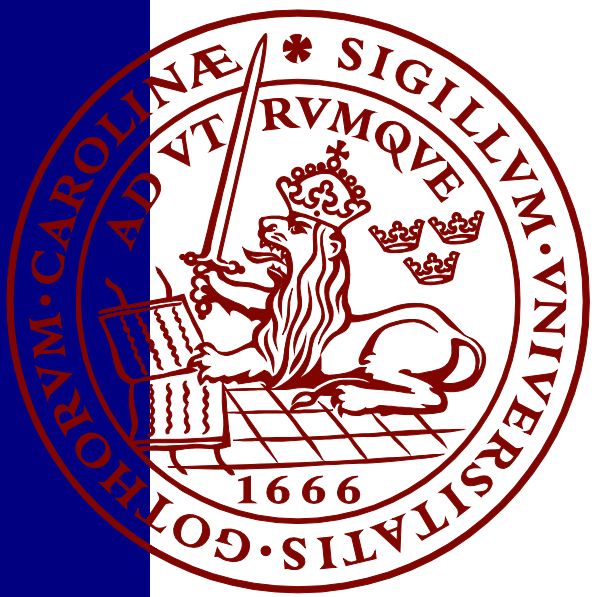

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Abstract:

As one of the biggest coal producers in the EU and a country with a coal-based energy system, Poland is faced with a difficult challenge of transforming the energy sector. However, coal has a very powerful position in the country, protected by incumbent actors and their interests. This thesis focuses on the Bełchatów Basin, an important lignite region, and examines coal narratives and their implications for the carbon lock-in. Through discourse analysis, the thesis reveals that the local debate is dominated by pro-coal narratives supported by the incumbents. Simultaneously, several alternative narratives try to challenge the role of coal in the energy system and open a pathway of discursive change. The discursive struggle results in two discursive lock-in mechanisms created by the dominant and some alternative narratives. Consequently, the carbon lock-in is reinforced discursively, which can become a potential obstruction for the coal phase-out process in Poland.

Keywords: energy transition; coal phase-out; discourse; lock-in; Poland; coal region

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Abbreviations

ADA	Argumentative Discourse Analysis
CC	Climate change
CO_2	Carbon dioxide
DA	Discourse analysis
ESS	Energy security & sovereignty
EU	European Union
EU ETS	European Union Emissions Trading System
JTF	Just Transition Fund
PEP2040	Energy Policy of Poland until 2040
PGE	Polska Grupa Energetyczna / PGE Górnictwo i Energetyka Konwencjonalna S.A.
RES	Renewable energy sources
RQ	Research question
TJTP	Territorial Just Transition Plan for the Łódzkie region

1 Introduction

Limiting global warming and reaching the 1.5°C climate target requires a substantial reduction in global coal consumption, involving the phase-out of coal from the power sector (IPCC, 2023). That is a challenge for countries like Poland, which is the biggest hard coal producer and second-largest lignite producer in the European Union (EU) (Brauers & Oei, 2020). Despite the decline in recent years, in 2022 almost 70% of electricity was still produced from coal, placing Poland as one of the biggest emitters in the EU (Miniszewski & Pilszyk, 2023).

A radical transformation of the energy sector in Poland is necessitated not only by climate change (CC) adaptation and the pressure to align with EU climate policy, but also increasing air pollution and the poor economic situation of the mining industry (Krzywda et al., 2021; Mrozowska et al., 2021). However, an analysis of the political economy of coal in Poland shows that while economic reasons indicate a need to withdraw from mining, continuation of using coal is justified from a socio-political perspective (Brauers & Oei, 2020). The interests of the coal regime are protected by the connection between the industry and the government. Many actors in Poland resist the phase out of coal, among them coal corporations, unions, and the government (Brauers & Oei, 2020). These influential actors are referred to as incumbents and are characterized by their prominent history, personnel, revenue and political power (Ramanauskaitė, 2021).

The strong position of coal influences national plans for the energy sector. Even though in 2021 the national government and trade unions signed an agreement to phase out coal, the date was set as late as 2049 (Hermwille et al., 2023). Additionally, the Energy Policy of Poland until 2040 (PEP2040), the most important document providing a framework for the energy transition, illustrates a lack of commitment to decarbonization, basing energy security on domestic coal resources and assuming that in 2030 the share of coal in electricity generation will be “not higher than 56%” (Mrozowska et al., 2021; Żuk et al., 2023). Nevertheless, transformation of coal regions is still set as a strategic project in PEP2040.

The transition of Polish coal regions is supported on the EU level with a total of €3.85 billion under the Just Transition Fund (JTF) (European Commission, 2022). The five coal regions that are classified for the JTF support are: Upper Silesia, Małopolska, Lower Silesia, Wielkopolska, and Łódzkie (see Figure 1) (European Commission, 2022). The first two rely on hard coal deposits, Lower Silesia comprises both hard coal and lignite plants, while Wielkopolska and Łódzkie are lignite regions (see Figure 2).

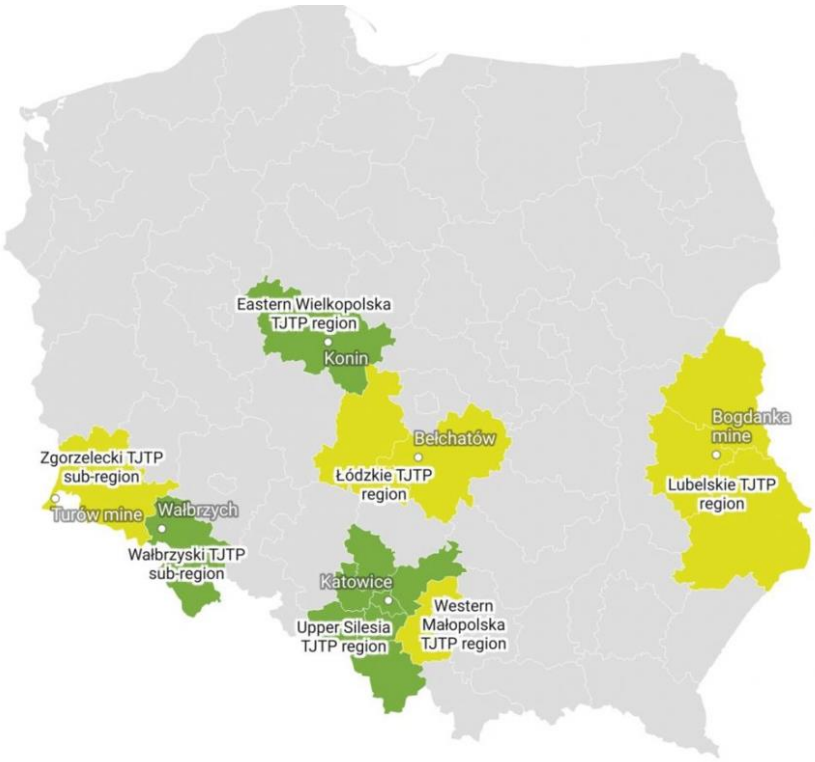

Figure 1. Just Transition regions in Poland (Ślimko et al., 2021)

Note: The regions marked in green were officially confirmed as the recipients of the Just Transition Fund in 2021, at the time of creating the publication. Afterwards, yellow regions were accepted as well

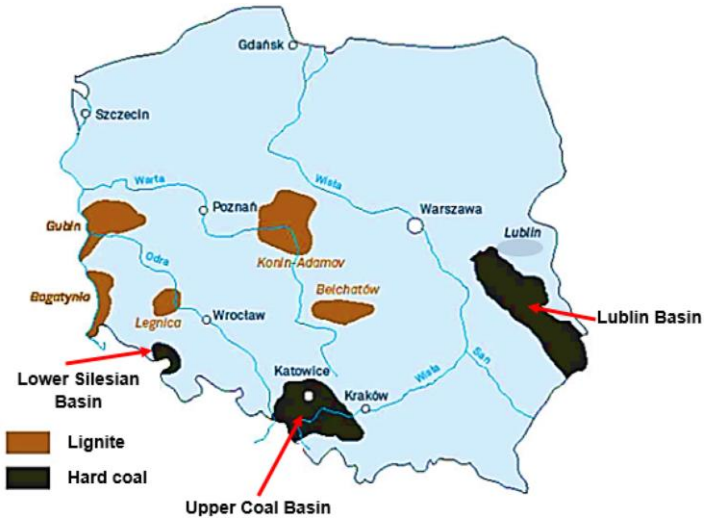

Figure 2. Hard coal and lignite deposits in Poland (Brodny & Tutak, 2022)

In this thesis, I focus specifically on Bełchatów Basin that is located in the Łódzkie region. In contrast to many areas that are already undergoing the process of transformation, Łódzkie still has time to prepare for the changes that will happen in a few years (Frysz, 2023). In fact, decommissioning of the Bełchatów Power Plant units is planned for 2030-2036, while coal mining in the fields Bełchatów and

Szczerów is to be continued until 2026 and 2038 respectively (Buchalska-Frysz, 2021). The process is defined in the Territorial Just Transition Plan for the Łódzkie region (TJTP), the key document of the transformation officially adopted in 2023 (Województwo Łódzkie, 2023).

Phasing out coal will certainly impact the future of Bełchatów Basin. However, this future depends to a large extent on the course of the transition process. To understand transitions, it is important to consider not only technological aspects, but also social and cultural processes that shape transformations, such as politics or discourse (Genus & Coles, 2008; Riedy, 2022). Energy transition, including decarbonization, has been one of the most emotional topics in the Polish debate (Chodkowska-Miszczuk et al., 2022). Coal has a very important political function in Poland, following the rhetoric of the "black gold" that was forged during the communist period to symbolize the powerful position of this resource and its role in rebuilding the country after World War II (Kuchler & Bridge, 2018; Żuk & Szulecki, 2020). Consequently, "Poland stands on coal", a famous slogan from the time of communism, was a beginning of various coal-supportive narratives that have dominated the current debate (Kuchler & Bridge, 2018; Osička et al., 2020; Żuk & Szulecki, 2020). Understanding this rhetoric can provide valuable insights into the stability of the coal regime and its implications for the transition policies. That includes potential sources of obstruction, which may affect the agreed coal phase-out process, risking a delay or even the transition not happening at all.

1.1 Research aim and questions

This thesis aims to identify different coal narratives that exist in the Bełchatów Basin, and how these narratives challenge or reinforce carbon lock-in.

The analysis is guided by the following research questions (RQs):

RQ1: What are the dominant and alternative narratives around the role of coal in Bełchatów Basin and who constructs them?

RQ2: How do the identified narratives impact local carbon lock-in?

RQ3: What are some implications of the observed discursive dynamics in Bełchatów Basin for the coal phase-out in Poland?

The next chapter provides some background on previous research on coal narratives in Poland and introduces the area of Bełchatów Basin. In chapter 3, I present the theoretical underpinnings guiding my research. Next, I describe the methodology, including methods, data collection and analysis. Chapter 5 comprises my findings that provide answers to the first two RQs. The following chapter

contextualizes the results and discusses implications (RQ3), as well as some limitations. Lastly, the thesis ends with some concluding remarks.

1.2 Relevance for sustainability science

Moving away from fossil fuels is one of the main challenges undertaken in the sustainability transitions research (Loorbach et al., 2017). This thesis contributes to this field by expanding the understanding of the dynamics within the energy system, demonstrating the importance of discourse and its interlinkages with other system elements. By taking a socio-institutional approach to understanding energy transition, the thesis emphasizes the role of discourse, but also incumbent powers (Loorbach et al., 2017). Adopting a discursive approach to study the transition of the energy system provides a deeper understanding of the processes of stability and change, including the elements that can hinder or advance a sustainability transition (Simoens et al., 2022). In this way, my research offers further insights into explaining the persistence of unsustainable regimes and assessing the success of the potential transition pathways (Loorbach et al., 2017). Furthermore, by linking concepts from the transition studies and discourse literature, this thesis reflects the interdisciplinary character of the sustainability science field (Jerneck et al., 2011; Spangenberg, 2011).

2 Setting the scene

2.1 Previous research on coal narratives in Poland

Before presenting more information about the region of my study, in this section I introduce previously identified coal narratives in Poland to provide insight into how coal is perceived in the country. The public debate about coal in Poland takes place mainly at the national level. One of the most prevalent narratives in the media is crafted around coal as the base of the Polish economy, resulting in a need for resource continuity to avoid economic collapse (Osička et al., 2020; Żuk & Szulecki, 2020). Therefore, the government needs to mobilize resources to keep the industry alive (Osička et al., 2020). Another major reason given to justify the need of keeping coal production are energy security and sovereignty (Osička et al., 2020; Żuk & Szulecki, 2020), emphasized especially by the state-owned media enterprises to mobilize public support for coal (Brauers & Oei, 2020). Coal is also rephrased by incumbent actors as a modern and clean energy source (Kuchler & Bridge, 2018; Osička et al., 2020). The actors who are given voice in the media are mostly people associated with

the government and major energy companies, while those who do not support the status quo have less media coverage (Osička et al., 2020).

The discussion about coal in Poland is not politically neutral. Biedenkopf (2021) identified the dominant policy narratives that have been used mostly by Law and Justice (PiS), the right-wing party ruling between 2015-2023. One of the narratives emphasized an alternative pathway that Poland is allowed to take by continuing to use coal and reducing emissions through forestry and technological innovations. This narrative builds on another one, presenting the situation of Poland as unique, which requires special consideration from other EU member states, involving increased financial support (Biedenkopf, 2021).

Whenever a regional perspective is presented, it mostly concerns the Upper Silesia region, which hosts most of the hard coal mines (Osička et al., 2020). In Upper Silesia, regional stakeholders assign various meanings to coal. Industrial actors and trade unions see the transformation as a story of restrained progress, in which the EU imposes the coal phase-out on Poland (Hermwille et al., 2023). For them, but also for some local companies and different level policy makers, coal is the only solution to secure affordable energy supply. However, this narrative is contested and rejected by many civil society actors, environmental groups or political actors not associated with the government (Hermwille et al., 2023). The regional narratives sometimes focus on the local environmental externalities of coal, such as the problem of smog (Osička et al., 2020). However, in this context the role of coal as the energy source is not questioned, and the proposed solution is rather to improve heating infrastructure or coal standards (Osička et al., 2020).

2.2 Bełchatów Basin Area

This section provides more information about the studied area and offers justification for its choice. Bełchatów Basin Area is located in the Łódzkie region and constitutes an important energy center, generating approximately 20% of the electricity in the country (Żak-Skwierczyńska, 2022). At the same time, the lignite power plant in Bełchatów is the single biggest emitter in the EU (European Commission, 2022). The economy of the Bełchatów Basin Area is based on lignite mines and the power plant. The energy complex is the biggest employer in the region, providing jobs for almost 8000 people, i.e. 19% of those employed in the Bełchatów county (Juszczak & Kutwa, 2021). An additional 5500 people are employed in subsidiaries (Województwo Łódzkie, 2023). It is estimated that the transition process will result in 8364 jobs lost (ibid).

Apart from being an important employer, the energy complex owned by Polska Grupa Energetyczna (PGE) provides other benefits for the local community, such as significant funds from taxes and fees that directly support adjacent municipalities (Województwo Łódzkie, 2023). Additionally, it constitutes a center of local life and a big part of the local identity (Dańkowska & Sadura, 2021). Consequently, the local community is afraid of negative impacts of the transition, including mostly high unemployment and emigration of young residents (Juszczak & Kutwa, 2021). To address these fears, the regional government and other societal actors take efforts to engage different stakeholders from the local and regional community in joint planning of the transformation process and creating the future of the region (Bełchatów 5.0, n.d.; "Jaki plan na Bełchatów?", 2021).

A just transition process should consider specific needs of a given region, its future aspirations and the challenges it faces (Hermwille et al., 2023). Focusing on the narratives at the regional level is a good way to understand local context and identify barriers and opportunities for the transition (Hermwille et al., 2023). To this date, the regional research on energy transition in Poland has focused mostly on Upper Silesia, neglecting other coal regions, especially the ones dominated by lignite production (Koczan, 2023; Krzywda et al., 2021). However, the strong infrastructural, financial and cultural embeddedness of coal and the importance of the Bełchatów Basin for the national energy supply render it an interesting case study that can offer valuable insights into the impact of coal narratives on the transition process, especially where the transition is still to come.

3 Theoretical approach

3.1 Carbon lock-in

The concept of carbon lock-in is useful for my thesis, as it provides an explanation for the strong position of coal in Poland and Bełchatów, including difficulties connected with the phase-out. Carbon lock-in refers to a process that inhibits different efforts to reduce carbon emissions (Seto et al., 2016). It is path-dependent, meaning that its favorable initial conditions in the social and economic spheres lead to developing resistance to change and large-scale system variations (Seto et al., 2016). Once technological systems, such as electricity generation, are adopted and naturalized, they become difficult to displace due to systematic forces (Unruh, 2000). That means that they lock-out potential alternative technologies, including ones that are more efficient. Lock-in of such technologies is reinforced by a constellation of interdependent industries and private institutions that influence the acceptance and support for certain technologies through non-market forces. Finally, the involvement of the government is crucial for locking-in a technological system, as they

have the power to overcome market forces with institutional policies, creating new "rules of the game" (ibid). One common justification for such intervention is national security (Unruh, 2000), which reflects the position of energy security as a guiding principle for energy policy (Rentier et al., 2019). Despite the evidence of the contribution of fossil fuels to CC, governments often exacerbate the lock-in through subsidies. The difficulties they face in terms of withholding financial support for fossil fuel industries can be seen as a manifestation of carbon lock-in (Seto et al., 2016; Unruh, 2000).

This is visible in the case of Poland. The long history of coal mining and significant share of coal in the current power generation system make the country prone to carbon lock-in (Rentier et al., 2019). This lock-in is manifested through continuous investments in coal and problems with restructuring the energy sector, emphasizing the dominant role of coal (Skoczkowski et al., 2018). Some regions within the country exhibit a more powerful lock-in due to their mining or electricity generation activities. Dragan & Zdyrko (2023) describe the carbon lock-in in the context of Bytom, a town where mining remains a core part of the local economy, and Jaworzno, where a mine and coal-fired power plant provide employment and taxes for the municipal budget. As both towns resemble the character of Bełchatów Basin, it can be anticipated that Bełchatów is characterized by strong carbon lock-in as well.

The carbon lock-in can take various forms. Seto et al. (2016) introduce a differentiation between three types of carbon lock-in. These include: 1) *infrastructural and technological lock-in*, involving infrastructure contributing to CO_2 emissions; 2*) institutional lock-in*, associated with the governance and decision-making that influence energy-related production and consumption; 3) *behavioral lock-in*, which relates to habits and norms associated with the demand for fossil energy. However, Buschmann & Oels (2019) argue that the carbon lock-in literature has overlooked the role of discourse that can help explain both stability and change. Consequently, they introduce a fourth dimension – *a discursive lock-in*, which appears when discursive reproduction becomes institutionalized and self-reinforcing (Buschmann & Oels, 2019).

3.2 Discourse

Discourse theory can help understand why the discursive dimension is important in the context of transitions and lock-ins. Language and communication are not neutral. In fact, discourses are "grounded in the awareness that language profoundly shapes our view of the socio-political world rather than merely mirroring it" (Fischer, 2003, p. 47). Consequently, discourses are seen as a system of shared meanings reproduced in social practices (Hajer, 1995). These meanings emerge from routines, rules and norms that exist in social life (Hajer & Versteeg, 2005).

In discourse analysis (DA), actors play an important role, as they actively draw on discursive categories to influence the definition of a problem by trying to impose a particular discourse or frame (Hajer & Versteeg, 2005). Consequently, different discourses struggle for dominance, i.e. discursive hegemony. If many people use a particular discourse to conceptualize the world, we talk about discourse structuration (Hajer, 2006). Over time, some discourses may become institutionalized and as a result, their meaning becomes reflected in social practices and institutional configuration (Hajer, 1995). If both structuration and institutionalization of a discourse are observed, that means that the discourse is dominant (Hajer, 2006). The dominance of a discourse is not permanent, as any discourse requires a constant reproduction to ensure its continuity. Therefore, it may be challenged by alternative discourses that carry a different meaning.

Within a discursive struggle, there are various narratives that construct a problem (Hajer, 2006). Narratives are a way to summarize discourses in condensed stories, making complex issues tangible by translating them into heroes and villains, plot, morality, etc. Narratives that are attractive, convincing and legitimate may become dominant (Hajer, 1995). In response to them, alternative narratives emerge, presenting stories that differ either only marginally or radically. The success of the alternative narratives depends on their reproduction, which is associated with a "discursive dilemma" (Hajer, 1995). If a marginal narrative is too similar to the dominant one, it can induce only small changes. On the other hand, radical narratives may turn out to be too different from the institutionalized discourse, hence not being reproduced at all.

3.3 Discourses and narratives in transition studies

This section presents how various studies have conceptualized the specific role of discourses and narratives in transitions. As part of culture, media, economy, institutions and technological systems (Riedy, 2022), discourses and narratives are recognized as key elements of socio-technical transition processes that may influence the status of the regimes (Roberts, 2015; Ruhrort, 2023).

First, discourses may be used to stabilize the current regime and sustain the fossil fuel hegemony, as visible in the narratives identified previously in Poland. That involves for instance legitimization of certain policy decisions or technologies, which in turn consolidate the status quo (Feola & Jaworska, 2019; Hermwille, 2016). In the energy system, narratives are often used by regime actors to gain public support for investing further in the fossil fuel energy system (Trencher et al., 2019). Alternatively, narratives can diffuse new or existing technologies by emphasizing their necessity or inevitability, such as in the case of coal (ibid).

On the other hand, narratives may be also used by opposing actors to weaken the legitimacy of incumbent regimes (Feola & Jaworska, 2019; Trencher et al., 2019). For instance, negative storylines about the regime may create a powerful negative policy feedback and threaten pro-regime policies (Roberts, 2017). Consequently, the opposing narratives can mobilize support towards transition policies, visions of change and alternative future, presenting them as desirable and achievable (Feola & Jaworska, 2019; Ruhrort, 2023).

All of these opportunities have implications for the transitions. As political domination depends on successful narratives (Hermwille, 2016), the politics of sustainability transitions are in fact a discursive struggle over legitimacy of certain technologies or solutions (Markard et al., 2021). Therefore, to understand the politics of sustainability, it is necessary to comprehend the relevant narratives (Hermwille, 2016). It is also crucial to understand the successful and ethical ways to intervene in the discourse, as any transformation towards sustainability will need to entail a discursive transformation as well (Riedy, 2022).

3.4 Discursive dynamics in a socio-technical system

To identify the narratives in the Bełchatów Basin and explore their implications for the transition, I decided to adopt a heuristic by Simoens et al. (2022), who integrate the concepts of environmental discourse literature with transition studies. *Heuristic* refers to guiding principles or rules of thumb rather than a rigid framework (Boda & Faran, 2019; Simoens et al., 2022). The usefulness of this conceptualization lies in providing an opportunity for mapping the narratives, actors and their position in the discursive struggle, but also identifying mechanisms that can hinder or advance processes of change.

Following Simoens et al. (2022), the discursive dimension is an integral part of a socio-technical system, consisting of an interplay of meta-, institutionalized, and alternative discourses, dominant, marginal, and radical narratives, as well as weak and strong discursive agency. *Discursive agency* is defined as “an actor’s ability to make him/herself a relevant agent in a particular discourse by constantly making choices about whether, where, when, and how to identify with a particular subject position in specific story lines within this discourse” (Leipold & Winkel, 2017, p. 524). Becoming a strong discursive agent depends on the positional and individual characteristics presented in Table 1.

Table 1. Positional and individual characteristics connected with a strong discursive agency (adapted from Leipold & Winkel (2017))

Positional characteristics	Individual characteristics
professional position	rhetoric skills
position within a political organization	diplomatic skills
credibility	intelligence
mandate to act	diligence
material resources	education
connection to discursive structures	knowledge of an issue
ecological/social situation with which actors are faced	commitment
	experience

The heuristic applies the discursive perspective to the analytical dimensions that are commonly used in transition studies, namely landscape, regime and niche (see Figure 3) (Simoens et al., 2022). This terminology is associated with the Multi-Level Perspective developed by Geels and refers to macro, meso and micro level respectively (Geels, 2002). The landscape dimension shapes the external context of a socio-technical research. From a discursive perspective, that refers to *meta-discourses* that build on values and unchallenged assumptions. They are not connected with a specific sector or actor, but rather more general, and may be shared across different socio-technical systems (Simoens et al., 2022). The regime level is related to an *institutionalized discourse*, *dominant narratives* and *strong discursive agency* of incumbent actors that may form coalitions. It can shape the development of other elements of the system, such as practices, institutions or material artifacts. Lastly, the niche dimension is a space where *alternative discourses* emerge. They can entail *marginal narratives* that only slightly differ from the institutionalized discourse or *radical narratives* that present a new story challenging the regime. Both types of alternative narratives are created by *weak discursive agents* and compete either with the institutionalized discourse or with each other.

Simoens et al. (2022) provide a list of three *discursive lock-in mechanisms* that prevent socio-technical change. Firstly, *unchallenged values and assumptions of meta-discourses* create a situation when institutionalized discourses reproducing the same values are not questioned, but rather reproduced and reinforced. Secondly, *incumbents with strong discursive agency* have the power to reproduce the institutionalized discourse, which they do to protect their resources and position in the system. Lastly, marginal narratives may lock-in the institutional discourse by *narrative co-optation* resulting from the discursive dilemma (Simoens et al., 2022).

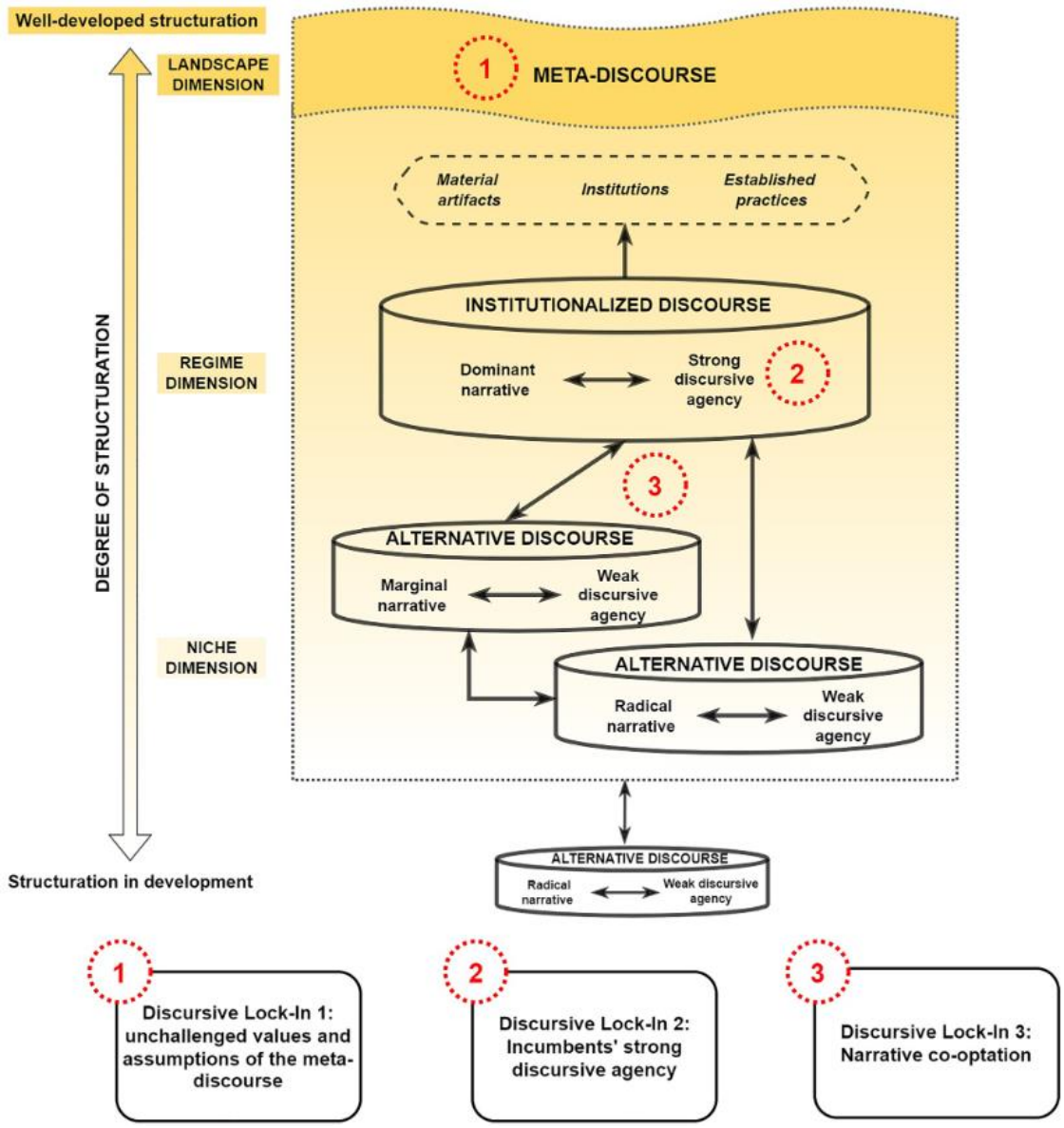

Figure 3. Discursive dynamics in a socio-technical system (Simoens et al., 2022)

To enhance sustainability transition, discursive change must be enabled. Simoens et al. (2022) introduce three ideal-typical *pathways of discursive change* that provide a window of opportunity to change the socio-technical configuration. These pathways are defined as "patterns of discursive change, where the discursive struggle between the various discursive elements, allows for a new or different institutionalized discourse leading to alternative material artifacts, institutions, and established practices" (Simoens et al., 2022, p. 1847). *Disruptive discursive change* results from external events that alter the assumption of the meta-discourse and may challenge the underlying values. *Dynamic discursive change* means a change from within. It may be achieved by an active disclosure of underlying values of the meta-discourse, opening the debate for alternative narratives and making them attractive for incumbent agents, or breaking the power asymmetries to unlock the

discursive agency of incumbents. A third pathway, *cross-sectoral discursive change*, assumes a deliberative learning process between different socio-technical systems, e.g. energy and mobility, as a change in one system may lead to a change in the other one.

3.5 Analytical framework

Discourse theory and the elements from the heuristic by Simoens et al. (2022) serve as the base of my analytical framework. To answer RQ1 and examine the dominant and alternative coal narratives in Bełchatów Basin, I will focus on identifying the aspects listed below:

1. Discursive agency & discourse coalitions
2. Dominant narratives
3. Alternative narratives

To answer RQ2 regarding the ways in which local carbon lock-in is impacted by the identified narratives, I will analyze the following points:

1. Local discourse sustaining the carbon lock-in
    a. Relation with the institutionalized discourse
    b. Discursive lock-in mechanisms
2. Local discourse challenging the carbon lock-in: pathways of discursive change

Lastly, based on my results, I will reflect on the implications of the observed discursive dynamics in the discussion section to answer RQ3.

4 Methodology

4.1 Epistemological and ontological considerations

The epistemology adopted in this thesis is constructionism, referred to also as (social) constructivism (Kim, 2001). It posits that people actively construct the world around them and assign meaning (Holstein & Gubrium, 2007). Constructionist research is interested in how social realities are produced, maintained, sustained or contested (Silverman, 2017). It addresses mostly the *how* questions to study the process of assembling the social reality, however, the *what* questions regarding the organization of the constructed realities are equally important (Holstein & Gubrium,

2007). Constructionist epistemology is reflected in my thesis through discourse analysis, which sees language and discourse as central means constructing the ideas, social processes and world in general (Nikander, 2007). DA studies the nature of social action by analyzing how actions and meanings are constructed by different texts and talks (Nikander, 2007). The constructionist approach fits also well with the topic of narratives, as they form social relationships, guide actions and can be effective in social transformations (Sparkes & Smith, 2007).

4.2 Argumentative Discourse Analysis

Because of its complexity, DA is often described both as a theoretical approach and methodology (Phillips & Hardy, 2002), providing a coherent structure for the research. My thesis is inspired by the Argumentative Discourse Analysis (ADA) approach developed by Hajer (1995), which in its examination focuses on what is being said, to whom, and in what context. In all that, ADA emphasizes the role of storylines, i.e. narratives that allow actors to create meanings, and discourse coalitions created to promote actors' views in public and political arenas (Hajer, 1995).

ADA is a particularly useful approach for my research because it focuses on the struggle for discursive hegemony in the context of environmental problems and policy-making (Hajer, 1995). Energy transition and coal phase-out are one example of such problems. As shown before, the powerful position of coal in Poland makes the discussion around it not politically neutral (Krzywda et al., 2021). The narratives that different actors employ may consequently have implications for the transition process itself, contributing to environmental policy-making (Biddau et al., 2023).

Hajer (2006) suggests 10 steps that should be a part of ADA. However, I decided to adapt this method to my aim and RQs and limit the process to 4 most applicable steps. Specifically, as this thesis aims to identify the narratives and the discursive dynamics, including discursive lock-ins and possibilities of challenging the carbon lock-in, an analysis based on the below steps is sufficient to reach the objectives:

1. *Desk research*, i.e. a survey of secondary data to provide a "first reading of events"
2. *Document analysis*, involving identifying structuring discourses and narratives
3. *Sites of argumentation*, i.e. trying to understand argumentative exchange
4. *Interpretation*, i.e. analyzing the results

My adaptation of ADA will result in less emphasis on understanding the causal chain of events or argumentation as interplay between the actors. Despite this limitation, I believe that this method can still provide valuable insights for my research, as the key concepts of storylines and discourse coalitions are crucial to understand the discursive dynamics. Previous studies have demonstrated that such adaptations of ADA can still be useful for exploring similar topics, e.g. uncovering the dominant storylines within an energy system (Bosman et al., 2014) or studying how discursive dynamics can withhold energy transition by delegitimizing coal decline (Biddau et al., 2023).

4.3 Data collection

Before the actual data collection, I employed desk research to provide the "first reading of events" (Hajer, 2006). Similarly to Christley et al. (2024), this step was meant to give an understanding of a broader discourse in Poland surrounding coal and its problem definition by different actors. In practice, it comprised a literature review, including academic papers, gray literature such as reports and newspapers articles and one interview with a researcher studying this topic.

4.3.1 Newspaper articles

The first step of the data collection process was focused on media analysis. Following Biddau et al. (2023), a search in local and regional newspapers allowed me to examine how the actors' narratives are constructed and presented in public arenas. Newspapers can serve as a space in which (de)legitimizing narratives can be constructed beyond formal policymaking. Therefore, analyzing this type of source can reveal which narratives are dominant in the public discourse and which actors have a strong discursive agency.

For the analysis, 5 local and regional newspapers were chosen: Dzień Dobry Bełchatów, Bełchatów Nasze Miasto, ebełchatów.pl, Dziennik Łódzki, lokalna.news. All of them are available online, enabling a search for related articles. The search included articles written in 2021 or later, as in this year the draft TJTP was adopted and the public consultation took place, constituting an important milestone in the transition process. The articles were filtered on the criteria listed in Table 2. As most media articles in Poland refer to coal in general without differentiating between hard coal and lignite (Osička et al., 2020), I included all mentions of coal. The search resulted in 32 relevant articles. However, 5 articles were excluded after more careful reading, as the narratives could not be connected to any actor. Additional search resulting from the second step of data collection led to discovering 4 more relevant articles that were added to the corpus. As a result, 31 articles were labeled as relevant and coded (see Appendix 1).

Table 2. Selection criteria for analyzed media articles and stakeholders' documents

All of the following criteria must be fulfilled:
1. A text must explicitly mention coal or decarbonization
2. A text needs to express an opinion about coal
3. An opinion must be attributed to a person or organization
4. A statement needs to refer specifically to the Bełchatów Basin

4.3.2 Actors' official communication

The second step of data collection was inspired by the research design of Bosman et al. (2014) and involved studying the official communication of stakeholders. This step aimed to broaden the data array collected in the media analysis, providing more context to the narratives presented in the newspapers, but also allowing to include the narratives of those actors who are not given voice in the public spaces. Therefore, this step was also meant to discover alternative narratives and actors with weak discursive power.

The process was based on the approach employed by Hermwille et al. (2023) in their study on regional just transition narratives. First, key stakeholders were identified based on my own knowledge, desk research and literature review. After that, the relevant communication channels of each actor were screened, namely websites, reports and their own publications. The documents were filtered on the same criteria as the newspaper articles.

Stakeholder mapping resulted in 46 actors who engaged with the transition process in Bełchatów Basin. However, not all actors maintained their channels and many of them did not refer to coal in any publications. Therefore, I decided to analyze a sample of stakeholders including various voices concerning coal. The actors were grouped and assigned to one of seven categories representing different interests (see Table 3). The categories were based on main actors of the energy transition in Poland identified by Krzywda et al. (2021), with an adaptation to the local context. From each group, two stakeholders were chosen as representatives. The number of documents was limited to 2-5 for each stakeholder group to keep the samples comparable in size and due to time constraints. This resulted in a total of 30 documents. The list of analyzed documents and assigned codes can be found in Appendix 2.

Table 3. Overview of analyzed actors

Category	Actor
Business environment institutions	Bełchatowsko Kleszczowski Park Przemysłowo Technologiczny (Bełchatów-Kleszczów Industrial and Technology Park)
	Łódzka Agencja Rozwoju Regionalnego (Łódź Regional Development Agency)
Civil society actors	Bełchatów 2050
	Forum Energii (Energy Forum)
Environmental NGOs	Client Earth
	Greenpeace
Energy industry	PGE Górnictwo i Energetyka Konwencjonalna S.A. (PGE)
	Związek Pracodawców Porozumienie Producentów Węgla Brunatnego (Association of Employers Alliance of Lignite Producers)
Government	National government
	Region Lodzkie (Łódzkie)
Mining municipalities, communes and counties	Bełchatów County
	Radomszczański County
Representatives of the miners' trade	Ogólnopolskie Porozumienie Związków Zawodowych (OPZZ) (The All-Poland Alliance of Trade Unions)
	NSZZ "Solidarność"

4.4 Thematic analysis and the coding scheme

Thematic analysis was used as the complementary method, forming the first step of DA to identify salient topics mentioned in the context of coal (Alejandro & Zhao, 2023). The coding process was carried in NVivo and the coding scheme combined a deductive and inductive approach. Firstly, a deductive set of codes was created based on the coal narratives identified in previous research in Poland (see Table 4). Additionally, during the coding process more codes were created inductively based on recurring themes. This inductive list was actively reorganized during the coding process, which involved adding new codes, deleting codes, grouping codes, renaming codes, etc. An excerpt from the final list of inductive codes can be found in Appendix 3.

Table 4. The deductive set of codes based on the previously identified narratives

The narrative	Source
coal as a modern and green source	Kuchler & Bridge (2018); Osička et al. (2020)
coal as the base of Polish economy	Osička et al. (2020); Żuk & Szulecki (2020)
coal as the only source of affordable energy	Hermwille et al. (2023)
energy security & sovereignty	Osička et al. (2020); Żuk & Szulecki (2020)
environmental externalities of coal	Osička et al. (2020)
EU imposes the coal phase-out on Poland	Hermwille et al. (2023)
legacy of communist image	Kuchler & Bridge (2018)
Poland has a unique situation	Biedenkopf (2021)

5 Results

5.1 Dominant and alternative narratives about coal (RQ1)

The RQ1 of my thesis is: "What are the dominant and alternative narratives around the role of coal in Bełchatów Basin and who constructs them?". I begin by discussing the discursive agency of actors and their coalitions to establish their position in the discourse. My analysis revealed numerous narratives that appear in the local debate. Here I focus on the dominant storylines, as well as those that challenge the institutionalized discourse.

5.1.1 Discursive agency & discourse coalitions

First, I wanted to find out which actors have strong discursive agency that renders their narratives dominant. Following the heuristic by Simoens et al. (2022), strong agency is associated with incumbent actors. This may be attributed to their positional characteristics, such as place in the system, credibility or mandate to act. Such characteristics can be observed among the incumbents in Poland, i.e. the national government, energy company PGE and trade unions. Through planning the energy strategy in PEP2040, the national government has a mandate to influence the position of coal. Their views on the resource are more visible and can be directly translated into legislation and strategy plans, establishing the place of coal in the energy mix. PGE also has a mandate to act through decisions about their investments in already functioning and prospective mines and power plants. Furthermore, PGE is strongly embedded in the region, both as the biggest employer and through its financial contribution to the municipalities, which strengthens its position among the

local residents. Lastly, the trade unions in Poland have been shown to have an influential position within the political system. All of these characteristics reinforce the actors' strong discursive agency.

Strong discursive agency may be also associated with actors' visibility in the media. My analysis of the media shows that the most represented group in the context of coal in Bełchatów is the government, including mainly the national government that is referenced in the articles 15 times (see Figure 4). The trade unions representing the mining industry are also cited frequently, and the press focuses on the few most active unions like Solidarność or Odkrywka. Civil society actors have the same level of representation as trade unions, however, almost all these references relate to the subgroup of academia, which includes researchers from different universities and backgrounds. Interestingly, even though the energy industry as a group is represented less than civil society, the energy company PGE is its single representative and in fact the second most cited actor. This indicates that the three incumbent actors, i.e. the national government, PGE and trade unions, have the highest representation in the media, mirroring their strong discursive agency. On the other hand, environmental NGOs are represented to a very limited extent. Some articles mention actions undertaken by such organizations, for instance lawsuits, but their perspective is not really presented to the public. Lastly, mining municipalities are mentioned in the media only once, while business environment institutions providing entrepreneurship support services have no representation at all.

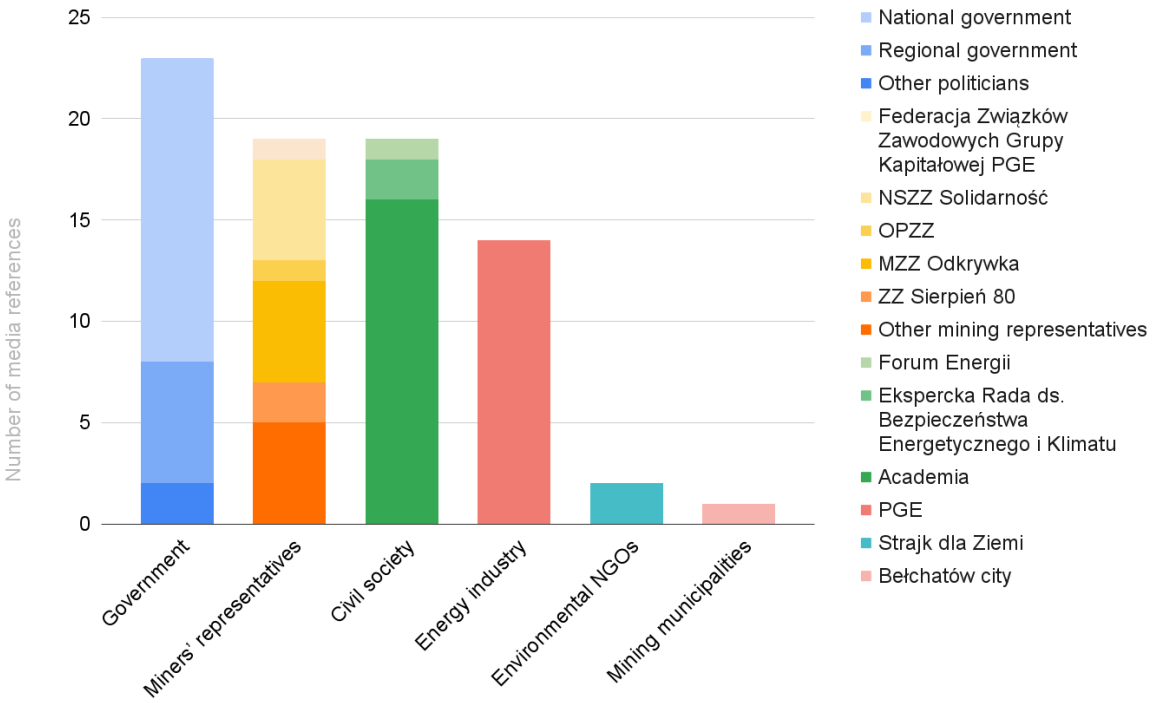

Figure 4. Representation of the actors in the local and regional media

Interestingly, some actors receive significantly less media attention than the incumbents despite having strong positional or individual characteristics. For instance, civil society actor Forum Energii works on energy transition in Poland. Therefore, the organization has high credibility and adequate professional position, while its representatives can be characterized by relevant experience and knowledge. The fact that this actor has received so little media attention may be connected with other positional characteristics that the organization is lacking, for instance material resources or position within political structures. Another interesting example is academia. Their high representation may be caused by strong individual characteristics that researchers usually have: intelligence, education, knowledge of a specific topic and their credibility as experts. However, academics represent various disciplines, which results in a very heterogeneous group with a high variance in views on coal. Therefore, despite high media coverage, academia as a subgroup cannot reach the same level of discursive agency as incumbents, as their narratives are not necessarily reproduced by other group members.

When analyzing the discursive struggles, some discourse coalitions can be observed. Following their wide presence in the media, the incumbents create a solid coalition that unites on the pro-coal narratives, further reinforcing their own agency and rendering their narratives dominant (see Figure 5). They remain the core of the coalition and are sometimes joined by the regional government, academia or mining municipalities. Due to its heterogeneity, academia is an attractive partner for coalitions with both strong and weak discursive agents. Therefore, academia is represented simultaneously in dominant and alternative narratives. In the alternative narratives academics join forces with environmental NGOs. Additionally, this coalition is often supported by the regional government or other civil society actors, although they do not always present similar views on each of the narratives.

5.1.2 Dominant narratives

The local debate is dominated by four storylines that are most reproduced in the media. It is important to understand their argumentation and reasoning, as these narratives have the most power to influence the transition process. This section introduces each of the narratives and presents associated discursive agents.

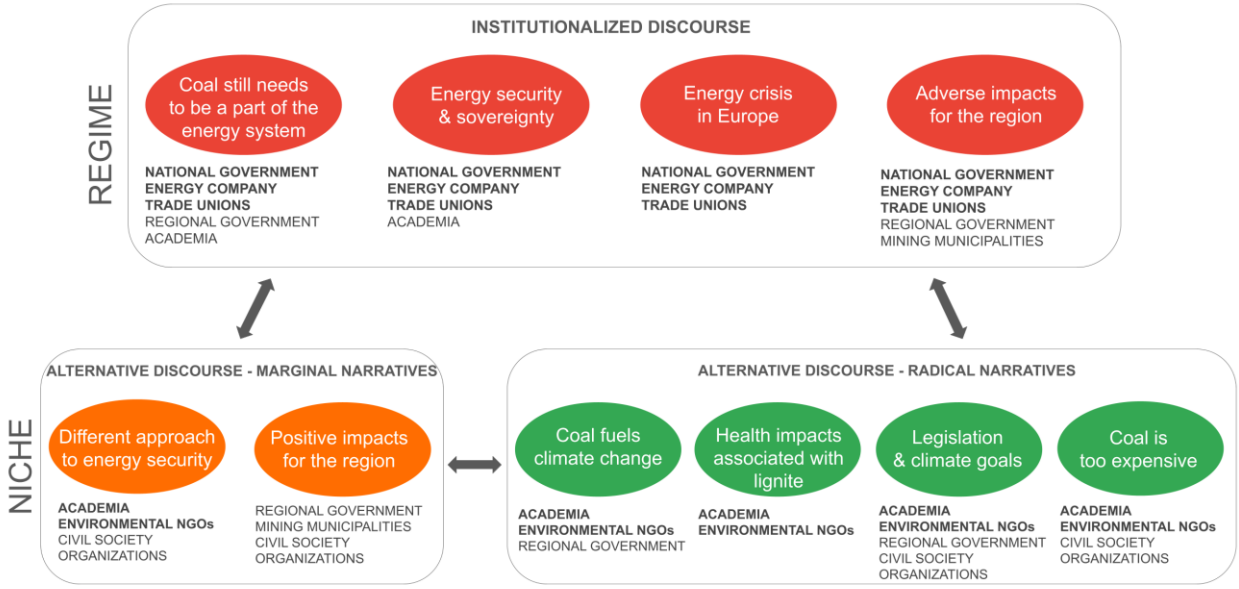

Figure 5. Discursive dynamics in Bełchatów Basin

Note: The figure presents the dominant narratives on the regime level and alternative narratives on the niche level, with differentiation between marginal and radical narratives. Under each narrative, discursive agents reproducing the storyline are presented. The main actors of the discourse coalitions on both regime and niche level are marked in bold.

Coal still needs to be a part of the energy system

There is a widespread belief that decarbonization is inevitable (M5[1], M24, S3, S4, S6, S7, S8, S17, S18, S21, S26). The end of coal is projected by all of the analyzed groups except the national government. Actors have different explanations for that: financial difficulties of the mining sector (S3, S17), climate change (S21), lack of public acceptance for investments in coal (S3, S8) or dwindling coal reserves in Bełchatów Basin (M24, S7). Nevertheless, many actors believe that for now coal still needs to be a part of the energy mix (M12, M18, M21, M23, M28, S13, S16, S17, S18, S19, S20, S21). Some researchers and parts of the energy industry claim that coal-based energy should be continued until lignite deposits are fully exploited (M12, S17). Similarly, the trade union MZZ Odkrywka states that "Poland, as a country with huge deposits of hard coal and lignite [...] should guard the exploitation of these deposits, which have been a stable source of electricity in the energy sector since the dawn of time" (M18). Alternatively, the actors emphasize the need of a gradual rather than

[1] The codes refer to the analyzed documents. The letter M indicates a media article, while S points to stakeholder communication. The list of codes can be found in Appendix 1 & Appendix 2.

drastic transition (S13, S21). Consequently, incumbents and some academics believe that coal should secure the energy system until the nuclear plants are built[2] (M12).

Energy security & sovereignty

This most frequent narrative significantly outnumbered other storylines in the media. Energy security is associated either widely with coal or with Bełchatów specifically. Generally, coal is phrased as incredibly important for the energy security and sovereignty (ESS) of Poland (M3, M8, M9, M13, M30, M31, S14, S16, S18, S20). PGE portrays coal as "the basic source of primary energy ensuring a stable level of electricity production, [...] the cheapest fuel currently available on the market ensuring a high level of security of supply and production, which is invaluable in terms of the country's energy independence" (M3). Furthermore, both PGE and trade unions state that accelerating decarbonization is a threat to the country's ESS (M6, S14).

The second variation presents Bełchatów as a crucial unit and energy center of Poland (M4, S7, S15, S22). One politician states that "without the power plant operating at 100%, our country's energy security cannot be ensured" (M4). Consequently, a prospective new mine in Złoczew relates for many actors to ensuring energy security (M1, M2, M6, M17, M23, M31, S18). Even the national government, who in 2021-2022 denied the possibility of opening the pit (M9), decided to reanalyze this option in 2023 as a way to strengthen the ESS of Poland due to the new conditions in the energy market caused by the war in Ukraine (M18).

Energy crisis in Europe

The Russian invasion on Ukraine in February 2022 led to significant turbulence on the energy market in Europe, providing the incumbents with more reasons to advocate for coal. As cutting off Russian gas led to an energy crisis, incumbents returned to the ESS narrative, associating coal with secured energy access (M13, M16, M18, M25, S13, S14, S15, S20, S28). The aspect of sovereignty was also stressed more frequently (M4, S20). During his visit to the Bełchatów Power Plant, the Minister of Justice emphasized that "Russia's aggression against Ukraine has shown how important energy sovereignty is. The condition for Poland's energy security and effective development of our country is cheap electricity from lignite and hard coal" (S20). That created a need to revise the strategy, as most of the plans assumed that natural gas would be a transition fuel between coal and RES (M4, M18). As a result, coal was presented as a solution to not only provide independence from Russian fuel, but

[2] The Polish strategy assumes transitioning to an energy system based on nuclear units and renewable energy sources (RES). The opening of the first block of a nuclear plant is currently planned for 2033 (gov.pl, 2023).

also address other problems of the energy crisis, i.e. high energy prices for businesses and individual customers (M18).

Adverse impacts for the region

The last dominant storyline was the least visible in the media, although it was frequently mentioned in other sources. It involves several negative impacts of decarbonization, mainly job losses (M6, M18, M20, M22, S20, S21, S22, S26), regional impoverishment (M2, M6, S21, S22) and migration (M2, S21, S22, S26). The loss of jobs is the biggest theme, emphasized by the national government and trade unions in the context of decarbonization, but also the decision to not open Złoczew, which unions see as "a tragedy for thousands of mine and power plant workers who were previously fed by politicians with promises of opening a new open-pit mine" (M18). The problem is also recognized by the regional government and mining municipalities. However, they use a more formal and distanced language, such as "significant transformation in the regional labor market" or "decrease in employment" (S21). At the same time, they expect to see the negative impacts of the transition only if it is badly driven (S22).

5.1.3 Alternative narratives

The analysis revealed that the local debate contains various storylines that differ from the dominant discourse. I identified two marginal narratives that offer a slightly different perspective to the dominant storylines. Additionally, I describe four radical narratives that try to challenge the position of coal and institutionalized discourse.

Marginal narratives

Different approach to energy security

The importance of energy security is recognized not only by incumbents, but also by actors who see its relation to coal differently. Forum Energii states that "to maintain the reliability of electricity supplies, Poland must prepare for a future after lignite" (S7). Consequently, by encouraging careful planning of the decarbonization process they depart from placing an emphasis on coal as the only source providing stability. Some academics and NGOs take a slightly different strategy, shifting the attention to other energy sources, such as gas, nuclear or RES with energy storage (S3, S12). Nonetheless, their arguments are refuted by the energy industry or other researchers, who indicate uncertainty of nuclear plans or instability of RES as a barrier to rely on them for energy security (M23, S17).

Positive impacts for the region

A marginal narrative emerges also in the context of the impacts of decarbonization. Even though the regional government and municipalities recognize the risks connected with the process, they emphasize that just transition is "a chance for the development of the region" (S26). Joined by the civil society representatives, they envision new, better jobs and opportunities (M11, S21, S22, S26) – as long as the process is properly designed and implemented. Additionally, they emphasize the positive environmental consequences of phasing out coal (S21). However, as they still acknowledge the adverse impacts and use careful language to communicate potential benefits, the narrative is not as strong as it could be.

Radical narratives

Coal fuels climate change

The connection between the emissions caused by coal-fired plants and climate change is not visible in the media discourse, but it is often invoked in stakeholders' documents. The regional government acknowledges Łódzkie's position among the biggest emitters and sees the need of transforming the energy sector to mitigate CC and improve air quality in the region (S21). Some academics and NGOs emphasize that the awareness is growing also among the wider public, leading to an external pressure visible in electoral preferences (S3, S5). Furthermore, different NGOs directly mention that because coal fuels CC, there is a pressing need to transition the Polish energy system to a carbon-neutral one (S4, S5, S9, S10, S12). One organization even states that "in the era of increasing ecological awareness, both in terms of air pollution and the disastrous effects of CC, further investment in coal mines – apart from being often completely unprofitable – is simply unethical" (S5). The narrative exemplifies therefore a radical one, questioning the role of coal in the energy mix and implying its serious consequences for the climate, which results in unquestionable need of the phase-out.

Health impacts associated with lignite

The health storyline consists of two sub-narratives. First of them presents the Bełchatów Power Plant as detrimental to human health, emphasizing greater harmfulness of lignite than hard coal (M14, S3, S4, S5). The actors show that the plant leads to severe pollution not only in the region but also further areas (S4), which results in increased asthma attacks, diseases of the nervous system or even higher mortality (M14, S4). As one organization lists, "in 2016, the [Bełchatów] plant contributed to 489 premature deaths, 205 cases of chronic bronchitis in adults, 398 hospitalizations, 7,864 asthma

attacks in children and 141,993 lost workdays. The health costs associated with burning coal were estimated at EUR 1.42 billion" (S4).

The second sub-narrative addresses the change of legislation allowing the purchase of lignite by individual customers. Without adequate filtration in household heating systems, burning lignite leads to even higher health risks (M14). According to one researcher, "the government should not allow such a scenario [...] and do whatever it takes, even pay more for hard coal. These are disastrous consequences for the budget, but in this situation it's better to pay more for more expensive coal from abroad than to pay with people's health" (M14). This radical narrative disrupts therefore the view of lignite as a safe and stable resource.

Legislation & climate goals

The need to abide by the legislation and decarbonization goals is mentioned solely in stakeholders' documents. As the EU legislation prohibits state aid towards the lignite mining industry, Poland has to obtain a special permission to continue such support, which seems rather unlikely (S3). Moreover, in light of the European Green New Deal and CO_2 emissions reduction goals that Poland signed, at least a gradual reduction in lignite extraction is required (S3). Consequently, decarbonization of Bełchatów is crucial for Poland to reach its climate goals (S7). Additionally, transformation of coal regions is one of the main objectives of the national energy strategy, which also serves as a base for the TJTP of Łódzkie (S21, S22). Some actors also state that Polish climate goals are not sufficient from the perspective of science, as well as other EU states who introduce their own, more ambitious targets (S3, S9). Therefore, NGO Client Earth calls to "assess the coherence of the provisions of the transition plan for the Łódź Voivodeship with the goals of the European Union, and not with national goals that fall far short of them" (S9). This narrative can be classified as a radical one, as it presents decarbonization as a form of obligation that Poland agreed to, overshadowing any potential benefits of coal as a resource.

Coal is too expensive

The last radical narrative focuses on the (un)profitability of coal. In contrast to the national-level narrative of coal being the only source of affordable energy, civil society actors and environmental NGOs argue that there are no economic reasons to invest in coal (M26, S3, S4, S7, S8, S10). They demonstrate that coal-based energy is associated with high prices due to the costs of extraction and increasing EU Emissions Trading System (EU ETS) prices (M26). Moreover, rising EU ETS prices may accelerate the transition process, especially in the case of lignite and its much higher emissions, which will also impact its price. Therefore, as the economic situation of coal is already unfavorable

and is projected to worsen, maintaining and investing in this resource is not reasonable (S7). As Forum Energii puts it, “the modeling results show that coal in the energy sector is no longer economically profitable, and in 2028, when the support system for coal-fired power plants ends, it will generate losses” (M26).

5.1.4 Summary of RQ1

The local debate is dominated by pro-coal narratives reproduced mainly by a coalition of incumbents, who state that coal still needs to play an important role due to energy security, the energy crisis in Europe and adverse impacts of decarbonization for the region. On the other hand, several alternative narratives try to challenge the position of coal. They focus on climate change, health impacts, legislation and unprofitability of lignite. The main actors supporting these narratives are environmental NGOs and researchers.

5.2 Impact of the narratives on the carbon lock-in (RQ2)

The RQ2 of my thesis is: “How do the identified narratives impact local carbon lock-in?”. Here I investigate whether the storylines contribute discursively to sustaining the carbon lock-in. Additionally, I examine the discursive dynamics to look for pathways of discursive change that could unlock the institutionalized discourse to enhance a sustainability transition.

5.2.1 Local discourse sustaining the carbon lock-in

This section analyzes ways in which the identified narratives contribute to the reinforcement of carbon lock-in in Bełchatów. That includes the reproduction of the broader pro-coal discourse, as well as identification of lock-in mechanisms described by Simoens et al. (2022).

Reproduction of the institutionalized discourse

The analysis of local discourse revealed that all narratives identified in previous research (Biedenkopf, 2021; Hermwille et al., 2023; Kuchler & Bridge, 2018; Osička et al., 2020; Żuk & Szulecki, 2020) are reproduced to some extent locally. The local debate includes not only the most widespread *energy security & sovereignty* narrative, but also quite frequent references to *coal as the only source of affordable energy*, *coal as the base of the Polish economy* and *the EU imposing the coal phase-out on Poland*. All of them are crafted by incumbent actors, who have strong discursive agency both in the national debate and in the local context. This may explain the strong presence of the narratives on both levels.

Apart from that, the local discourse consists of numerous narratives that were not identified in previous research. In fact, they are more frequent than the previously identified storylines. Many of them refer specifically to the local context, i.e. the Bełchatów Power Plant or Złoczew, but a lot of them also address coal in general. Importantly, even if they introduce new assumptions, such as a view that Polish coal is attractive or coal is a stable source of energy, they do not contradict the dominant discourse. Rather, they emphasize a slightly different aspect, which often results from local context and experiences, while still maintaining a general pro-coal stance. This way they introduce more reasons to keep the status quo and reinforce the institutionalized pro-coal discourse.

Comparing my analysis with the previously identified narratives says a lot about the degree of discourse institutionalization and its reproduction. For instance, the narrative on energy security & sovereignty was already identified in the research conducted between 2015-2019 (Osička et al., 2020; Żuk & Szulecki, 2020). However, my analysis shows that the narrative still remains dominant, holding a powerful position as the single most referenced storyline in the Bełchatów region. That means that over the years the discourse around coal has not changed significantly and energy security still serves as an argument for continuing the use of coal. The constant reproduction of the same pro-coal narratives ensures the continuity of the hegemonic discourse, leading to its structuration by shaping the public perception of coal, and institutionalization through solidification in institutional arrangement. Consequently, the carbon lock-in is reinforced.

Discursive lock-in mechanisms in Bełchatów Basin

As already discussed before, Bełchatów Basin exhibits a carbon lock-in due to its dependence on the mining industry and the lignite plant. In order to say that the local discourse sustains this lock-in, a discursive type of lock-in needs to be observed. Such lock-in underlies other types of lock-ins that revolve around infrastructure, institutions and behaviors. For a discursive lock-in to happen, the reproduction of institutionalized discourse needs to become self-reinforcing, meaning that pro-coal discourse has to be reproduced automatically.

Simoens et al. (2022) identify three types of discursive lock-in mechanisms that can lock-in the institutionalized discourse and prevent socio-technical change. Two of them are relevant for my study of discursive dynamics in Bełchatów Basin, i.e. incumbents' strong discursive agency that locks-in the discourse on the regime level and narrative co-optation that happens on the niche level when marginal narratives align too closely with the institutionalized discourse. As my thesis does not examine the discursive landscape dimension, I could not evaluate whether the other lock-in mechanism appears as well.

The strong discursive agency gives certain actors a clear advantage in the discursive struggle. As described previously, the positional characteristics of the national government, PGE and trade unions automatically render them strong discursive agents. As a result, whenever they resort to any strategic practices to support their narratives, they are bound to be more successful than weak discursive agents. As shown in section 5.1.2, the incumbent actors reproduce the pro-coal narratives that become dominant in the local debate. They use their discursive power to lock-in the institutionalized discourse in order to protect their own interests, position or resources that are tightly connected with the current position of coal. At the same time, they are not present in any of the identified alternative narratives that try to challenge the position of coal. This results in a self-reinforcing lock-in mechanism, as the incumbents' narratives that are more powerful from the very beginning become even more influential after gaining dominance. As the incumbents contribute to the creation of the institutionalized discourse, they reinforce the carbon lock-in, creating a positive feedback loop and making it even more difficult for other narratives to influence the discourse.

Another discursive lock-in mechanism that can be observed in Bełchatów Basin is the narrative co-optation. This lock-in results from the discursive dilemma between radical and marginal narratives, i.e. a struggle between presenting completely new ideas or speaking within the format of current discourse (Hajer, 1995). Following the second path increases the chances for reproduction by other actors, but at the same time such narratives may be co-opted by dominant narratives. The marginal narrative on energy security is a good example of the narrative co-optation lock-in mechanism. The actors crafting this narrative are aware of the importance of energy security in Poland. By addressing this issue, they strive to speak in terms that are relevant within the institutionalized discourse. This way, they want to make their narrative visible among the incumbent actors. However, by focusing on the future and not challenging the role of coal in the present system, the discursive agents align too closely with the dominant ideas and lose the transformative power of their narrative. Even though the narrative itself does not intend to support the position of coal in the energy system but rather aims to accelerate the decarbonization process, the main message seems to focus on the importance of energy security, which for many actors equals to maintaining the coal-based energy, as visible in the most widespread dominant narrative. As a result, this marginal narrative locks-in the institutionalized pro-coal discourse rather than challenging it.

5.2.2 Local discourse challenging the carbon lock-in: pathways of discursive change

The last step of my analysis aimed to examine if the discursive dynamics in Bełchatów create a space for any of the discursive pathways described by Simoens et al. (2022). I was specifically interested in

whether any potential pathways could open a window of opportunity for narratives challenging the role of coal in the energy mix to gain more dominance.

First, it is worth to comment shortly on the disruptive discursive change resulting from external events. The main disruptive external event during the period of analysis was certainly the war in Ukraine and subsequent energy crisis in Europe. Even without analyzing the meta-discourses and potential change in values, it is evident that the war strengthened the position of coal, reinforcing rather than challenging the carbon lock-in. Therefore, instead of becoming a pathway of change as e.g. in Sardinia (Biddau et al., 2023), the event turned out to be another lock-in mechanism.

Therefore, out of the three pathways introduced by Simoens et al. (2022), dynamic discursive change that involves a change from within is the only one that I observed in my analysis. Simoens et al. (2022) mention different strategies that could enable this pathway. One of them aims to unlock the discursive agency of incumbents by breaking power asymmetries or delegitimizing incumbent groups. This is best visible in the narrative on climate change. Apart from reinforcing the connection between lignite, CO_2 emission and CC, some actors directly blame the energy industry, trying to undermine their position. In the case of Greenpeace, this took the form of a climate lawsuit, as they sued PGE based on the Polish Environmental Protection Law, demanding faster reduction in the company's CO_2 emissions (S11). By presenting the energy company as the biggest emitter in Poland, the NGO aimed to delegitimize one of the incumbents and even up the struggle for discursive dominance. As a response, PGE adopted a similar strategy, trying to undermine the position and motivations of Greenpeace (S14).

Another strategy focuses on opening the discursive struggle for alternative narratives. My analysis shows that various actors strive to achieve that by engaging more stakeholders in the debate. However, this debate revolves mainly around the transition process rather than coal itself. For instance, Bełchatów 2050 provides a space for different stakeholders, such as academics, NGOs or civil society organizations, to bring their perspective, expertise and experiences from various fields in regards to the transition. Another example applies to the regional government who talks about positive impacts and emphasizes that just transition must involve everyone. This way they aim not only to focus on the impacts, but also encourage various actors to actively participate in the process. Importantly, considering the status of lignite in the region and the central part of decarbonization in the transition process, it could be anticipated that involvement of more actors in the transition debate would also allow to include more views on coal. Therefore, even if this actor does not directly aim to include more perspectives on coal, higher participation in the transition debate might still have indirect implications for the discourse around coal.

This way of reasoning may be in line with another strategy assuming that "new narratives may be created that aim to build trust and provide space to discuss conflicts that arise from a transition by default" (Simoens et al., 2022, p. 1849). By shifting the focus to the justice aspect of the transition and emphasizing positive social impacts, the actors step away from more contested topics of decarbonization or the role of coal in the energy mix. As shown in section 5.2.1, institutionalized pro-coal discourse is locked-in by local narratives and therefore not easily challenged. By emphasizing involvement of everyone and the need to collaborate, the actors build trust and safe space to open a discussion on the transition. This way they have a chance to address potential concerns of the incumbents, increasing their willingness to participate in the process, which also entails decarbonization plans.

To convince incumbent actors, it is also important to present clear directions or goals. There are some attempts of that, visible for instance in the marginal narrative on energy security, in which Forum Energii emphasizes the importance of having a carefully crafted plan for coal and decarbonization. Additionally, one expert-based actor presents clear directions for the government and suggests concrete steps that should be taken in terms of the transition process. Based on their own expertise, they propose to change the coal phase-out date in Poland to a more ambitious and realistic date of 2035 (M26). By doing that, they increase the chance that the incumbents would take their suggestions seriously.

In sum, civil society actors, environmentalists and the regional government take efforts to open a dynamic pathway of discursive change. In terms of specific narratives, those efforts can be mainly attributed to the marginal storyline on positive impacts for the region and radical narrative on climate change. Additionally, some actions that the actors take, such as providing a space for other voices, support the undertaken discursive efforts. All of these efforts are good first attempts to unlock institutionalized discourse. However, taking into account the degree of discourse institutionalization and the discursive lock-ins, these efforts are rather unlikely to create a window of opportunity for a new dominant discourse in the near future.

5.2.3 Summary of RQ2

The dominant narratives in Bełchatów Basin reinforce the carbon lock-in by reproducing the institutionalized discourse and due to the incumbents' strong discursive agency. Moreover, the carbon lock-in is strengthened by the narrative co-optation by the marginal narratives. Even though the civil society stakeholders, NGOs and the regional government strive for a discursive change, their efforts are unlikely to soon open a window of opportunity for the dominance of anti-coal discourse.

6 Discussion

6.1 Contextualizing the results

Understanding the discourse around coal is important to enable a sustainability transition in the energy system. My analysis shows that the debate in Bełchatów is dominated by a coalition of incumbent actors who reproduce pro-coal narratives. This discourse is locked-in due to the incumbents' strong discursive agency and narrative co-optation by the marginal storylines. As a result, despite the efforts by the alternative narratives to open a pathway of discursive change, the carbon lock-in in Bełchatów is sustained discursively both on the regime and niche level.

The discursive dynamics in Bełchatów align with the results of previous studies indicating the discursive dominance of national government, energy companies and trade unions (Krzywda et al., 2021; Osička et al., 2020). Similarly, research shows that those who are marginalized in the debate are non-status quo actors, including NGOs, which are most actively working against coal, and mining municipalities representatives, who are not given voice in the media (Brauers & Oei, 2020; Krzywda et al., 2021; Osička et al., 2020). That is confirmed by my analysis of the local and regional media in Bełchatów, where these groups have the least media coverage.

Apart from the actors' coalitions and position in the discourse, similarities with previous studies are visible in the employed narratives. While environmentalists raise issues of CC, the government sees coal as a national asset, and mining municipalities express their fear of transition and its social effects (Krzywda et al., 2021). As there are various ways to study discourse and consequently to describe and categorize the emerging storylines, sometimes it may be necessary to look beyond the classification chosen by the author in search for common themes and assumptions. For instance, in their study in Upper Silesia, Hermwille et al. (2023) identify a story of (restrained) progress. Even though I do not use that terminology, certain similarities can be observed. In the Silesian story of progress, NGOs, local activists and other actors acknowledge the complexity of the transition process while highlighting the opportunities. In my study in Bełchatów, a very similar approach is presented by the regional government and mining municipalities in the narratives concerning adverse and positive local impacts.

Despite being often specific to the local context, e.g. debates on Złoczew, the narratives in Bełchatów can still tell us a lot about the broader discourse in Poland. Comparison of this case with other studies implies that the legacy of coal described by Kuchler & Bridge (2018) continues to support the position of coal in the future energy mix. While Brauers & Oei (2020) thoroughly describe the

political economy of coal in Poland in terms of material, organizational and financial characteristics, my analysis, together with previous studies, indicate that this strong connection between coal and the political structures is manifested also in the discourse. Therefore, my study contributes to understanding the form of this discursive manifestation and how it impacts the carbon lock-in not only in Bełchatów, but also the whole country.

Another contribution of my thesis lies in disclosing alternative narratives. Several previous studies focused on the media or policy narratives (Biedenkopf, 2021; Chodkowska-Miszczuk et al., 2022; Huber et al., 2021; Osička et al., 2020; Żuk & Szulecki, 2020). These tend to reveal mostly dominant discourses of influential actors who have the power to appear in the debate. While analyzing dominant narratives says a lot about discourse institutionalization and policy implications, to understand lock-ins and potential for change it is important to consider more discursive dimensions. Identifying alternative narratives offers insight into the pathways of change and allows for assessing the outcome of the discursive struggle. It also provides more detailed and accurate representation of the debate. For instance, including marginal narratives allowed for identification of nuances in the discourse on energy security. Consequently, the heuristic by Simoens et al. (2022) proved to be a useful analytical tool to study discursive dynamics by offering a comprehensive approach that includes various dimensions and mechanisms.

Lastly, it is worth reflecting on the role of media in the socio-technical transitions, and specifically in sustaining the carbon lock-in. It is clear that incumbents tend to be given more voice in the media, and while my research involved only local and regional press, other studies suggest that this is visible also in radio or television (Krzywda et al., 2021). That implies the importance of the media in shaping discursive struggles. It has been shown that the political connections of media broadcasters in Poland affect the type of discourse that is presented (Chodkowska-Miszczuk et al., 2022). Consequently, by promoting certain narratives the media agenda can either enable or constrain potential policies (Osička et al., 2020), which is incredibly important for changing the energy regime.

6.2 Implications for the coal phase-out (RQ3)

In this section, I intend to answer my RQ3 by briefly reflecting on some possible implications of the observed discursive dynamics in Bełchatów for the coal phase-out plans in Poland.

First, it is worth revisiting Trencher et al.'s (2019) distinction of interactions between narratives and the energy system. As mentioned before, the coal narratives identified so far tend to sustain fossil fuel hegemony in Poland. In the case of Bełchatów, all the dominant storylines can be classified into

this category as well. However, focusing on alternative narratives reveals that there are also attempts to weaken the legitimacy of the incumbent regime to open a pathway of change. Although it is a positive shift, it does not imply that these narratives will succeed in weakening the legitimacy of coal. Simoens et al. (2022) note that the dynamic discursive change, which is the only pathway observed in my analysis, may risk supporting only incremental changes and there is no certainty whether any radical change may happen as a result.

This suggests that there is a high chance of sustaining the current pro-coal views among many actors participating in the transition. In other words, the outcome of the discursive struggle in Bełchatów clearly favors the pro-coal discourse coalition. As Ruhrort (2023) notes, successful coalition building is key for a socio-technical change. Moreover, it has been suggested that the actors' fear of radical changes to their positions and responsibilities within a system may create a barrier to creating ambitious policies, preventing a successful transition (Simoens & Leipold, 2021). That can also be the case of incumbents in the energy system in Poland. No matter if the debate concerns transformation of Bełchatów or the whole country, the national government, PGE and trade unions' positions will be influenced by the phase-out of coal. Therefore, they will sustain the status quo to protect their positions for as long as possible.

In summary, the situation around the coal phase-out in Poland is rather complex. On the one hand, official decarbonization plans threaten the position of coal. On the other hand, discursively coal still plays an important role and in that sense its position is not yet significantly impaired. Therefore, the process is likely to remain contested and challenging the dominant views may require a lot of effort and time. Interestingly, the study of Markard et al. (2021) on the coal phase-out in Germany has shown that decades of discursive delegitimization of coal were needed for the actual phase-out decision. This is not the case in Bełchatów or Poland, where phase-out plans were implemented without discursive delegitimization. That may lead to the question whether discursive legitimation is imperative for a successful transition. However, as discourse constructs what appears technologically, economically and politically feasible (Hermwille, 2016; Ruhrort, 2023), discursive delegitimization of coal and simultaneous legitimization of a carbon-free energy system may still be key to gain public and political support for the phase-out policy (Ruhrort, 2023), which then influence the course of transition. The fact that the phase-out dates have been set does not guarantee meeting these dates. Considering the nature of the narratives sustaining the status quo in Bełchatów and Poland, there is a risk that the still ongoing discursive legitimization of coal can endanger the phase-out process in Poland, leading to a delay or even decarbonization not happening at all.

6.3 Limitations

I want to conclude this section by discussing some limitations of my research. Firstly, studying discourse and narratives requires a certain degree of subjective interpretation. Even though I intended to remain unbiased, my positionality regarding the studied country and sustainability issues might have influenced the coding process or analysis (Gibbs, 2018). Furthermore, by studying alternative narratives I intended to give space to the voices that are not heard so clearly. However, my choices concerning the analyzed actors and communication channels might still have led to exclusion of some marginalized voices.

My use of the heuristic by Simoens et al. (2022) also involves certain constraints. Even though I aimed to apply as many analytical dimensions as possible, due to time and space constraints I needed to narrow the scope of my analysis. Therefore, I decided not to include the landscape dimension and focus more thoroughly on the dominant and alternative narratives. However, "incorporating the discursive landscape dynamics is important to understand the sociotechnical configuration as a whole" (Simoens et al., 2022, p. 1850). Therefore, excluding this part might have led me to overlook some important insights, influencing my interpretation of the discursive dynamics in Bełchatów Basin.

7 Conclusion

My study has demonstrated that socio-technical transitions are complex processes in which technologies, politics, economy, but also discourses are intertwined. Even though Poland has a coal phase-out policy in place, the public debate continues to be dominated by pro-coal narratives crafted by influential actors, including the national government, who have a direct influence on the course of the transition process. In the Bełchatów Basin, several alternative narratives try to challenge the role of coal in the energy system. However, the strong discursive agency of incumbents and narrative co-optation by the marginal narratives lead to a discursive carbon lock-in. Consequently, despite attempts by alternative storylines to create a pathway of change, the pro-coal discourse is reinforced. The discursive legitimization of coal can be a potential source of obstruction for the coal phase-out in Poland, risking its delay or even preventing the transition from happening.

By adopting a discursive approach to study energy transition, this thesis has contributed to the research on narratives in transitions, demonstrating their importance as a tool to constraint or enable processes of change. Additionally, this case study of Bełchatów Basin has enhanced the

understanding of the discursive lock-in mechanisms and potential pathways of change. My findings can serve as a basis for future research on narratives in other coal regions. Studying places where carbon lock-in has been overcome discursively could uncover how alternative narratives can successfully open a window of opportunity for a sustainable discourse and in which ways they impact the phase-out processes.

8 References

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9 Appendices

Appendix 1. The list of media articles

Title	Newspaper/portal	Year	Code
Międzynarodowy kongres górniczy w Bełchatowie: ostatni dzień dyskusji	Bełchatów Nasze Miasto	2023	M1
Minister sprawiedliwości Zbigniew Ziobro w Bełchatowie. Wrócił temat odkrywki Złoczew	Bełchatów Nasze Miasto	2023	M2
Najważniejsi ludzie polskiej energetyki w Bełchatowie. Rozpoczął się międzynarodowy kongres poświęcony transformacji energetycznej	Bełchatów Nasze Miasto	2023	M3
Europoseł Adam Bielan w Bełchatowie mówił o przyszłości węgla. Spotkanie w Elektrowni Bełchatów z Małgorzatą Janowską	Dziennik Łódzki	2022	M4
PGE zmienia strategię. Odejście od węgla najpóźniej w 2030 roku!	Dziennik Łódzki	2023	M5
Prezes PGE: kopalnia Złoczew? Gwarantowałaby znalezienie się za kratkami	Dzień Dobry Bełchatów	2021	M6
Aktywistki zaśpiewają kolędy o... kopalni i elektrowni. Happening przed urzędem w sprawie rezygnacji z węgla	Dzień Dobry Bełchatów	2021	M7
Górnicy wydobyli więcej węgla niż planowała PGE. W bełchatowskiej odkrywce zostało go niewiele…	Dzień Dobry Bełchatów	2021	M8
Górnicy z Bełchatowa będą wydobywać coraz mniej węgla. Ile zostało w odkrywkach?	Dzień Dobry Bełchatów	2021	M9
Ile unijnej kasy dla Bełchatowa? Ministerstwo zaproponowało podział funduszy dla regionów węglowych	Dzień Dobry Bełchatów	2021	M10
Jaki plan na Bełchatów „po węglu”?	Dzień Dobry Bełchatów	2021	M11
Przynieśli świńskie głowy pod siedzibę PGE. Powód? Ogromne ceny węgla i prądu	Dzień Dobry Bełchatów	2022	M12
Chcą specustawy, która odblokuje złoża węgla. PGE wróci do pomysłu otwarcia nowej odkrywki?	Dzień Dobry Bełchatów	2022	M13
Czy palenie węglem brunatnym to dobry pomysł? ''To będzie męka. Ludzie to kupią i będą przeklinać''	Dzień Dobry Bełchatów	2022	M14
Jakie są limity i kolejki za węglem w PGE Kopalni Bełchatów? ''Przyjeżdżają z województwa i całego kraju''	Dzień Dobry Bełchatów	2022	M15

Pół miliarda ton węgla czeka na ''odblokowanie''. Chcą specustawy, a PGE i ministerstwo... podają ceny	Dzień Dobry Bełchatów	2022	M16
Wydobywają więcej węgla niż PGE planowało. ''Ratujemy system, ale złoże wyczerpie się wcześniej''	Dzień Dobry Bełchatów	2022	M17
Górnicy nie odpuszczają walki o 500 mln ton węgla. Rząd ponownie przeanalizuje inwestycję	Dzień Dobry Bełchatów	2023	M18
Sprzedaż węgla w Kopalni Bełchatów. PGE przystała na prośbę kupujących	Dzień Dobry Bełchatów	2023	M19
„Radykalne ograniczenie wydobycia węgla i produkcji prądu”. Związkowcy piszą do premiera	Dzień Dobry Bełchatów	2023	M20
Co dalej z węglem i bełchatowską elektrownią? "To strategiczny błąd. PGE powinna pełnić inną rolę"	Dzień Dobry Bełchatów	2023	M21
Co z Bełchatowem i regionem po węglu? OZE i „produkcja energii w technologii nuklearnej”	Dzień Dobry Bełchatów	2023	M22
PGE zrezygnowała z 500 mln ton węgla. Czy wrócą do inwestycji? "Może zabraknąć prądu w gniazdkach? Oczywiście!"	Dzień Dobry Bełchatów	2023	M23
Pracownicy Kopalni Bełchatów wyruszyli w rajd do Skandynawii. „Złoża węgla kiedyś się skończą”	Dzień Dobry Bełchatów	2023	M24
Znikają budynki i drogi, PGE przejęła 400 hektarów. Miliony ton węgla pod wioską	Dzień Dobry Bełchatów	2023	M25
PGE zacznie wygaszać elektrownię i kopalnię. Eksperci wskazują datę odejścia od węgla	Dzień Dobry Bełchatów	2024	M26
PGE ograniczy produkcję prądu i wydobycie węgla, a później wygasi kompleks. Co dalej z regionem?	Dzień Dobry Bełchatów	2024	M27
Region bełchatowski generuje 12% PKB województwa! Transformacja energetyczna Bełchatowa to wyzwanie dla całego Łódzkiego	EBE24	2022	M28
"Region wymaga szczególnej troski i prac nad poszukiwaniem nowych pomysłów na rozwój", czyli o transformacji energetycznej Łódzkiego	EBE24	2022	M29
Ostatni dzwonek na inwestycje w węgiel, powraca temat Złoczewa	ebełchatów.pl	2023	M30
Minister Sprawiedliwości Zbigniew Ziobro w Kopalni Węgla Brunatnego w Bełchatowie	Lokalna News	2023	M31

Appendix 2. The list of documents from stakeholder communication channels

Title	Stakeholder category	Stakeholder name	Year	Code
Transformacja a rozwój gospodarczy regionu. Energia przyszłości zaczyna się dziś!	Business environment institutions	Bełchatowsko Kleszczowski Park Przemysłowo Technologiczny (Bełchatów-Kleszczów Industrial and Technology Park)	2022	S1
Przyszłość regionu węglowego	Business environment institutions	Łódzka Agencja Rozwoju Regionalnego (Łódź Regional Development Agency)	-	S2
Dlaczego proces odchodzenia od energetyki węglowej będzie przyspieszał?	Civil society actors	Bełchatów 2050	2021	S3
Kompleks w Bełchatowie to duże zagrożenie dla zdrowia i życia	Civil society actors	Bełchatów 2050	2021	S4
Smog zabija. A winnym są także elektrownie węglowe	Civil society actors	Bełchatów 2050	2021	S5
Odejście od węgla brunatnego jest możliwe nawet w 2032 r.	Civil society actors	Forum Energii (Energy Forum)	2021	S6
Jak utrzymać energetyczną przyszłość Bełchatowa	Civil society actors	Forum Energii (Energy Forum)	2022	S7
Decyzją GDOŚ kopalnia Złoczew nie powstanie, Bełchatów wciąż bez planu transformacji	Environmental NGO	Client Earth	2021	S8
Plan transformacji woj. łódzkiego – wciąż potrzebne konkrety	Environmental NGO	Client Earth	2021	S9
Kapitulacja PGE! Kopalnia Złoczew nie powstanie. Wielkie zwycięstwo mieszkańców i organizacji ekologicznych	Environmental NGO	Greenpeace	2021	S10
Greenpeace and Polish Energy Group will meet in court	Environmental NGO	Greenpeace	2022	S11
PGE GiEK nie przygotuje w tym momencie strategii	Environmental NGO	Greenpeace	2022	S12
Bezpieczeństwo energetyczne Polski i Europy – sympozjum w Bełchatowie	Energy industry	PGE Górnictwo i Energetyka Konwencjonalna S.A.	2022	S13
Bezprecedensowy atak Greenpeace na suwerenność energetyczną	Energy industry	PGE Górnictwo i Energetyka Konwencjonalna S.A.	2022	S14

Centralne obchody Barbórki w spółce PGE GiEK	Energy industry	PGE Górnictwo i Energetyka Konwencjonalna S.A.	2023	S15
O roli jednostek konwencjonalnych w dobie ewolucji sektora energetycznego na konferencji naukowo-technicznej	Energy industry	PGE Górnictwo i Energetyka Konwencjonalna S.A.	2023	S16
Czy Polskę stać na przedwczesną likwidację elektrowni opartych na węglu brunatnym?	Energy industry	Porozumienie Producentów Węgla Brunatnego (Association of Employers Alliance of Lignite Producers)	2021	S17
XI Międzynarodowy Kongres Górnictwa Węgla Brunatnego: Szanse i zagrożenia transformacji węgla brunatnego	Energy industry	Porozumienie Producentów Węgla Brunatnego (Association of Employers Alliance of Lignite Producers)	2023	S18
Utworzenie Narodowej Agencji Bezpieczeństwa Energetycznego wchodzi na ostatnią prostą	Government	National government - Ministry of State Assets	2023	S19
Wizyta ministra Zbigniewa Ziobro w Kopalni Węgla Brunatnego Bełchatów	Government	National government - Ministry of Justice	2023	S20
Development Strategy of the Lodzkie Region 2030	Government	Region Lodzkie (Łódzkie)	2021	S21
Terytorialny plan sprawiedliwej transformacji województwa łódzkiego (Territorial Just Transition Plan for Łódzkie Voivodeship)	Government	Region Lodzkie (Łódzkie)	2023	S22
O transformacji w praktyce – doświadczenia Wielkopolski	Mining municipalities, communes and counties	Bełchatów County	2021	S23
Transformacja a rozwój gospodarczy regionu – nowe technologie i podsumowanie projektu	Mining municipalities, communes and counties	Bełchatów County	2022	S24
Naukowcy z kilku krajów rozprawiają w Bełchatowie o węglu brunatnym	Mining municipalities, communes and counties	Bełchatów County	2023	S25
Sprawiedliwa Transformacja – szansa na rozwój regionu	Mining municipalities, communes and counties	Radomszczański County	2023	S26

Powiat radomszczański w obszarze Sprawiedliwej Transformacji	Mining municipalities, communes and counties	Radomszczański County	2024	S27
A letter to Andrzej Legeżyński, CEO of PGE Górnictwo i Energetyka Konwencjonalna S.A.	Representatives of the miners' trade	Ogólnopolskie Porozumienie Związków Zawodowych (OPZZ)	2022	S28
Kopalnia Węgla Brunatnego Bełchatów: nie zgadzamy się na dalszą likwidację polskiego górnictwa	Representatives of the miners' trade	Ogólnopolskie Porozumienie Związków Zawodowych (OPZZ) (The All-Poland Alliance of Trade Unions)	2023	S29
Protest „Solidarności" PGE w Warszawie	Representatives of the miners' trade	NSZZ "Solidarność"	2022	S30

Appendix 3. An excerpt from the final list of inductive codes

adverse impacts for the region	future technologies
Bełchatów is key for the energy system	health impacts of brown coal
blame the others & change the focus	international position of Poland
climate change & science	just transition
coal as a stable source	legislation & climate goals
coal for individual customers	need for a plan
coal is too expensive	not enough energy to close the plants
coal still needs to be a part of the energy system	Polish coal is attractive
decarbonization has serious political and economic consequences	positive impacts of decarbonization for the region
decarbonization is inevitable	potential of coal
decarbonization should be or will be faster	respect for the mining community
energy crisis in Europe	the energy complex provides opportunities for the region
ETS prices are too high	there's no alternative
future of Bełchatów	Złoczew