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How Germany is phasing out lignite: insights from the Coal Commission and local communities

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Abstract

Background This article asks the following question: how well are coal regions, affected by phase-out plans, represented in mediating commissions, to what extent do local communities participate in the decision-making process and how are the political negotiations perceived by the communities? We look at the case of the German lignite phase-out from a procedural justice perspective. Informed by literature on sociotechnical decline and procedural justice in energy transitions, we focus first on aspects of representation, participation and recognition within the German Commission on Growth, Structural Change and Employment (“Coal Commission”). Second, we analyze how to ex-novo coal in two regions closely tied to the coal- and lignite-based energy history in Germany: Lusatia and the Rhenish Mining District.

Results Based on interview series in both regions, we connect insights from local communities with strategies for structural change and participation programs in the regions. We find significant differences between the two regions, which is primarily an effect of the challenging historical experiences in Lusatia. Participation within existing arrangements is not sufficient to solve these problems; they require a comprehensive strategy for the future of the regions.

Conclusions We conclude that the first phase-out process was a lost opportunity to initiate a community-inclusive sustainable transition process. As the phase-out process is not yet concluded, additional efforts and new strategies are needed to resolve the wicked problem of lignite phase-out.

Keywords Sociotechnical discontinuation, Procedural justice, Coal Commission, Energy transition, Energy justice

Background

Introduction: justice, recognition and the representation of public interest in the German coal phase-out

Studies have examined defossilization or decarbonization from a distributional or intergenerational justice

perspective [1, 2]. This article adds a procedural justice perspective to the question of deliberate sociotechnical decline [3].

The literature has delved into the ways in which the state can promote more sustainable living [4], particularly concerning energy resources [5]. An essential question revolves around the legitimacy of state structures in determining the design and sustainability of public goods, such as electricity production [6–8]. In the deployment of renewable energy technologies [9–12], the legitimacy question has been examined from the procedural justice perspective. Here, we use the perspective to analyze the German coal

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phase-out process and its implications for affected local communities.

Lignite is a distinctive incumbent fossil fuel that cannot be stored and must be burned for electricity and heat [13]. This practice is widespread in Germany, notably in the Rhenish Mining District (West Germany) and in Lusatia (East Germany), two regions whose economies are based on lignite mining. Transitions away from lignite will significantly alter local conditions, but coal phase-out takes precedence from an environmental standpoint, given that the combustion of lignite is more detrimental than that of hard coal.

We analyze the Coal Commission's work from 2018 to 2019, considering the anticipations for it and reactions to it, as well as development programs and strategies developed from it for the affected regions. We consider decarbonization in the years following the Commission's work, which allows us to evaluate this key pillar in Germany's climate strategy [14–16]. The Commission aimed to balance the interests of different regions, communities, and stakeholders in the lignite phase-out, a challenge when the main lignite mining regions, Rhineland and Lusatia, are economically weak and chronically lack qualified workers [17–19]. We analyze how the Commission's decisions are perceived and evaluated by citizens and stakeholders in the mining regions, comparing the representation of interests and the participation of stakeholders, as well as conflicts and controversies in the two regions, leading to three research questions:

- Representation of affected regions: how did the affected regions react to the decisions to phase out coal; how was equal representation of interests achieved (or not)?
- Participation of local communities: which participation processes can be found in the two regions; how are they conceptualized, and do they deliver procedural justice?
- Conflict and controversy about the phase-out process: what controversies arose and how well could conflicts be solved during and after the process of decision-making?

Through these questions, we can present in detail how state intervention affects procedural justice in (former) German coal regions by studying how people's representation in the Coal Commission's decision-making processes was (or was not) enabled.

Framework: procedural justice and social representation in processes of deliberate sociotechnical decline

Sociotechnical discontinuation and procedural justice

We use “sociotechnical discontinuation” to mean leaving unsustainable energy practices through exnovation

and phase-out policies [20]. This involves procedural justice, which requires energy systems be “clean, efficient and affordable” [[21], p. 2541] and meet other criteria [22–25]. However, as technology transition is controversial and creates winners and losers [3], procedural justice also concerns the quality of legal and political processes [9, 13], including those related to sociotechnical decline [10]. We focus on three aspects of procedural justice: representation, participation, and conflict resolution.

Representation

We discuss two aspects of social representation in lignite phase-out. One is the influence of experts, policy makers and administrators on technological design [26, 27]. We examine how the Commission excluded a specific technology from the discussion and focused on the phase-out. The second aspect is the reactions of local inhabitants and Commission representatives to technology implementation [12]. We use the concepts of participation, equality, fairness and information provision to analyze representation in the decision-making process [28–32]. We also consider how inequality and injustice are embedded in the cultural politics of coal [33].

Intentional participation

We consider how social representation and procedural justice affect participation in political processes related to climate and energy. We examine two questions: “Who” influences these policies and “How” they are decided. The first question concerns representation of different actors and interests [34], while the second question concerns the quality and impact of participation processes [31].

Conflict and sociotechnical controversy

To reach balanced negotiations, local actors and knowledge are essential [35, 36]. Therefore, the phase-out agenda of measures and strategies should consider the community's inequalities, power relations and diversities [37]. Recognition justice is also important, meaning that communities' perspectives and input are valued and included in decision-making [30, 31, 38].

As a third party, the Coal Commission was established to find a legitimized, long-term strategy for the coal phase-out in Germany. However, how does the policy instrument actually play out in managing conflicts? We look at political resistance that arises against new economic (infra)structures. We consider what happens when disputes or human rights violations arise.

Methodology

We used a mixed methods design with secondary data (newspaper and research articles) and interviews. We reviewed literature on procedural justice, participation

and societal conflict related to sociotechnical decline. Based on this, we searched multiple databases (Scopus, Google Scholar, Web of Science) for studies on coal phase-out in Lusatia and the Rhine regions before and after the 2013 coalition government introduced a mediating Commission. We selected 22 relevant studies: 14 on the Rhine region and 12 on Lusatia (see Table 6 in the appendix). We coded our material using MAXQDA software according to representation, participation, and conflict. We compared the expectations and outcomes of the Commission's decision from different stakeholder perspectives before ($n=59$) the decision and after ($n=59$). This helped us identify gaps in the Commission's procedural design.

We also interviewed 25 people from Lusatia and the Rhenish Mining District in 2020 ($n=13$) and 2021 ($n=12$) and held an online workshop in 2020 with 9 energy justice experts from academia and local governments (see Tables 7 and 8 in the appendix). They included representatives of the federal and local government ($n=8$), political parties ($n=4$), civil organizations ($n=9$), companies and media ($n=4$). We used a semi-structured interview to assess knowledge, interpretations and perspectives on the local conflict and the energy transition. We transcribed and coded the interviews (see Table 9 in the appendix). This validated our research and enriched our analysis of procedural justice in the Rhenish and Lusatian coal phase-out regions.

Results: a procedural justice perspective on the German Coal Commission's decision on lignite phase-outs in Lusatia and the Rhine region

Background

The federal government announced the Coal Commission 5 years before it decided on burden-sharing for regions affected by the lignite phase-out. The Commission became public in 2014 when the German Climate Action Plan 2050 confirmed the coal and lignite phase-out [39]. In 2017, Germany's Federal Ministry for Economic Affairs and Energy proposed a Commission to facilitate a just phase-out [40]. The Commission's work faced a dispute over a Rhenish forest threatened by coal mining, which was later saved ("Hambach Forest"). This conflict dominated news in 2018 and determined the Commission's agenda [41–45].

The Commission's recommendations were adopted and included in the Structural Reinforcement Act for Mining Regions (2020) together with the coal phase-out law that set 2038 as the final date. Lignite-mining areas will receive up to €14 billion in financial aid until 2038 for especially important investments facilitating their structural change [23, 46]. These investments should target

expansion of renewable energies and establishment of innovative start-ups and research institutes.

The Lusatian perspective

The interviewees reported that the coal phase-out has become a big issue. While easily overlooked at first, now it is:

"ultimately a matter of somehow implementing this coal phase-out, because we are, after all, an open-cast mining region. For most of the population, they have grown up with coal, it has been a tradition here for decades. It is a cultural asset and also something that people identify positively with. After German reunification, the whole economy collapsed in Lusatia and tens of thousands, I think 40,000 jobs were lost here in Lusatia in the coal industry. So really incredibly many".

Coal is Lusatia's traditional livelihood. Companies recently created 1.3 billion euros in sales and 8000 jobs, plus 16,000 indirect jobs. About 75,000 people depend on coal—out of 200,000 residents. One respondent said, "This is our livelihood," explaining why a third of the population supports coal. There is no big-city environmental awareness: "Your environmental thought is not wrong, but please do not touch my livelihood!".

The first structural change in Lusatia took place in 1990 in the coal industry, 100,000 employees lost their jobs, now there are only 8000. The mass layoffs led many to leave the region, which has shaped the culture. Being a miner was associated with pride. Proud older miners could not be blamed for destroying the environment and being "criminals." Conflicts were therefore inevitable due to young activists. Structural change therefore took place much earlier, "only nobody talked about it in such a big way." The older people therefore say: "Yes, we've been through all this before and now it's all coming back!". One interviewee, who himself worked in the coal mine, reported that it was a matter of self-esteem:

"I experienced another ten years in the GDR era and then the post-reunification period, and if you've experienced how quickly something like that can happen, that an entire industry that had existed for centuries dies, then you can perhaps understand why I thought about it. There is still 'German unity trauma.' People are incredibly afraid that when the coal phase-out comes, this German unity trauma will repeat itself and suddenly a whole lot of people will become unemployed and the region will collapse and 'then it's all over.' This fear is extremely great."

The respondents are afraid of higher prices and inflation, which would have increased the worries even more

if the jobs in the coal industry disappear and the added value in the region decreases. The question then arises, 'Has this really brought us anything positive now?'

The coal industry pays high salaries and pensions, attracting people and benefiting the work-life balance. The money stays in the region, boosting consumption and orders. Therefore, employees say "We can't get out of coal! You are destroying our communities and jobs". The fear persists, "What will happen to us if we lose our main economic sector?" Some cities lost two-thirds of their residents after German unification. Many young people left the region in the 1990s due to lack of jobs and high unemployment. That was the central experience after 1990.

Almost every interviewee told us that every structural change leads to mass unemployment, to social upheaval. In other words, the phase-out really does have consequences for people's personal lives. Most interviewed persons in Lusatia do not want that anymore and they do not trust the government to make the structural change smooth, i.e., without these distortions that they experienced after 1990.

Coal was synonymous with the state in GDR times. The GDR made the region a coal region. Coal had a majestic and omnipresent effect. The GDR needed electricity, the GDR needed heat, and Lusatia was the only region where that could come from. The awareness of having been the energy region of the GDR still spurs a sense of pride; the entire economic structure of the region had been shaped by coal, and many people had moved there because of the good jobs and the region's good facilities. The state government, led by the Social Democrats for 30 years, supported the coal industry. The prime minister was also the chairman of the lignite committee and a de facto coal lobbyist. This link between mining and politics has lasted since the 70s and 80s and still exists today. The regional mining company LEAG sponsors many things in the region, and investments have been made in social measures.

One interviewee working in the civil society sector sums up the overall picture: "Mining and the energy industry have existed for over 100 years. And you can't just end an industry like that, especially since there's still enough coal. So, the coal would last until 2058".

In GDR times, the coal industry would have heavily polluted the air and damaged the environment, with coal dust everywhere. After reunification, coal became cleaner and people felt problems were solved. In the 2000s, the region stabilized, but the phase-out deadline does not give enough time for a deep structural change ("they will definitely not be enough"). However, the region has labor potential and can develop new value chains. Measures can be taken in good time, as one politician describes:

"Founding rescue companies, finding bridging paths, creating transition paths from one industry to another, from one job to another".

The coal industry paid for everything, so there were swimming pools and there were shopping malls and there were cinemas and everything was better, it had a higher standard than was otherwise so common in the GDR and even in retrospect, the coal industry solved all the problems. There was no broad middle-class industry like in West Germany, where there are several companies that form the economic backbone of the region, and then people continued to cling to this wrong structure after reunification.

One interviewed politician outlined the specific narrative of experiences in East Germans in the past: "People now have the feeling that a lot is breaking away, that it's like a religion. They could not imagine what it was like to live without it. Young people left the region after 1990, millions of them, especially well-educated people. For this reason, it is not enough to simply provide money, because you need local people with whom you can implement structural change". He concludes, that only an upgrade of rural areas could be the key for the transformation: "Therefore, the attractiveness of the region must be greatly increased, otherwise no one will come there. This is more successful in other eastern German regions because they can sell themselves better and have developed their own identity. A change in perception is therefore needed; people have to want to come here. And for that they have to get to know the region, for that they have to get to know the potentials and those have to be right in their stage of life. Then I believe this region has a very great potential."

Other respondents were in favor of the specific phase-out date, because they could be prepared for it. But had a referendum been held, it would have rejected the phase-out out of habit, routine, uncertainty, and fear. The Commission's preparation and decision changed the regional debate on climate change and coal use. The 14 billion euros for the regions also helped.

However, the coal phase-out law also established various adjustments and bridge payments for employees, causing envy among workers in other industries. One former coal worker describes the individual perspective of sorrows: "And that's really what it's all about", he says, that people are very concerned, "Will I continue to find good work here, and will that work pay well?" He gives an example of a police academy being established as an alternative, but "an excavator operator is not going to be able to teach police students. If I had a job like that in the coal, I might cling to that, too". Another politician underlined this fear-of-loss argument: "It is not so much about the living conditions, because they are good in Lusatia.

New settlements could be built thanks to payments from the energy companies as compensation for villages that had to make way for open-cast mining. It is the fear of unemployment, poverty, weaker purchasing power or that the region will die out because then everyone will move away. The job opportunities are very limited in the region”.

There is a very high level of dissatisfaction among young people, one politician said, because they do not know how to plan their lives in the future: "Will I build a house in Lusatia now, for example? Or do I have to deal with leaving the region now, as I did in the early 1990s?" However, other interviewees report that many people now want to move to the countryside, some accepting a further commute from Berlin and being able to purchase inexpensive land. A new planned rail connection with a high-speed train could strengthen this effect in the future.

From the perspective of local representatives, the coal phase-out is only one struggle based on another challenges. One mayor states that the coal phase-out has a "punch" that has to do with the images of the transformation process. The mayor also says that demographic change is a decisive factor. Based on the fears of the population, this resulted in the slogan "We don't want the coal phase-out. Coal has always brought us prosperity." This is an easy narrative, he said, because after all, it requires a lot of knowledge and also a lot of preoccupation with looking at other options. "It's always easier to say let's keep it that way".

Another mayor in Lusatia addressed the question of awareness: "The point is, to know a problem on paper is one thing, but to have it constantly in front of your eyes and to understand it as a problem is something else. You can have such a problem in front of your eyes and because you don't want mining to have negative consequences, then the problem is suppressed, it is simply negated and you don't act and of course you don't question it".

Most respondents think the population is divided on the coal phase-out. Coal supporters blame politics and demand compensation from those forcing the change. The state governments claim they are in need of money and are using restructuring funds for unrelated investments.

What are the attitudes in the population towards coal use? One respondent states that "out of 100 residents, about 20 people are very active in the coal debate, of which 15 argue strongly in favor and 5 strongly against". Respondents report that the right-wing populist party resonates with its position against coal phase-out, but this does not reach younger people. There had been an "absolute clinging to coal", but more and more a

rethinking is setting in as well. The anti-coal phase-out position went down well with the population, because people are so unsettled and are also directly affected by the phase-out. That stokes fears, the respondent said, and then all someone has to do is say: "We're the victims here! And all people can agree with that. For these positions, you get votes accordingly".

Several interviewees report that the consequences are more immense than is apparent at first glance: the death of the industries also means a loss of revenue for the municipalities (for example, more than 100 million euros in trade taxes have already had to be paid back to an energy company). In addition, there is a serious ground-water problem, because mining takes a lot of water and at the same time pollutes water bodies. However, the demographic change is considered by interviewed politicians to be much more threatening than the coal phase-out, because the population is aging and young people are leaving the region (the city of Spremberg has shrunk from 28,000 to 22,000 inhabitants). The coal phase-out would need to be socially acceptable, so that no one would suddenly become unemployed. Fears stem from the unclear future and the unknown success of the structural change. Young people with loans now worry about paying them later. However, the region still has attractions: "We have sports clubs, cultural clubs; and we have social clubs. Subsidies are available."

The political process was reconstructed by some politicians in our interviews. A local working group ("Lusatia Roundtable") was key to changing the region's mood. "Now half of the people support the coal phase-out. It was different before." The city council used to criticize the federal government's decisions and ideas to phase out coal. A mayor thinks that without a citizen movement to support the phase-out, the mood would have remained hostile.

Two interviewees were on the Coal Commission. One member faced the enormous challenge of the energy transition, yet despite her concerns as a regional representative, she supported the coal phase-out: "If it hadn't been for the pressure, with an open pit mine on our doorstep and a power plant, which has brought in good business taxes for decades, would we have done it on our own?"

The member also revealed that in the negotiations, the Lusatian energy company had wanted to change 2038 as the final phase-out date to 2045. After intensive negotiations and intervention by minister presidents, a compromise was reached. The member conceded that in the end the Structural Development Act and Coal Phase-out Act had not corresponded to what had been set out in the Commission. Particularly with regard to the regulations for the region, the fight for local interests continues:

"Because the money that is stipulated there for Lusatia is being used for things where I say: that is not right. One must accept that large-scale industry cannot be established in the region; the soil has been severely damaged by coal mining". The question for the future, he said, is therefore: "In which areas do we need to develop?"

The mayors of the region wrote to the chancellor in 2016, wanting to shape the energy transition actively. They wanted to resolve Lusatia's problem, but the coal advocates refused to cooperate. Some individual members voted for the phase-out while on the Commission, but criticized it as a wrong decision later. Even today, some members try to influence the subsidies and funds for structural change. There is a "circle of friends of the Coal Commission" with most members in it. The negotiations continue. Another member said that a lot of money is coming into the region: now a fight for the money is breaking out and he said: "Now the cards are on the table. We have the laws, we know the numbers. Now it's time for implementation. We have to make something out of it and now it's up to us".

The series of interviews also shows that the Lusatia region has been intensively concerned with its future since the decision to phase out coal. Politicians and mayors interviewed in our survey reported on a participation process during the coal phase-out negotiations in the form of a series of talks in all municipalities in Lusatia. The result was that citizens were most concerned about the issue of demographic change due to dramatic out-migration (30% of the population after German unification). Rural areas had to be upgraded, and medical care and educational opportunities had to be improved. The politicians derived three central future topics for the region from this: health, mobility and education. One politician summarized the goal: "We want to be pioneers, you can take many people with you, even the excavator driver can do a qualification and deal with digitalization."

Other politicians also emphasize the importance of participation and the experience of self-efficacy: "I helped shape this and I didn't just wait and sit around."

New jobs are to be created, and training opportunities are also to be created for young people. A returnee program has been initiated. Projects are being promoted for the reuse of power plants. An industrial park was founded in the town of Spremberg, start-ups were also able to settle there, and the first companies are producing hydrogen. In addition, soft location factors are being upgraded: "These include, of course, attractive housing, attractive cities, a social environment with daycare centers, schools and a club life, playgrounds and swimming pools. It is political will to preserve the cinema."

Another politician understands his task as follows: "My very big goal is to create such jobs that people really

stay here. Here in their homeland. And, of course, that as many as possible come back." Most of the other interviewees say the same thing. Other people report critically that subsidies would not only be used sensibly, however, but would also be used to finance flower boxes. But the creation of new jobs is also viewed skeptically:

"We must not forget: You can't make a research man out of a miner, you can't make a nurse out of a miner, and that's why we need well-paid industrial jobs"

Other interviewees emphasize the importance of location in persuading companies or investors to come here: "If they notice that the conditions here are great—be it the transport links, be it the electrical supply, be it sufficient jobs, or that it is not expensive to build here, then they might consider coming to us sooner." Transport connections, shopping facilities, childcare and Internet connections would have to be improved. Then it would also be worthwhile for young people in home offices with children to stay in the region or move here.

The support programs result in initiatives for the municipalities, which makes some interviewees hopeful that "we will also help shape and support the structural change from below". Others are not sure whether the new jobs will be similar to the old in terms of quality and salaries. In the opencast mining areas, some interviewees say, it is necessary to think openly about the possibilities for wind energy and solar energy.

The identity of the people with their homeland is also important, as one politician explained us: "This has been neglected and if you destroy a settlement area, the cultural landscape, that is not only the individual house, but it is the village, it is the network, it is the landscape. Then, of course, the language dies much sooner, so these are completely different reasons that play a role."

Several interviewees said local communities felt judged by outsiders. A mentality had taken root: "We are harmed by outside processes and helpless against them. This happened before and is happening again. You can call this a regional trauma." Other interviewees confirmed that the region depended on industry and was always looked at from the outside. But new things had to grow from the bottom up. The state must support this "with all available structural policy instruments and funds. The point is to have a clear perspective: "In twenty years, we'll be out of there. That means we'll work hard for the next twenty years and come up with targeted measures."

The state follows the logic: "Now there is money and you have to make something out of it. After unification, companies and investors came to East Germany and left investment ruins. This disappointment can be felt everywhere", one politician said. However, Lusatia had been

industrialized once. But suitable people were needed for this: All educated young people left the region—this has to change, according to all respondents.

The Rhenish perspective

The interviews reveal significant differences between Lusatia and the Rhenish Mining District. Lusatia was shaped by the GDR era, German unification and the aftermath, which hurt the region. The Rhineland does not have these influences. But both regions depend heavily on the energy industry, especially the powerful company RWE in the Rhineland. However, the Rhenish Mining District has a denser population and a more diverse economy. It has more sectors and medium-sized companies than the mostly rural and coal-based Lusatia.

The region's environment also matters. It belongs to the Rhineland metropolitan region, which offers more prospects to the district population if the coal industry disappears. The area attracts people from neighboring metropolitan regions as a place to live and spend leisure time. It has a varied landscape with woods, and farms, in addition to open-cast mines. Fruit and vegetable farming has a long tradition here.

The region may react differently to the coal phase-out than Lusatia. But the rural areas will also face challenges, as they, like Lusatia, have few prospects. But Western Germany's recent history is different, as are local identities, attitudes and experiences with structural change processes, political decision-making and civil society participation. The socialist regime's traces still linger in eastern Germany.

One interviewee points out that the coal phase-out and the energy transition are about the big picture and not just individual measures:

We talk about issues like electricity market design, for example. We also talk about climate change, of course. About energy policy as a whole. How do we want to set ourselves up? How do we want it to work? That we are all supplied with renewable energies as quickly as possible and perhaps also manage to phase out coal here sooner. We're also talking about visions for the future. I think about the younger generation. About my children. What kind of world do they want to live in?

This interviewee pointed out that extreme weather events resonate painfully with the younger generation. He observed that wind power opponents may support the idea but regularly resist local wind farms ("not in my backyard"). But they don't offer alternatives. External consultants also invite conflict, as outside assessments, as in Lusatia, are questioned.

One interviewee acknowledged the many opinions but noted that research institutes offer no guidance for the coal phase-out and the energy transition in the region. He pointed to the basis for the political decisions and laws when the coal phase-out was not a social issue. Then, he said, you have to consider what has changed. "And how can we deal with that differently... we passed this law twelve years ago, but now we have to get it right."

In addition to the coal phase-out, a new major power line ("Ultranet") is a major issue in the region. For some, the power line is necessary for the energy transition in order to transport wind power from northern to southern Germany. Proponents of coal use consider the power line superfluous. However, many critical citizens, having founded citizen initiatives, believe the line will be used primarily for coal-fired power and that the energy transition is just a pretext to justify its construction.

One respondent mentioned the energy transition debate in 2017, when the county council argued energy could be moved in space or time, but moving it in space requires pipelines and moving it in time requires storage. The interviewee said the credo had been to move energy in space, which means transmission lines. That's why the region needs a new "Ultranet line", he believes. It links the Rhenish Mining District with southern Germany, which is now affected by the shutdown of nuclear plants by 2023. This, he believes, is the real reason for the line: "And that's why we resist it."

Another interviewee concurs that the line will be used for coal-fired power: "The transport of coal power to the south, as a replacement for the nuclear plants that have failed or will fail by next year. That is the background." He dismisses the idea that wind power from northern Germany will have the connections needed for transport.

People in the Rhenish Mining District are also uncertain, concerned, and skeptical about the coal phase-out. They doubt that renewable energies and power lines can supply industrial regions. They wonder if closing coal-fired power plants sooner (the state government's goal is 2030) will affect power line construction. The power company plans to use more wind energy, but future development in the area is unknown. No one can explain how the power generation and transport system is to work. The major power transmission networks connect to coal-fired and nuclear power plants. The respondents feel ignored and deceived. They want to understand the arguments, but they fail to do so. They suspect hidden interests behind the projects.

Respondents also consider the consequences of open-cast lignite mining in Garzweiler or in the Cologne area:

It's frightening how nature is destroyed in order to obtain the raw material lignite, which is only used to generate electricity with an extremely low degree of efficiency. So, once you've seen that, you'll certainly be in favor of using more renewable energies to put a stop to this gigantic destruction of resources and this gigantic destruction of nature. So, from that point of view, I am absolutely in favor of pushing ahead with the energy transition.

The interviewee is aware that “we also have to accept a certain amount of restrictions”. Still, he believes that the Ultranet line and wind energy projects threaten to undermine democracy in the region, limiting fundamental rights of citizens. He sees the energy projects driven by legislative procedures that exclude the citizen voices. Normally, major projects would take longer and require more consultation. This raises suspicion and violates democratic standards; patronage interests seem involved. He thinks energy suppliers or producers oppose storage solutions because they would make their coal, gas and nuclear power plants unnecessary:

They get paid especially well for that. So that they can use it to ensure security of supply. It's easy to see that they have no interest whatsoever in ensuring that storage solutions are available quickly, nationwide and on a large scale, i.e. for high capacities. They have been doing this for years, and it is systematically prevented or capped.

Most interviewees support the energy transition, but differ on its design, technologies and deployment. For example, one interviewee favors renewable energies, saying they are “the only way to make the energy transition work.” Of the large investment, “it will pay off.” To protect both the climate and the region’s economic future, “we have to follow the energy transition path. Germany could become a new technology leader and export the technologies That’s why I support the energy transition and how it’s happening.”

This respondent was not the only one to express support for the government’s energy transition strategy:

Shutting down offshore wind plants in the north and nuclear power plants in the south is a good strategy. And we have to expand the grid and make it available at the right time so that, at the end of the day, we can shut down coal-fired power plants.

However, a key issue for many interviewees is poor communication and involvement of citizens in the transition. One interviewer says: “There is too little information for the citizens.” He suggests using press relations and online offerings to inform and engage the affected citizens “about what is coming down the road.”

The coal phase-out, the new power line, and the additional wind turbines are the burning issues in the region, and respondents feel annoyed and fooled because they are not well-informed. The old narrative of CO2 neutrality seems a pretext for companies to enrich themselves. Some interviewees propose a new narrative: “Folks, it’s about industry, it’s also about jobs, and it’s also about the economy. It’s not always just the energy transition.” That would be more tangible and understandable for the population. Overall, this interviewee said there is too little recognition that the energy turnaround is creating many new jobs, both directly through the construction of new energy plants and through businesses that benefit from the cheap electricity.

Other interviewees complain that although the coal phase-out has been decided, it still seems very unclear “how to set up a company now”. Politicians and companies also have to understand this because it involves a great deal of for a business owner. Money is now being poured into numerous projects (“100,000 projects”) and decisions have to be made in each case as to what will be funded. This requires “real foresight.”

In summary, the Rhenish Mining District respondents support the energy turnaround and do not oppose the phase-out. They are more forward-looking than the Lusatian respondents. They also worry about job losses, but they see new opportunities from the energy turnaround. They do not share the Lusatian post-reunification experiences, demographic changes, poor infrastructure, or the departure of young and educated people. But they do share uncertainty and doubts about key energy turnaround measures.

Representation of affected regions, local communities, and their interests

The Commission was formed as a top-down policy instrument to resolve the controversial sharing of phase-out costs among industries and citizens. Its 28 voting members included an interdisciplinary board of experts and representatives: minister-presidents from Brandenburg and Saxony (2), scientists (7), business and industry representatives (8), trade unions and municipal associations (4), environmental associations (2) and the Red Cross (1). Four regional representatives completed the voting body – a mayor and a local green party chairwoman from Lusatia, a district administrator, and a citizens initiative representative from the Rhenish Mining District. Therefore, the majority had economic priorities, the minority, environmental ones. Also in the minority was regional representation. Neutrality was compromised by including fifteen members with party affiliations.

State governments competed strongly with other Commission members. They acted as parallel authorities that were rarely challenged. This mattered, because the eastern states (Brandenburg and Saxony) worried about being ignored and overruled by the western ones. That is why the two heads of state chaired the Commission [47–49]. In Lusatia, a right-wing party already had a quarter of the votes. The eastern states' sense of disadvantage could have grown, worsening the German unity debate and boosting the right-wing party if people felt disenchanted with their representatives [50, 51]. Moreover, North Rhine-Westphalia was better off economically and had experienced structural change in the Ruhr region [52]. So eastern state representatives had to sell the Commission's results as a big success to their people [47]. However, the different starting points of the two states made consensus difficult.

The Commission focused on financing structural change measures in the regions, but did not reach concrete conclusions. It viewed the German government's initial measures (EUR 1.5 billion by 2021 as an emergency program for all structural policy expenditures) as "at best a first step." All funding should link to the sustainable development goals (SDGs), especially to promote a CO₂-neutral economy. The Commission argued that the structural development strategy must suit the individual coalfields, which had different needs for the instruments. It emphasized setting up a monitoring system to measure the success of structural change by an employment balance sheet. The goal was to track the industrial jobs lost and the adequate jobs created by structural change. The Commission named a positive employment balance as a strategic goal. No monitoring information exists.

A central problem was the Commission's lack of independence. Politicians were members of the Commission,

so they represented party interests. Some politicians from the government and certain parties had strong interests in the energy industry, while others were more ecologically minded or represented worker interests. In addition, politicians from both coal regions in East and West Germany wanted to achieve the best results for their region. This complicated cross-constellation of interests weakened the Commission and created complexity and compromise in the process.

Though Lusatia developed regional institutions and structures later than the Rhine region, in the past 20 years, a strong local network of actors has emerged out of economic alliances, political interests, networks, and citizens engaged with the region's future [52–54]. The key actors in public debates are mayors, Lusatia commissioners, citizens, structural change organizers, and trainees [53]. Similar councils exist in the Rhenish Mining District [55]. All interviewees mentioned these actors and bodies. However, the Commission did not represent them and hardly reflected their interests. The Commission was externalist and expertocratic, most ignoring local interests [23, 56].

We identify a proxy conflict in the Commission between academia/NGOs and business/industry over climate change goals. Politicians and corporations wanted more funding and a later phase-out date, and they dominated the Commission. The Commission was top-down and exclusive; local actors and civil society were ignored or sidelined. Three power asymmetries played out with a minority ecological group debating a majority political–business group on the coal phase-out intensity and speed, while the local community group could only seek more compensation. Table 1 sums up the recommendations made.

Table 1 Recommendations from the Advisory Council for Spatial Development, appointed by the Federal Ministry of the Interior (2021)

Recommendations from the Advisory Council for Spatial Development (2021)

New institutional arrangements
 More collaboration between local stakeholders
 Separate organization for each region is needed
 New regional governance and coordination mechanisms (vertical & horizontal)
 More participation from relevant and responsible federal ministries
 Balanced strategy for establishment and decentralization of authorities and research institutions
 Completely new holistic and integrative approach of "transformation planning"
 Spillover effects for several regional contexts and issues of sustainable transformations
 Detailed scientific monitoring of the transformative planning process in the regions

Table 2 Policy and participation process in the Rhenish mining district 2019–2021

2019		2020		2021	
Policy process	Participation procedures	Policy process	Participation procedures	Policy process	Participation procedures
Start of the fast-track structural strengthening program	Informing about citizen participation options	Start of selection procedures for projects	Permanent citizens' council, district forum, district tours and talks, online dialogue (polling future visions and ideas)	General meeting of the Future Agency ("Zukunftsagentur")	Submission of the citizens' report (comments from the citizens' point of view)
Kick-off conference of the regional hubs	Participation in the conference	Structural strengthening act and coal phase-out act become law	District workshop (obtain opinions on future topics)	Signing of the district contract	Passage of the participation charter (binding policy document)
Economic program 1.0 submitted to government	Consultation process	Publication of the framework directive for the implementation of measures	District forum and discussions (development of guidelines for civil society participation)	Economic and structural program 1.1	Completion of the first public participation phase and planning of a second phase

Participation of local communities

The government-appointed Commission had 31 members from various sectors. It favored regional economic interests over climate policy. Both regions had long-term plans for structural change, meaning the top-down approach of the Commission conflicted with an ongoing bottom-up approach to local needs [57].

The Structural Reinforcement Act then set the budget for the Commission's recommendations. It provided 2 billion euros annually for 20 years, with 43% going to Lusatia [58]. The EU added 877 million euros for all German coal regions [59]. Lusatia would use the funds for science, transport and digital infrastructure [53, 54].

Both regions recognized the need for structural change well before the German coal phase-out decisions [13, 20]. Lusatia and the Rhenish Mining District often compared note and learned from each other during this process. They envisioned active cooperation in a state and federal policy framework with an action roadmap for the future [60, 61]. Researchers suggested that state governments should more actively shape the coal phase-out process and decisions and develop their own programs of measures [62–68].

In the end, the Commission failed to provide clarity and thus stability for the affected regions. To see how values and motivations influenced participation processes in the Rhenish Mining District after the Commission's decision, consider the Rhenish district's "Zukunftsagentur Rheinisches Revier" (Agency for the Future of the Rhenish Mining District). It brings the public in at the end of the process. The state agency asked citizens for their views on the phase-out pathway after the Commission's

decision in autumn 2020 [69]. Lusatia has not implemented a similar public participation process.

The first fast-track program for regional structural change measures started in 2019 with a kick-off conference of the regional hubs (see Table 2). An economic program was submitted to the government. Various participation procedures informed the public, consulted with them, and involved local actors and residents in the conference. In 2020, project selection for the structural strengthening program began. Through online dialogue, a district workshop, a second district forum and discussions guidelines for civil society participation were developed. In 2021, the Future Agency had its first general meeting, a district contract was signed, and an improved economic and structural program was presented. The citizens' report with their comments and ideas was handed over to the Future Agency, a participation charter was adopted as a binding policy document (concluding the first participation stage and planning for a second phase).

Efforts for early and comprehensive participation from the local communities are easily recognizable. Opportunities for active civic engagement were plentiful; however, the influence civic participation had on the Commission's decision seems marginal at best.

Conflict and controversy about the phase-out process

A controversy arose during the phase-out over a road map of concrete measures. The German Government had delayed publishing the phase-out plan until late 2019, well after the Commission's final report [65]. This suggests that the Coal Commission did not address how to design the phase-out, partly due to insufficient

consultation with the government. The Commission "proposed a coal phase-out plan in January 2019 that foresees shutting down a total of 12.5 gigawatt (27% of the active installed coal capacity at the end of 2017) of coal-fired power plants by 2022. All coal-fired electricity should be phased-out by 2035 or by 2038 the latest" [[62], p. 244]. An auction mechanism regulates this process. The Commission disregarded future injustices, which could hinder an anticipative strategy of phase-out policy action.

In Lusatia, a 2013 survey showed that economic issues dominated respondent opinions, with unemployment, the outflow of young people and the lack of job opportunities for young people deemed most important [70]. Another survey highlighted the problem of the region's "losers" (referring to vulnerable groups, e.g., unemployed people) and the massive out-migration, especially of younger women [71]. About employment opportunities, the population of Lusatia is significantly more pessimistic than Germany as a whole [72, 73] with people deeply concerned about economic development [74]. We suspect this finding also applies to the Rhineland area but with less urgency.

Rinscheid [67] conducted a comparative population survey between two regions to examine how fast they should phase out lignite. He surveyed over 3000 citizens from Lusatia ($n=500$), Rhineland ($n=500$), and other areas of German ($n=2000$). The respondents were ambivalent about a coal phase-out in 2030 or 2040, but 56% of the Lusatian sample and 59% of the Rhenish expected positive health effects from it. This aligns with the main reasons for the phase-out: to cut emissions, prevent climate change, and address unjust energy systems [75–77]. The respondents from the regions also prioritized job security over social security, unlike the national sample [67]. The findings point to the socio-geographic dimensions of phase-outs that are well explored in the energy justice literature [78–80].

We contend that ineffective policies for civil society result from low participation in the Commission's activities, as have others [63, 81, 82]. For instance, Lusatia's organized civil society comprises many small groups that preserve industrial and Sorbian cultures in nonprofits [83]. The Rhine region shows a similar pattern, but with a stronger environmental movement [84]. Civil society binds structural change, maintaining local social ties and traditions, and connecting new firms and institutions with new residents [34, 85–87].

A post-decision survey by Roose [73] in German coal regions found that structural change was not perceived as stronger than elsewhere. Many people reported

economic improvement and expected more. However, dissatisfaction with the coal phase-out policy was evident: survey respondents saw political decisions as unfounded, demanded more action, and condemned radicalism and egoism. Respondents hoped for the middle class and new companies. Politics was blamed, but most rejected further polluting industries. Politics was also viewed as the cause of economic decline by more people than average.

The perfect storm of large-scale unemployment, migration, financial weakness, and administrative restructuring has coal districts feeling that change causes overload and outsiders decide their fate [53]. They also feel unappreciated for their energy and climate contributions [88].

To sum up, the Commission did not succeed in establishing even a thematic connection that could integrate the "actors of change" from the affected regions into its work. Figure 1 illustrates those various actors, contrasted with the graded areas where decision-making authority was concentrated.

Discussion: a comparison of two different ways of the mining regions

We conducted a comparison of interest representation and stakeholder participation in two regions impacted by coal mining: Lusatia and the Rhenish Mining District (see Tables 3 and 4). Our findings indicate the primary concerns differ between the two regions, focusing on landscape and tourism in Lusatia, and regional industries in the Rhenish district. The divide runs deep. The Rhenish Mining District has implemented a participation strategy that integrates local stakeholders and the population, a feature lacking in Lusatia. Local Rhenish communities and traditions receive more recognition in the Rhineland than in Lusatia. And while state governments wield significant influence in both regions, local authorities play a more substantial role in the Rhenish district than in Lusatia. The divide extends into the participation of academia and civil society in the phase-out, where we can show their greater involvement and influence in the Rhenish region than in Lusatia.

These differences influence the level of conflict in each region, as industry and institutional authority are more prominently visible and valued in the Rhenish region, whereas economic and job-related issues take precedence in Lusatia. This means deeper conflicts and more urgent questions arise in Lusatia over development strategies that are able to include local concerns and aspirations.

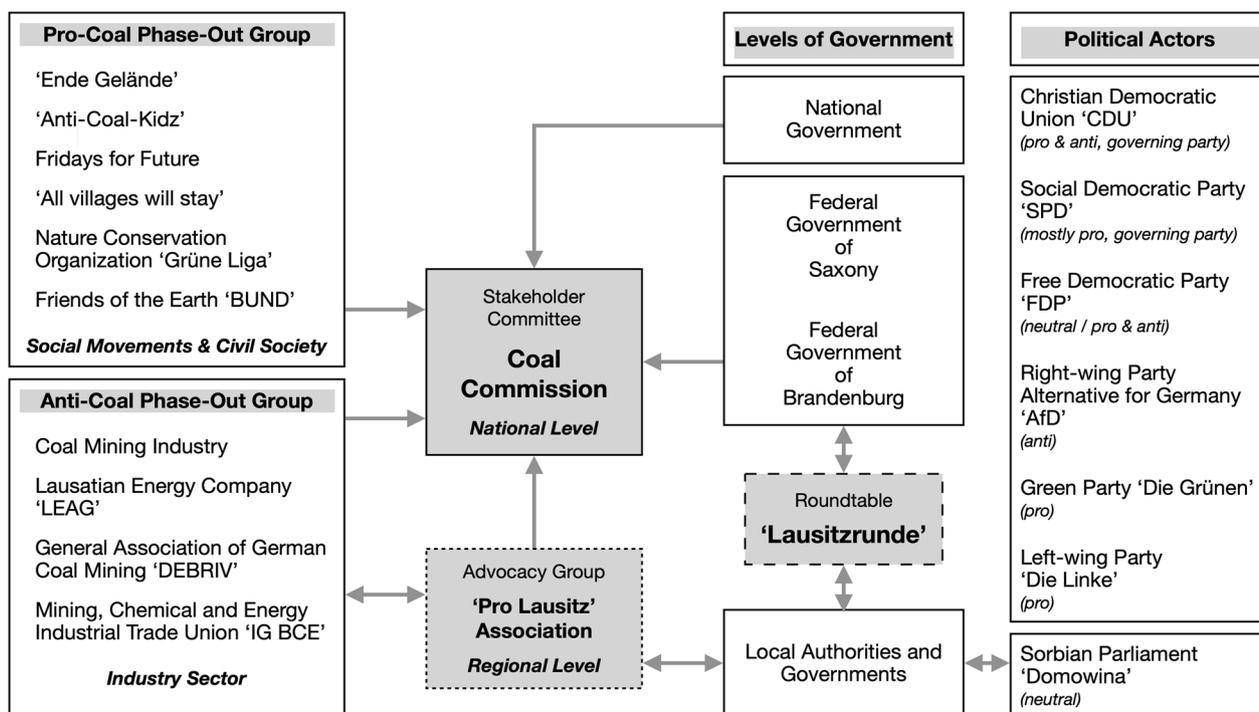


Fig. 1 Constellation of actors in Lusatia around the Coal Commission (in the period from 2018 to 2019)

Both regions lacked a voice in the Coal Commission’s decisions, but used different strategies to compensate. The Rhenish Mining District had more local participation and interests than Lusatia, which faced different challenges. More local involvement in Lusatia could have improved the structural change process and led to a fairer allocation of funds for those most affected by the phase-out.

In our final analysis of regional development in the two regions, we focus on four aspects: industrial culture, tourism, education, and economy. We highlight

the role of place attachments and identities, procedural justice, and recognition of local communities and cultures. Both regions used studies and surveys to plan their structural development programs [89, 90]. The study in the Rhenish Mining District emphasized involving the population from the start. As "ambassadors of the region", their participation would raise awareness of the region’s transformation. This implies networking, creativity, experimentation, little top-down management, infrastructure conversions with "deliberate breaks", a regional mission statement,

Table 3 Overview of dimensions of procedural justice within and after the coal phase-out decision making process in Lusatia

Procedural justice within and after the coal phase-out decision making process in Lusatia		
Representation	Participation	Conflict
High-level influence from state governments	Strong influence of landscape and tourism issues	Hidden history of industrial culture
Low-level influence from local authorities	Low-level inclusion of actors of change	Economic issues and job security strongly pronounced
Low-level influence from academia and civil society	Participation strategy missing	Weak recognition of local communities and traditions

Table 4 Overview of dimensions of procedural justice within and after the coal phase-out decision making process in the Rhenish mining district

Procedural justice within and after the coal phase-out decision making process in the Rhenish mining district		
Representation	Participation	Conflict
High-level influence from state governments	Strong influence of economic concern for regional industries	Strong and present history of industrial culture
Medium-level influence from local authorities	Medium-level inclusion of actors of change	Economic issues and job security less pronounced
Medium-level influence from academia and civil society	Participation strategy existing	Strong recognition of local communities and traditions

Table 5 Comparison of survey results from Lusatia and the Rhenish Mining District about transformation into a tourist region

Transformation into a tourist region: survey results from Lusatia	Transformation into a tourist region: survey results from the Rhenish mining district
Insufficient gastronomic offers	Hospitality industry is not focused on the transformation process
No professionalization of cultural management	Inadequate coordination of current and future events
Weak network building between local stakeholders	Harmonization of promotions and branding is missing
Inactive spots of cultural heritage	Storytelling could be used for commercialization
Many regions and spaces are undeveloped and unconnected for tourism	Accessibility and quality standards should be universally considered
Not activated potential for adventure, nature and wilderness activities	Non-activated potential for adventure, nature and wilderness activities

long-term strategies, a tourism plan for economic growth with separate profiles and themes for different spaces, interim uses, and careful implementation processes (see Table 5).

Young people want a better future in Lusatia, but the region is divided and diverse. Lusatia is more rural than North Rhine-Westphalia, which affects people's values and preferences. For instance, a tourism survey found that visitors to urban areas prefer high culture (theaters, museums, galleries), while those to rural prefer popular and everyday culture (traditions, folk festivals, cultural landscape, agricultural and handicraft products) [90]. However, the region lacks hospitality attractions, cultural management, network building, and active cultural heritage sites. Many areas remain untapped for tourism, with unexploited potential for a tourist industry to create new services for adventure, nature and wilderness activities.

The Rhenish Mining District faces similar challenges but the hospitality industry is not focused on offsetting losses from the transformation process. Still, cultural events are poorly coordinated, and local services lack promotion and branding.

Tourism development can balance local needs and culture with place attachments and identities. However, it can also exploit and marginalize local culture for commercial purposes. To ensure procedural justice and local culture recognition, the local population should be involved early and follow a long-term strategy as both reports recommend (see above).

The Coal Commission had significant deficiencies in the dimensions of representation and fair decision-making. The recognition of local communities and identities of the coal regions, crucial for justice beyond the process level, was reduced to marginal civic participation with an asymmetric power distribution among stakeholders that has eroded democratic legitimacy. Bang et al. [91] identify the root challenge as balancing the concerns of the energy transition (speed and cost-effectiveness) with equitable treatment for businesses, workers, and communities most affected by it. Policymakers in Germany have prioritized the energy transition, but mostly when it aligns with incumbent interests. A just transition succeeds better when institutions mediate government-stakeholder interactions and allow for broad participation, as this increases policy change feasibility and legitimacy.

We argue that Germany's government has strongly addressed equitable transition concerns, as broad stakeholder representation and transition assistance measures have occurred in the formal process. However, this contradicts Gürtler et al. [23], who found that the German Coal Commission focused on broad advocacy and government spending for affected regions, workers, and industries. Since commissions are arenas for spatial, moral, and sectoral (re)negotiations, various levels and actors would pressure commission members to justify their engagement and outcomes. The essential self-image of commissions must be a commitment to record and

reflect the municipalities’ needs in the coal regions and communicate their concerns and demands to the federal government. The crucial problem is on the spatial level, because the unequal distribution of burdens and benefits surrounding climate protection measures provokes legitimacy struggles from local to global contexts (municipal needs vs. climate protection). This triggers structural change processes that transcend geographic scales, vertical levels of policy and politics, and sectoral boundaries. Only if governments expand capacities to organize transition processes that positively affect and influence the livelihoods of workers, communities and regions, can they achieve wider acceptance of climate policy measures.

Conclusion: lacking procedural justice, representation and participation

Based on two interview series in Lusatia and the Rhenish Mining District, we analyzed the effects of the decisions of the German Coal Commission on these two mining regions through the lens of procedural justice, examining representation of local concerns and participation of local communities.

We found the representation of citizen interests inadequate and attribute this to deficits in integrating the two regions into decision making, shortcomings in participation, and missed opportunities to create a fair and open process based on recognition of local communities’ demands and concerns.

Our interviews show considerable differences in representation between local communities in Lusatia and the Rhenish Mining District. In Lusatia, the perception of "loss" is central, and interviewees want companies to settle and population to increase. This is less important in the Rhenish region, where the "how" of the transformation process is emphasized and respondents want a sensible implementation of the energy transition. The Coal Commission recognized Lusatia’s need for structural transformation support, but could not pursue this aspect and develop strategies; it had no mandate and it was not politically desired.

This study’s examples, especially the Lusatia conflict constellation analysis and the tourism region transformation development strategies, show potential for conflict, which has been overlooked. Future strategies of participation, collaboration and mediation will be essential to establish procedural justice in regional strategies and implementations [92–95].

Finally, we have to characterize the Coal Commission negotiation process as a missed opportunity. The potential for higher procedural justice was not exploited, despite favorable third-party intervention [96]. It may be hard to balance the sociopolitical levels of actor and

community constellation vertically and horizontally and to involve and coordinate bottom-up policymaking, civil society, and private sector activities effectively, participatorily, and goal-oriented [97–101], but failure to do so promises social upheavals.

Consider possible alternatives to a Coal Commission that only represented privileged interests in society. Many scientists have emphasized the need for more participation from municipalities [102], and a concept for participatory governance has been explored [63]. In Lusatia, a research project has identified indicators for a "good life" [103]. However, these ideas were ignored by the Commission, and so chances to build trust and empower stakeholders were wasted.

Our study has limitations. The minds and hearts of the local populations remain elusive to research; responses in the two regions to the pressures of the energy transition are intertwined with history and culture [104–106]. We analyzed the Lusatia case study to gain insight. We also considered relevant investigations [23] and a second Commission’s reflections on the Commission’s work. However, the long-term effects of the Coal Commission’s recommendations will continue [107–109]. The participation programs and tourism development ideas we suggest point the way to a more just and democratically legitimate phase-out, but more research is needed to recommend phase-out policies.

We have shown that the Commission acted as a third intermediary body, not as a bridge between communities and actor networks [110–113]. Yet public participation and regional stakeholder integration are key for policy diffusion and learning [114, 115]. The Commission should have addressed local issues and sentiments with sensitivity and empathy. This could have helped integrate local communities in decision making and increased acceptance and legitimacy [116–118]. We conclude that the recognition dimension is crucial for energy justice in structural change processes like the coal phase-out.

Appendix

See Table 6, 7, 8 and 9.

Table 6 Sources used for the document analyses

No.	Issues (coding system)	Sources (total amount)
1	Coal Commission Pre decision: Various Sources	11
2	Coal Commission Post decision Various Sources	8
3	Coal Commission Pre decision: Scientific Sources	48
4	Coal Commission Post decision: Scientific Sources	51
Total		118

Table 7 Interview participants and dates in Lusatia

No.	Function	Sector of Society	Location	Year
1	Mayor of a City	Local Government	Lusatia: Urban Area	2020
2	Mayor of a Village	Local Government	Lusatia: Rural Area	2020
3	Head of the Department for Business Development	Local Government	Lusatia: Urban Area	2020
4	City Manager (Municipal Company)	Local Government	Lusatia: Urban Area	2020
5	Equal Opportunities Officer	Local Government	Lusatia: Urban Area	2020
6	Group Chairman of the Left-Wing Party	Local Politics	Lusatia: Urban Area	2020
7	Representative of the Social Democratic Party	Local Politics	Lusatia: Urban Area	2020
8	Representative of the Left-Wing Party	Local Politics	Lusatia: Urban Area	2020
9	Chairman of a Youth Association	Civil Society	Lusatia: Urban Area	2020
10	Founder of a Creative Agency	Business & Civil Society	Lusatia: Rural Area	2020
11	Owner of a Cinema and Cultural Association	Civil Society	Lusatia: Urban Area	2020
12	Owner of a Cultural Meeting Point	Civil Society	Lusatia: Rural Area	2020
13	Representative of a Youth Council	Civil Society	Lusatia: Urban Area	2020
14	Representative of a Youth Council	Civil Society	Lusatia: Urban Area	2021
15	Representative of an Environmental Association	Civil Society	Lusatia: Rural Area	2021
16	Representative of an Environmental Association	Civil Society	Lusatia: Rural Area	2021
17	Citizens' Initiative for Coal Mining Stop	Civil Society	Lusatia: Rural Area	2021
18	Representative of the Industrial Union	Business	Lusatia: Urban Area	2021
19	Journalist of the Local Press	Media	Lusatia: Urban Area	2021

Table 8 List of interview participants and interview dates in the Rhenish mining district

No.	Function	Sector of Society	Location	Year
1	Member of the Federal Parliament	Federal Government	Rhenish Mining District: Supra-Regional	2021
2	Group Chairman of the Free Voters Party	Local Government	Rhenish Mining District: Local District	2021
3	Mayor of a Village	Local Government	Rhenish Mining District: Local District	2021
4	Chairwoman of the Free Voters Party	Local Politics	Rhenish Mining District: Local District	2021
5	Spokesman of an energy company	Business	Rhenish Mining District: Supra-Regional	2021
6	Citizens' Initiative for Grid Expansion Stop	Civil Society	Rhenish Mining District: Local District	2021

Table 9 List of retrieved segments used for evaluations of the interview series

No.	Issues (Coding System)
1	Biography, life situation and attitude of the interviewees
2	Socio-economic context of the region
3	Regional development
4	Media
5	Conflicts and protests
6	Local actors and conflict parties
7	Energy transition
8	Perceptions of democracy and politics
9	Populism and populist narratives
10	Personalization and homeland
11	Discourse fragments and narratives
12	Self-perception and perception of others
13	Urban-rural differences
14	Corona Pandemic

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Declarations**Ethics approval and consent to participate**

Not applicable.

Consent for publication

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