

The Ordering of Green Values Ecological Justification in Public Fracking Controversies in Germany and Poland

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Abstract: The article presents a comparative study of shale gas media debates in Germany and Poland. Drawing from the Sociology of Knowledge Approach to Discourse (SKAD), it addresses discursive conflicts over the use of hydraulic fracturing and its environmental impacts in both countries. The authors relate their analysis to the theoretical debate that emerged in the 1990s in French sociology concerning the question of “green justifications” that form a specific way of how social actors intervene, dispute, and build compromises in public discussions to protect non-human entities. Referring to these discussions, this article identifies several ecological justification clusters and the associated social actors that are ‘compromised’ or enclosed in existing orders of worth.

Keywords: discourse analysis, ecological justifications, French pragmatic sociology, public controversies, shale gas



Modes of Justification in Public Fracking Controversies

Beginning in the first decade of the twenty-first century, using hydraulic fracturing techniques to extract shale gas raised strong concerns and disputes about environmental risks wherever this technology was promoted. In the United States, hydraulic fracturing processes enabled shale gas extraction on a commercial scale and fundamentally transformed the energy sector. The United States eventually became a net energy exporter for the first time since the 1950s (EIA 2021). However, incidents such as leaks, local protests with prominent figures, or movies like *Gasland* (the well-received documentary made in 2010 by Josh Fox) have brought concerns about risks related to fracking into broader public debate (Vasi et al. 2015). In Europe, initial attempts were made to establish this energy technology but never overcame first explorations. Here, unconventional energy extraction became a highly disputed issue against different environmental concerns, such as land and water use,





seismic activities, air pollution, habitat degradation, health hazards, chemical spillovers, surface-groundwater, and soil contamination. What made shale gas disputes in different European countries a fascinating research subject are the various social and political responses to the implementation of fracking, ranging from conditional advocacy (“when controlled properly”) to temporary moratoria or permanent bans. As Thomas Beamish and Nicole Biggart draw attention to national energy choices, they define them as not merely political or economic debates, “but fundamentally epistemic arguments founded in beliefs about what is true and morally right and the justifications that stand behind them” (2017: 196). We fully agree with this statement. While energy prices and profit expectations are the most important incentives for extraction companies to engage in fracking, political rationalities must consider many additional rationales like energy autonomy, citizens’ health, ecological concerns, diverse interests in resource exploitation, or general public acceptance. We would add the materiality of shale gas reserve and the extraction technology, such as geological resistances or chemical substances, and the like to this list of considerations. National energy decisions present a complex confluence of moral and geopolitical concerns, supply issues, and consequences for national stability and international peace, as the war in Ukraine sadly demonstrates. All such factors exist as discursive entities from the ground up—significantly influencing extraction prices. These factors are elements within processes of discursive meaning-making that, in fact, “decide” cost-profit relations. Resource prices are in no way the sole result of market forces, but are instead shaped by discourse, through and through.

Our primary focus in this article is the role of ecological justifications in public debates about shale gas and hydraulic fracturing in Germany and Poland between 2010 and 2015. Our research concerns itself with analyzing the different ways knowledge claims regarding the safety and risks of hydraulic fracturing were presented and evaluated in both countries. While Germany saw massive protests against shale gas extraction, and the voices from political and scientific actors that came forward were primarily critical, leading to a temporary ban on hydrofracturing, Poland has shown a consistently positive attitude toward the new resource extraction, which resulted in supportive regulatory and other measures. Although there is no commercial shale gas extraction in either country, the reasons are very different. Against the backdrop of increasing energy prices, new shale gas ventures were again proposed in 2021 in both countries, and the Ukraine war has further given rise to a discussion about a return to fracking.¹

Our research uses the Sociology of Knowledge Approach to Discourse (SKAD; see Keller, 2010, 2011; Keller et al. 2018) and its conceptual and methodological apparatus. SKAD follows in the steps of Michel Foucault's interest in power/knowledge regimes and Ulrich Beck's interest in "social power relations of definition" (Beck 1999). SKAD research addresses social relationships of knowledge and knowing and politics of knowledge and knowing—regarding discourses as conflictual social processes of power/knowledge and meaning-making. The central questions could be characterized as what form of understanding about phenomena is produced, how they circulate, how they are evaluated and de-/legitimated in public controversies, by whom, and with what effects. Discourse research can be an interesting analytical perspective to account for the production, recognition, and consequences of corresponding knowledge and its evaluations. SKAD suggests a variety of concepts—such as interpretive scheme, phenomenal structure, classification, and argumentation clusters—to account for the patterned meaning-making elements of discourses. In this contribution, we refer to the idea of the argumentation cluster introduced by Wolf Schünemann (2018), which points to recurrent patterns of argumentation in public discourses.

Analysis was based on an extensive media corpus, expert reports, and interviews. In addition to the reconstruction of the discursive dynamics of these disputes, we were interested in the role of "civic epistemologies" (Jasanoff 2005) and "ecological justifications." The latter concept refers to Boltanski and Thévenot's pragmatic theory of justification (Boltanski and Thévenot 2006) and its transfer to questions of a "green order" (Thévenot 1996, Latour 1998). While SKAD most often uses Peter Berger and Thomas Luckmann's term "modes of legitimation" (1966: 110–146), it has pointed, since its early days, to work from the French pragmatic school, especially the idea of analyzing pragmatics of justification via discursive data, as shown in the work of Luc Boltanski and Laurent Thévenot (2006) or, for example, in Luc Boltanski and Ève Chiapello's analysis of the "new spirit of capitalism" (Boltanski and Chiapello 2005; see Keller 2010: 17). One advantage of the pragmatic theory of justification lies in its elaborate concept of the "orders of worth," which goes beyond the focus on "just modes of legitimation" by referring to the logics of hierarchization and value attribution, phenomena of critique, justification, and compromise, establishing equivalences between different, initially conflicting values (e.g., market values and social values), and so on. The idea of a "green order" imposes a hierarchization of values in which the magnitude of



an object, person, or phenomenon is measured by its contribution to the preservation of “natural” livelihoods. Evaluations of such contributions heavily depend on scientific knowledge—on what is known and not known. Drawing on some conceptual elements of the theory of (green) justification allowed us to bring the complex forms and processes of testing and evaluating energy-risk conflicts adequately into view. We then asked what modes of justification and test procedures played a role in assessing fracking processes and how different evaluations concerning safety/uncertainty, profitability, and risk scenarios have been performed in public discourse and national decision-making in both countries.² Regarding our situated case studies, we argue that argumentation clusters of “green justification” appear in different ways but not on an equal level as other established “economies of worth.” Therefore, we will suggest the conceptual idea of “enclosed modes of green justification.”

In the second part of our article, we enter the ongoing debate on ecological justification and its use in environmental discourse analysis. We then set the stage and briefly present our national case studies. In the subsequent fourth section, we present our estimation of the role of ecological justification orders in our cases of disputes about shale gas extraction. The fifth section discusses our results, followed by the sixth and final section, which contains our conclusion and outlook for future research.

French Pragmatic Sociology and the Notion of (Green) Justification

Justifications in Public Controversies

In *On Justification: Economies of Worth* (2006), Luc Boltanski and Laurent Thévenot referred to previous empirical research (e.g., using reader’s letters to newspapers or advice books for managers as data) and identified six different moral grammars or, as they called it, “economies of worth” (civic, market, industrial, domestic, inspiration, and fame) that represent basic social principles of the common good to which social actors refer to in everyday life to critique and judge the value of actions and actors. Each of these elaborated value orders has a specific way of reference formation, testing, testing procedures, and ways of relating certain things (materialities) and persons. Luc Boltanski (2011; see Thévenot 2014) suggested three different types of tests to

evaluate the reach of such critical judgments. The first of these, the “reality test,” not only refers to claims and human beings that can be tested but also the tests themselves are questioned. Reality tests can thus both confirm or criticize existing orders. In contrast, Boltanski also speaks of “truth tests” that aim to confirm existing orders of justification by using established test forms. Finally, he suggests the idea of “existential tests,” which, unlike the tests already mentioned, do not have a standardized character: “Existential tests are based on experiences, like those of injustice and humiliation, ...but also, in other cases, the joy created by transgression when it affords access to some form of authenticity” (Boltanski 2011: 107). In this way, existential tests can be radical in creating perspectives for establishing new forms of critique. Since our focus is on the processes of justification, we will speak mainly of orders of justification to which actors refer via arguments in disputes instead of the term “economies of worth,” which, as we know, is more common in the English literature discussing new French pragmatism.³

An Emerging Green Justification?

Concerning the emerging ecological crisis and discussions about political ecology since the 1970s, Claudette Lafaye and Laurent Thévenot (2017)⁴ initiated a debate on the question of whether ecology could constitute a new principle for judgment and justification of action or in other words: does ecology express a proper common good that cannot be reduced to other forms of the common good (2017: 287)? According to the authors, the unique feature of an ecological economy of worth is that the value of persons, groups, or institutional contexts is determined by their contribution to preserving the natural heritage (such as water, air, or natural vegetation). Thus, everything that contributes to the prevention of environmental pollution is valuable (2017: 289). As Laura Centemeri emphasizes, their work also demonstrated “that there is consequently a type of environmental critique that fits the grammar of legitimacy underpinning the modern construction of the public sphere” (2022: 6). For example:

[w]hen the environment is characterized as “heritage,” the reference is to a “domestic” construction of value, while reference to the beauty of a landscape derives from an inspired order of worth. The use of testimonials in defense of nature is associated with a worth defined in terms of “renown,” while the definition of ecosystem services and their monetization puts a price on elements of nature, giving rise to the creation of markets or payments.



Technical treatment of the environment involves its evaluation in terms of the (industrial) efficacy of processes, while the claiming of inequalities associated with the environment (especially in terms of distribution of environmental harms) refers to a civic definition of value. (2022: 6)⁵

Following this argument, the introduction of “green” values in the context of ecological interventions or in the introduction of environmental laws offers a starting point to discuss the different references of critique in public controversies when nature is at stake. In other words, the ecological order of justification starts from an extended circle of reference compared to the six orders of justification earlier described by Boltanski and Thévenot (2006), both on the level of human beings (e.g., by referring to the welfare and heritage of future generations) and on the level of non-human beings (e.g., by referring to the dignity and rights of animals or plants).

Based on such arguments, Laurent Thévenot and Michèle Lamont (2000) and, in that volume, in particular Laurent Thévenot, Michèle Moody, and Claudette Lafaye (2000) analyzed the role of ecological orders of worth in the context of environmental conflicts in the United States and France. They showed that justifications invoked in environmental disputes often fall back into well-established moral grammar. However, they emphasized that some aspects of environmentalism might represent a political novelty, suggesting the rise of a new “green” order of worth organized around ecological analysis, renewability, future generations, and the planet as an integrated ecosystem (*ibid.*: 241). Discrepancies in the scope of different types of evaluations in each culture (i.e., country) were found in how ecological arguments were combined or “compromised” with other established orders of worth, as well as which ecological views clash with others (Lafaye and Thévenot 2017: 29).

In reference to Boltanski and Thévenot, French actor-network theory (ANT) scholar Bruno Latour asked, if political ecology establishes a new principle of order, or if it dissolves into the six other poles that have emerged over time (Latour 1998: 222). His answer was straightforward: from Latour’s point of view, conceiving a green order in terms of the economies of worth theory is impossible. Based on local environmental disputes research, he saw ecological justification as a part of or embedded in the existing six economies of worth. As he stated: if political ecology (ecological movements and parties) has “nature” as its goal and not humans, it follows that there can be no regime of ecology—precisely because the logic of the economies of the worth theory

refers to “common humanity” as superior criteria: “We remain humans, after all, despite taking nature into account” (Latour 1998: 225). This cannot be aligned with one single evaluation principle:

Political ecology is unable and has never sought to integrate all its meticulous and particular actions into complete and hierarchized unity. This ignorance about totality is precisely its saving grace since it can never rank small human beings and vast ozone layers, or small elephants and middle-sized ostriches, into a single hierarchy. The smallest can become the largest. “The stone that was cast aside has become the cornerstone.” (Latour 1998: 229)

Latour persistently argues that political ecology does not refer to “nature” but promotes a movement and a political endeavor to make ecological problems visible and lasting—and this is, according to him, what is problematic about it (see Latour 1998, 2004, 2015).

However, this represents his assessment of his empirical observations, not his ultimate judgment about the possibility of a “green order.” Referring to Immanuel Kant, Latour suggested that we cannot conceive of “humans” without the “non-humans” interwoven with “us”—“non-human is not inhuman” (Latour 1998: 235). A radical green order, therefore, would extend the categorical imperative presented by Kant toward the sphere of non-humans and claim that they should not be treated as pure means for human purposes but as ends in themselves—a principle he finds in the political practice of ecological activism he was investigating at the time: “A canalized river is seen as something bad and undesirable within the ‘seventh regime,’ not because this futile development will be seen as expensive—taking thirty years to complete and being quickly eroded—but because the river has been treated as merely a mean, instead of also being taken as an end” (Latour 1998: 232). The way to “install” such a seventh regime is not to conceive of nature as an entity and an end in itself but replacing the modern separation between nature and culture by the idea of deep interconnectedness or interwovenness. In Latour’s radical new interpretation of a possible seventh order, he, therefore, states that such an order would not simply be a hierarchy of green entities or contributions to “green values.” Instead, it would refer to the hierarchizing of “un/certainties” about how human and non-human entities are connected. According to him, a high value in such a green order would imply acknowledging the deep uncertainties about non-human/human relations and favoring corresponding regimes of action; a small value would be attributed to conceptions that promote rigid ties between human and non-human entities—be it in deep ecology or modern industrial exploitation of



natural resources.⁶ The more rigid configurations of human and non-human entities are seen, the less can be said about the actual (locally differentiated and variously globally dynamic) state of ecological conditions. In that sense, Latour's analytical look is directed at the various associations of human and non-human entities (the "hybrids"), while Boltanski's approach invokes the plural but countable and relatively stable or even rigid value orders that actors apply and actualize in a conflictual situation.⁷

The Multitude of Ecological Grammar

Anders Blok (2013: 506) argues that Boltanski, Thévenot, and Latour describe essential aspects of an ecological order of justification, although, in his view, both say little about the existence or relevance of a more general, supra-local ecological order of justification. In a way, their contributions can be seen as blueprints for possible ecological grammars, each describing different dimensions of ecological valuation, which can contradict each other in concrete situations (see Blok 2013: 506). In his view, their proposed grammars do not show a "context transcending depiction of *the* novel ecological order of worth" and are somewhat "circumscribed, and thus more partial spaces of common ecological qualification, tied to divergent cognitive moral trajectories of moral conflict" (2013: 506, original emphasis). For Blok, this ultimately means that the ecological justification order is a differentiated system of value attributions, which must be further described in its differentiation, both theoretically and within the framework of empirical work, not least of all in order to grasp the possible spectrum of alternative ecological value attributions. Blok argues that ecology, in its present socio-political state, manifests itself in different cognitive and moral grammars tied to specific projects of ecological justification, conflict, and compromise. On top of this pluralism, he adds the multiplicity suggested by the observation that what qualifies as "ecological" is more loosely codified and more politically diverse than what Thévenot or Latour contend. Therefore, Blok argues for the plurality and multiplicity (referring here to Mol 2002) of ecological orders of justification: "In this sense, ecology is not just a matter of plural value orders; rather, ecology itself emerges as a world of inherent moral and cognitive tensions" (Blok 2013: 507).

Despite such a need for clarification, current studies in environmental sociology or political science or media and communication studies refer to the idea of "ecological justification order" as an order that actors refer to when valuing "nature, the biosphere, and the harmonious

relationship among humans, fauna, and flora” (Gond et al. 2016: 333 in reference to Lafaye and Thévenot 1993, here Lafaye and Thévenot 2017; see Beamish and Biggart 2017: 178; Lindberg and Mossberg 2019: 121–122).⁸ Concerning fossil fuels, Beamish and Biggart contend that this form of power generation is experiencing a period of “ferment,” in which alternative, supposedly ecological forms of power generation are gaining greater acceptance, and old technologies are facing more vigorous opposition from environmental and climate concerns (2017: 178). This also fits Ève Chiapello’s (2013) diagnosis. She claims that the ecological criticism that was very much present in the 1970s could not reorient capitalism completely but has become a central element in the recovery and restructuring of capitalism. She assumes that even artistic criticism is kept alive through its “hybridization” with ecological criticism (2013: 73). The “greening” of the economy is also addressed by Danie Nybergh and Christopher Wright (2012). They discuss that much attention in “greening businesses” has been directed to issues of firm competitiveness. Still, they claim that behind this generic claim lies “a complexity of justifications, including issues of increased efficiency, social contribution, organizational and personal well-being, public reputation, and *genuine concern for the environment and the future of humanity*” (2012: 1820, our emphasis).

As we have shown during our previous theoretical discussion, green criticism can be understood in corrective terms, questioning, and reconstituting existing evaluations and their various references. Concerning the debate of a newly emerging “green capitalism,” the green critique can also be understood as a radical, system-changing force that does not refer to existing instances of correction but questions them itself and proposes new ones. To put it more systematically: the core debate over the ecological economy of worth lies in these questions: (a) is there an emerging general seventh “green” order of worth or not, (b) are there rather multiple and independent ecological orders, (c) are green orders of justification always co-dependent of other existing orders of worth and therefore appear as “compromises,” or (d) does the possibility of a seventh order challenge the fundamental basis of the existing “modern” ones by extending the notion of human commonality to consider non-humans not as means but as ends in themselves.



Shale Gas and Hydraulic Fracturing in Germany and Poland

Our research design included a comparative study of the intense national debates and conflicts about shale gas as an energy source and hydraulic fracturing as a technology for extraction in Germany, France, and Poland. When we first became interested in researching this topic in 2014, there was a period of simultaneous intense public discussion in these three countries.⁹ The country selection was inspired by the divergent trajectories of fracking—an immediate ban in France, high conflictual intensity in Germany, which led to a ban in 2017, and a relatively positive public focus on exploitation in Poland, which nevertheless did not lead to a commercial scale of shale gas extraction, due to several factors that ultimately led to extraction companies leaving the country.

Our study focused on discursive struggles between proponents and opponents of the technology between 2010 and 2017, as well as on assessments of its “risk quality” in public debates, expert reports, and the various application contexts. Germany, France, and Poland were selected for the comparative design because

- they are economically similarly advanced industrial nations that (necessarily) attach great importance to issues of energy supply and transition to sustainable energy.
- the risks of fracking were discussed in all three countries both on a political and a civil society level and were accompanied by the emergence of new citizens’ initiatives, associations of municipalities, discussion forums, expert reports, and pop-culture products (agitation films, comics, non-fiction books); however, the course of debates, positions, and decisions on the use of fracking and shale gas extraction differed significantly.

According to our initial hypothesis, the conflicts took place against the backdrop of the global climate policy activities and in the context of debates about sustainability and the transformation of energy ratios. In addition, we assumed that fracking controversies have in common with previous risk conflicts the ambiguities of natural and technical-scientific risk assessments, polarized conflict structures, and conflicting interests, but that they differ from the “large-scale technological” controversies of the past decades in that “only” regional ranges of potential damage can be recognized, which allows for specific, local risk compensation. Furthermore, we assumed that all participants in those disputes invoke

“green justifications” to formulate their risk perceptions. Still, we expected that country-specific differences might result from divergent “civic epistemologies” (Jasanoff 2005), that is, discursively structured epistemic configurations, which produce different risk evaluations. The subsequent discussion refers to one segment of our research—the role of “green justifications” in the German and Polish debates. We therefore would like to briefly introduce these two cases to set the stage.

In Germany, a nationwide public debate on hydraulic fracturing began in the fall of 2010 as a reaction to test drillings announced by international corporations (e.g., ExxonMobil) in the states of Lower Saxony and North Rhine-Westphalia. The criticism voiced in the context of this public debate, particularly by citizens’ initiatives but also by politicians from the political party Bündnis 90/Die Grünen, focused essentially on the adverse environmental effects of hydraulic fracturing, with particular attention being paid to groundwater pollution and health risks potentially caused by chemicals/frac fluids. In contrast, representatives of the gas industry emphasized the safety of the technology and the positive carbon footprint of natural gas as an energy source, which suggests that hydraulic fracturing can be used as a bridging technology and contribute to climate-friendly energy production. Additionally, according to this perspective, the technique would contribute to a secure energy supply, as the extracted shale gas can compensate for the declining rates of natural gas production that have been occurring for some time.¹⁰

Intense local conflict mobilization (including citizens associations, political parties, local communities, and economic actors) against fracking, promotion of the technology by industrial actors, politicians, and some expert boards helped to get the issue on the national agenda, where, in addition to heavy media coverage, different expert boards and reports responded to the conflictual situation. This led to a ban decided by the federal parliament (Bundestag) in 2017 and the creation of a national expert board tasked with providing a definitive report on security and risk of using fracking technologies (Fleming 2017). In July 2021, the expert commission presented its final evaluation of environmental risk issues and concluded that risks of fracking could be minimized through adapted control and monitoring of industrial activities. The commission asked the political decision-makers to carefully draw conclusions from this report and provide decisions as soon as possible (Busse et al. 2021). To date, the question remains open if fracking will be used to explore unconventional deposits as it is still the subject of political decision-making processes that attempt to weigh social, economic, and health concerns, questions of energy autonomy in the shadow of



the Russian war in Ukraine as well as climate policy aspects against each other.

The situation and discursive dynamics of shale gas exploitation in Poland differed. A report by the US EIA (Energy Information Administration) in 2011 sparked interest in shale gas exploration and triggered a “shale gas euphoria” in Polish media. This first report estimated that Poland’s largest shale gas reserves in Europe (5 trillion cubic meters). The former Polish government (Civic Platform and Polish People’s Party from 2007 to 2015) hoped to achieve increased energy independence and economic gains through the self-production of shale gas. Furthermore, Polish policy aimed to reduce carbon emissions and mitigate European climate protection goals by diversifying domestic energy sources due to Poland’s poorly differentiated energy mix and coal-related CO₂ emissions. Regardless of technical, environmental, and legal obstacles, shale gas extraction was promoted as a radical change in the Polish energy landscape (see Wagner, 2016). Since the beginning of the debate, the Polish government has declared shale gas exploration the highest priority in its energy policy (see Kuchler and Höök 2020). Concurrent with Poland’s EU presidency in 2011, the promotion of unconventional resources was also placed on the EU’s energy policy agenda and increasingly discussed within the member states (see Goldthau 2018; Lis and Stasik 2018; Lis 2020). Poland’s interest was to achieve greater independence from Russian energy supplies; this motivation was fed by a historically shaped mistrust of Russia, reinforced by recurring Russian-Ukrainian gas conflicts. The conflicting issue in Poland was implementing the technology under challenging geological and legislative conditions, which led to a permissive regulation framework (see Uliasz-Misiak et al. 2014). Finding a specific regulation for “unconventionals” was altogether a European undertaking; in Poland, the license application process was simplified, parameters for environmental impact assessments were adjusted, and a special tax for hydrocarbon exploration was introduced (Godzimirski, 2016). In that sense, Poland adopted its shale gas regulation approach very early. It actively campaigned for its energy strategy, but due to low production rates, falling oil prices, and the withdrawal of investors, no commercial extraction could be achieved. In December 2021, the Undersecretary of State in the Ministry of Climate and Environment and Chief National Geologist, Piotr Dziadzio, stressed that Polish shale gas reserves are recently estimated to be much lower than initial US forecasts predicted; nevertheless, it would still be worthwhile to re-activate the Polish shale gas project in the near future (Sierak 2022).

Ecological Justifications in Germany and Poland: A Media Discourse Analysis

In our case studies, we analyzed discursive structuration (interpretive schemes, recurrent argumentation clusters) in public controversies concerning shale gas extraction and the use of hydraulic fracturing in Germany and Poland. The data corpus consisted of mass media press articles published in national newspapers between 2010 and 2017, focusing on the early debate within the first three years.¹¹ Even though there were initial reports of licensing for shale gas exploration several years earlier, we chose this period because this was when the fracking debate was most present and controversial in the national media. Our initial data corpus of 1,000 German and 1,320 Polish press articles was compiled using the databases LexisNexis and Factiva. Applying SKAD's strategies for theoretical sampling, we reduced our initial corpus to 176 items (83 for Germany, and 93 for Poland). We reduced our sample by paying attention to publication peaks in the selected years. The frequent reporting overview helped to structure the initial data. More important were the discursive events, such as legislative decisions, protests, political speeches, and more, that we contextually identified. We selected articles that initially had direct reference to discursive events; however, to avoid overlooking crucial interpretive material, we maximally contrasted our articles in terms of content and time. Data analysis followed interpretive procedures of sequential analysis as established in interpretive social research to generate analytical concepts and categories. We mainly focused on significant re-occurring statements relating to technological risks and environmental problems, which we call argumentation clusters (see Keller et al. 2018: 33; Schünemann 2018: 95–97). We qualified re-occurring argumentation clusters inherent to our data as “patterns of ecological justification” when they established a reference to “environmental concerns.”¹² In the following, we will present these clusters and illustrate them with a few selected quotes. We do not pretend to cover the totality of discursive structuration, decision-making, and local conflictual cases—we can only discuss what was present in our segment of data. However, we assume that this provides helpful insights for understanding the current dynamics of ecological justification, even beyond the concrete case of fracking.¹³

In this discourse-specific analysis, we focus not only on existing knowledge relations and structures that influence and favor certain statements, actions, and interpretations (e.g., dispositive, more or less dominant discourse structures) but on the social actors and their in-



terpretations of certain phenomena. As indicated in SKAD—and in an analytical perspective also similar to Boltanski and Thévenot’s approach—the analysis undertaken here places great emphasis on how actors in our documents interpret, argue, criticize, formulate agreements, and from which speaker position they do so.

Ecological Evaluation in Germany: Hydraulic Fracturing between Global Climate Change Impact and Local Hazards

In Germany, ecological justifications in the public debate on hydraulic fracturing focus on “climate compatibility of natural gas as an energy source” and on “environmental and health hazards” potentially associated with hydraulic fracturing. After initial attempts by the energy industry to promote the safety of shale gas extraction, local citizen associations, NGOs, and politicians surrounding potential drilling sites in Germany mobilized against “fracking,” which led to public attention and political concern on the national agenda level. Different expert bodies soon started to compile accounts about what is known and not known about the risk of hydraulic fracturing. As mentioned above, the conflictual situation led to a ban in 2017, which allowed for limited “experimental drilling” and for more scientific expertise to be gathered by a final commission created by the German government. The final report presented in the summer of 2021 declared that given all available information today, there would be no danger to groundwater or human health if the technology is used correctly because extraction would then be a safe procedure. The experts asked the decision-makers to draw their own political conclusions (including broader political aspects of the conflictual issue). In sum, we could see that the public way of dealing with the conflict was to introduce scientific experts as conflict solvers by asking them to produce a definitive account of the state of knowledge about potential hazards and thereby provide the “ultimate” basis for political decisions.

Argumentation Cluster PFG-I: Shale Gas as a Contribution to Combating Climate Change (PF stands for promoting shale gas extraction via fracking, G is for Germany)

Shale gas has a better CO₂ emission balance than other fossil energies. Using it helps to fight climate change in a period of transition. Therefore, it should be used.¹⁴

This argumentation cluster claims that shale gas extracted by hydraulic fracturing is a climate-friendly energy source compared to other fossil fuels due to its favorable carbon footprint. The central basis for evaluation is emission and pollutant balances, which allow for a comparison of fossil energy sources about their potential impact on climate change. The logic of environmental evaluations associated with this argument is exemplified in the following quote:

among the fossil energy sources, natural gas is by far the cleanest. Combustion produces neither soot nor ash, almost no sulfur dioxide, and far fewer nitrogen oxides than coal or oil. The combustion of natural gas also emits significantly fewer climate gases. In the case of power plants, CO₂ [sic!] emissions per kilowatt-hour generated are cut in half compared with coal. If heating oil, gasoline, or diesel are replaced by natural gas, this still saves a quarter of the greenhouse gas emissions. (Asendorpf 2010, own translation)

The central evaluation criterion here is the potential contribution of natural gas as a “bridging fuel” in a time of energy transition. This argument refers to scientific knowledge, and its main mode of evaluation is the comparison of the CO₂ balances of fossil energy sources against the background of findings from climate research. In terms of the sociology of justification, the CO₂-emission represents the central test variable or the yardstick for evaluating the ecological significance of shale gas extraction. It allows for a linked ranking of fossil energy sources, providing an ultimate hierarchy of values between energy sources. Natural gas thus appears to be particularly valuable, associated with comparatively low CO₂ emissions and high energy density.

The logic of justification inherent to this argument does not include the local processes of extraction, solely considering “natural gas per se” as an important resource for the benefit of the public and the environment. Possible hazardous local effects of fracking technology fade into the background to be supplanted by a global, overarching frame of reference. Investment in this type of fossil fuel may appear, at first glance, to be a step backward. However, given the broad social endeavor of the energy transition, it is here considered to be a progressive contribution to a globally sustainable approach to nature that subordinates special interests (profit, saving industry in decline) to the protection of the public and the environment. This argument is mainly performed by industrial proponents of fracking technology (e.g., ExxonMobil) but also by federal authorities such as the German Federal Institute for Geosciences and Natural Resources (BGR).



Argumentation Cluster CFG-I: Hydraulic Fracturing as a Climate-Damaging Extraction Process (CF stands for “criticizing hydraulic fracturing,” G is for Germany)

Shale gas extraction releases methane emissions, which contribute to climate change. Fracking, therefore, has an extremely negative climate impact overall. Using it must be avoided, even as a helper in transition.

The argumentation cluster just described is contrasted by an opposing one that also refers to climate protection as a central evaluation criterion but considers the technology of hydraulic fracturing harmful to the climate. In contrast to the ecological justification just described as PFG-I, the focus here is not on the energy sources “natural gas” or “shale gas,” but rather on hydraulic fracturing as a specific production process and the methane emissions generated during its use. They function as a central evaluation criterion and represent a danger to the stability of the global ecosystem. This argument is expressed, for example, in the following quote, which refers to a study published in the United States:

Natural gas is said to be far more harmful to the climate than assumed—and even a bigger climate killer than coal if extracted using the so-called fracking technique . . . because some of the liquid pressed into the ground during fracking returns to the surface. In the process, gas flows out—and quite a lot of it, since many millions of liters of water are used in a fracking operation. Natural gas consists largely of methane, which is much more harmful to the climate than carbon dioxide. (Schultz 2011, own translation)

Like in the PFG-I argumentation cluster that characterizes fracking as “climate-friendly,” elements are also being ranked in relation to another here. However, this hierarchy includes the processes of energy production and measurable pollutant emissions. It thereby establishes a scale between different methods of energy production, headed by low-emission processes of renewable energy production. This argument can be found mainly on the side of environmental associations, environmental activists, and energy experts.

Common to both argumentation clusters—PFG-I and CFG-I—is their reference to climate impact measurement. However, they differ considerably about what to include in such a measurement (i.e., methane leakages). According to Luc Boltanski (2011: 103–107), disputes about the “correctness” of measurements are significant elements of *internal conflicts* of justification orders, which Boltanski calls *reality tests*.

Argumentation Cluster PFG-II: Hydraulic Fracturing as an Optimized and Safe Process of Resource Extraction with a Long Tradition in the Natural Gas Industry

Given the long-standing experience of using hydraulic fracturing, skilled engineers from extraction companies have developed high competency in applying and controlling this technology. Shale gas extraction in Germany differs from the United States in many ways and uses safe technology, non-harmful chemicals, and the highest standards of environmental regulations.

It might surprise readers to see us present this minor argumentation cluster as a mode of ecological justification. We decided to pursue this route because the cluster argues along the same lines as both the counter-argumentation clusters but comes to a different conclusion regarding the local environmental and health impacts: extraction technology is under control and therefore safe. Its main speakers are actors from extraction industries and government agencies. Here is one illustrative quote:

We have our standards, how we drill a hole, how much water we need, how we communicate with communities. They apply everywhere, whether in Ukraine or anywhere else. We have also codified how fracking is done. You can be sure: This only happens under the highest safety standards. And in fact, anywhere. And everywhere! (Matthias Bichsel, CEO of Shell, quoted from Kunze and Tenbrock 2013, own translation).

As fracking has not been used in German shale gas exploitation, this argumentation cluster is prognostic, appealing to trust in engineer's skills. While cluster CFG-II refers to the US example as providing evidence for "bad usage and hazardous effects," the present cluster insists on making a distinction between the two countries, both concerning shale gas reserves and safer technological procedures to be applied "locally" (in contrast to what is being employed in the United States). This cluster refers to best practices examples of shale gas extraction that allow profitable gas production while preventing hazardous environmental impacts.

Argumentation Cluster CFG-II: Hydraulic Fracturing as a Threat to Local Groundwater and Human Health

Chemicals used in the extraction process, due to the many unknowns regarding their effects and the risk of human or technological failure in controlling extraction, constitute a danger for groundwater pollution and therefore human health. This has been demonstrated by many cases in the USA.



The local groundwater-related environmental threat justification assumes that chemicals used in hydraulic fracturing processes cause a significant hazard to aquifers, since they may lead to massive groundwater contamination. Here civic actors refer to reports about negative experiences in hydraulic fracturing in the United States, which are transferred to the German context. For example:

Every time gas bound in rock is to be dissolved by fracking at an American drilling site, well over ten million liters of water and many tens of thousands of liters of chemicals are needed. It is undisputed that some of the chemical substances used in the process, which have been necessary for the technology to function, are toxic, hazardous to drinking water, and harmful to health. Moreover, between 10 and 40 percent of the water used in fracking returns to the surface during the extraction process. There, it must be collected and safely disposed of. (Tenbrock 2011, own translation)

The central evaluation standard here—in contrast to argumentation clusters PFG-I and CFG-II, which both relate to climate change—is the protection of the primary natural resources surrounding a particular drilling site in the local area. The classification of chemicals is a central indicator of the threat potentially associated with the use of hydraulic fracturing. Some substances remain uncontroversial, and some are considered potentially carcinogenic. This classification works as an essential foundation for marking the hazardousness of the substances used in the context of drilling and for relating them to ecological and health consequences or making predictions about them—despite or maybe because such a classification is somehow lacking scientific reliance—is not very clear how these chemicals, and in which quantities, might cause health problems via groundwater pollution (or other ways of creating local damages). Thus, the focus of this justification pattern is on the evaluation of process safety. “Evidence” is first provided by the documentation of accidents in the United States, a country seen as “still” promoting fossil energy sources, adhering to a completely different (and considered highly problematic) energy policy of the past, in contrast to the challenges posed by the German project of energy transition. Later, the argument gains independence from ties to the United States and becomes more contextualized, transferring its basis to a general account of scientific knowledge about the technology and German geological conditions. Overall, this part of the German media debate is powerfully shaped by intervening natural scientists and citizen activists, who provide knowledge about possible environmental threats and work as counterparts to industrial practitioners and the latter’s claims for mastery and control of extraction processes.

The scientific counter-experts refer to the precautionary principle and evidence-based argumentations, using risk studies based on theoretical modeling and data from the United States. They address the environmental concerns among the general population, especially residents and protesters.

Ecological Evaluations in Poland: Hydraulic Fracturing between Energy Independence, “Climate-Betterment,” Process Control, and the Preservation of the Landscape

In the Polish media debate, environmental hazards such as chemical contamination were less problematized at the beginning of the shale gas debate. Instead, ecological justifications with positive connotations were put forward, such as the modernization of the coal-based energy system and the corresponding reduction of greenhouse gases. A popular argument in the Polish press was that shale gas extraction may diversify the coal-based domestic energy production and help the country become more energy-sufficient. To promote shale gas politically, it was classified as the lowest-emission resource compared to other fossil energy sources such as hard coal, lignite, and crude oil. The associated ecological argument of achieving emissions to meet European climate protection targets is closely linked to a sovereignty concept that relates to the geopolitical role of Poland: increasing the volume of shale gas produced in Poland can be used to substitute previously imported volumes of natural gas from Russia and hence be less dependent on critical gas infrastructures. In sum, the public debate is consensus-driven, which means that legal, administrative, or geological obstacles addressed in the fracking controversy are intended to be solved by industry experts, scientists, and politicians. Concerns from green NGOs or local protesters tend to be relativized or downplayed. Predominantly, cautions concerning landscape destruction for recreational, tourism, or agricultural purposes were articulated by local inhabitants and politicians more often in the data we analyzed, indicating a traditional sense of how local landscapes are perceived and used for community purposes.



Argumentation Cluster PFP-I: Shale Gas Extractions Enforce an Ecological Modernization of the Polish Energy Production (PF for promoting hydraulic fracturing, P for Poland.)

Poland still has a very traditional and climate-damaging mix of energy resources. Extracting shale gas would modernize Poland's energy production and help to meet climate policy targets.

The central evaluation criterion here is the emission balance of climate-damaging gases. Scientific calculations and comparisons are means to legitimize the process-based modernization of the Polish energy industry. The negative judgment of the existing energy supply as existing infrastructure based on coal is used to promote more climate-friendly energy sources such as shale gas. These justifications are mainly found on the side of the Polish government at the beginning of the debate in 2011 and actors from the industry who refer to international energy reports such as the EIA and IEA (International Energy Agency) (both published in 2011). For example:

In its latest report, the International Energy Agency suggests that the world is entering a golden age of gas. Not coal, which emits too much CO₂ into the atmosphere, not nuclear, which in the context of the events in Fukushima in Japan is becoming passé (this is confirmed by the decision of the German authorities to withdraw from nuclear energy), but gas. A fuel that is abundant worldwide and does not pollute the environment as coal does. (Korycki 2011, our translation)

Scientific calculations of CO₂ emissions are embedded in a political agenda, namely, to enter a new era of energy supply ("a golden age of gas") and to rely on the energy resource of gas (whether conventional or unconventional) in the development of the European and especially in the national energy mix. National and international energy institutes act as references for politicians to justify their proposed energy policies.

Argumentation Cluster PFP-II: Hydraulic Fracturing as a Manageable Extraction Process

There is a long-standing experience in the use of hydraulic fracturing. Engineers and industry experts are trustworthy actors with high competence and skills. They guarantee the safety of the application.

In the Polish media debate, shale gas extraction technology is dominantly described as a controllable energy extraction technique. Potential environmental hazards such as the contamination of water are described as manageable due to strict environmental monitoring.

The cooperation of the Polish industry and research institutes with US-based research institutes and industry experts enabled an exchange of knowledge, which acted as an argument for ensuring and securing the adaptation of the technology under new circumstances. The process of adapting fracking technology to Polish geological conditions is accompanied by scientific institutes and their “rigorous” assessments. The central evaluation criterion is compliance with environmental guidelines and limit values by scientific standards for certain, potentially harmful chemical groups. The reference to scientific studies and environmental regulations can be found primarily in the argumentation of actors from national as well as international industry experts, engineers, and scientific institutes such as the Polish State Geological Institute (polish abbreviation: PIG):

PIG employees also checked the impact of hydraulic fracturing, i.e., the injection of large quantities of water with chemicals under high pressure underground, on the surface, and in groundwater. The results showed that permissible rates were not exceeded at any of these elements during the work. The researchers further found that fracking had no effect on the cleanliness of soil, surface, and groundwater. (Duszczuk 2013, own translation)

In this cluster, the appropriate handling of the extraction technology, according to US standards (knowledge exchange) and local specifics (knowledge development), is entrusted to the industrial experts and particularly to the “engineering hand” and its ability to solve technological challenges:

Shale gas, its exploration, and extraction are associated with potential risks to the environment: surface water, air, and the lives of local communities. But if we de-demonize this information and look at shale gas from the engineer’s side, we have a waste product in the form of water used in the well, which can be disposed of with existing technologies. This is not a social or political problem but a purely technological problem that the engineer has to deal with (Kozmana 2011, own translation)

Argumentation Cluster CFP-II: Hydraulic Fracturing as a High-Risk Extraction Process

Extracting unconventional gas with the help of hydraulic fracturing could lead to water scarcity in the long term. Proper management of water usage and chemicals, as well as the recycling of wastewater, is indispensable to avoid high-impacting risks.

The use of so-called chemical cocktails in hydraulic fracturing is not problematized during the drilling injection but rather in the subsequent



wastewater management. Instead, the public debate focuses on the risk of wasteful water use, which in the long run, could lead to scarcity and unequal distribution of water for people and industry. Arguments of environmental organizations are relativized by monitoring approaches and measurements of geological experts and environmental administrations. A few voices from NGOs and research institutes promote this argumentation cluster, which is similar to the ecological justification CFG-II in the German discussion. They contend that fracking is dangerous—although with little public resonance—using evidence from accidents abroad, which have occurred even under strict conditions of control. In a few cases, the risk scenarios of chemical contaminations were attributed to Russian gas companies such as Gazprom to lobby against Polish shale gas production. However, the main actors that refer to these water risks are ecological organizations and NGOs: “This method is, according to environmental organizations, particularly harmful to the environment, because it requires breaking up underground rocks by pumping large amounts of water together with various chemicals.” (PAP, arb. 2011, own translation)

Given the overall marginality of CFP-II, no delegation of conflict resolution was needed, but state/administration requires “on-site analysis of experiences and environmental impact.” Geological experts as testers and providers of “definitive judgment on-site.” While PFP-II argues with the experience of industry and engineers, CFP-II refers to the simultaneous measurement evaluations in Poland that geological experts and environmental administrations conduct to prevent possible dangerous scenarios that environmental organizations address in the public media.

Argumentation Cluster PFP-III: The Extraction of Shale Gas Will Be Profitable for Local Communities

Hydraulic fracturing may lead to the commercial production of natural gas in Poland. The profits from this can be used for municipal investments and thus help local communities.

This cluster is a “classical” combination of long-term industrial planning and the profits it hopes to generate for local communities, such as the creation of new jobs or transport infrastructure in less developed areas. In that sense, it is an argument in favor of changing existing infrastructures in order to enhance the well-being of local communities. The future use of hydraulic fracturing is optimistically discussed by state development units, involved energy companies, local as well as national

politicians such as the Deputy Prime Minister and Minister of Economy Waldemar Pawlak:

During his visit to Kielce on Saturday, Deputy Prime Minister Waldemar Pawlak stressed that the exploitation of shale gas in Poland is a perspective of at least a few years but can significantly change the potential of the Polish economy and energy sector. However, it is important to take care of good legal solutions. Such that municipalities benefit from it as much as possible. (Drabikowska 2011, own translation)

More often, these hopes of commercial shale gas extraction and the associated municipal profits are expressed directly by marshals or district governors of areas where first explorations or drillings were planned.

Argumentation Cluster CFP-III: The Impact of Hydraulic Fracturing Processes Leads to the Destruction of Local Landscapes

Hydraulic fracturing must be avoided because drilling sites destroy our traditional landscape.

In the Polish media debate, we could identify an argumentation cluster that refers to domestic concerns of the local environment. Stakeholders from tourism and agriculture, as well as a few representatives of the PO party, feared enormous upheaval of the landscape by the introduction of hydraulic fracturing. The infrastructure for this technology, they argued, would have a negative impact on natural sites used as recreational areas for residents and tourists, as well as on areas of fertile ground toiled by farmers. However, few politicians brought these concerns into the national debate; instead, they were articulated more often in local areas:

On Wednesday, PO presidential candidate Bronislaw Komorowski spoke about shale gas exploitation during his pre-election visit to London. According to him, the decision in this matter requires consideration of arguments, both "for" and "against." He also said that the exploitation of shale gas would require open-cast mining, as in the case of lignite coal, and therefore would be "devastating for the landscape areas of Poland." (PAP, im. 2010).

The main criteria of evaluation are traditional values of a particular landscape, before-and-after comparison by residents, their concerns about their "traditional" landscape, and economic activities practiced there. This ecological justification is based on various empirical values of local conditions on the grounds and thus, underground. Inhabitants and local national politicians argue in a more conservative or conserv-



ing sense, emphasizing the preservation of what has lasted for years and should not be changed to maintain the well-being of people and the natural landscape. In that sense, the compromise of domestic and civic-industrial values (the economic well-being of local inhabitants and their attachment to their “home”) can be interpreted as more convincing to reach public attention. This compromise somehow “camouflages” the supposedly underlying “green values,” such as the integrity of the local ecosystems, by emphasizing locals’ views of native landscapes.

Local Argumentation Cluster CFP-IV: The Worth of Non-humans

Hydraulic fracturing sites are harmful to the local natural habitat of birds and other non-human beings. As Polish law interdicts any activity in protected natural areas, drilling activities must be prohibited.

This argumentation cluster is close to CFP-III mentioned above but adds a different aspect and, in fact, was articulated, to our knowledge, only in the debates referring to a singular local case in southern Poland. Polish protesters in the south generally opposed the drilling due to concerns about its detrimental impact on water, land, and their health. However, the villagers of the town of Żurawłów assembled a range of additional arguments: trying to keep the energy company out, they filed complaints with the authorities that the company’s trucks exceeded the legal limit on the roads, thereby simply referring to traffic regulation law. They also blocked Chevron’s intention to start drilling in 2012 by invoking a Polish law that states that no activity on the ground should be conducted that could be detrimental to birds’ habits or habitats during bird breeding season (starting in March and lasting several months). This argumentation cluster used existing environmental regulations, such as those promoting the protection of endangered species—animals, plants, and natural habitats—with the help of environmental laws, to oppose activities of hydraulic fracturing, in addition to traditional values such as the heritage of a landscape and fertile soil (as means and ends) or the richness of a landscape in terms of recreation and touristic activities. The reference to protected bird breeding is one new element here and is integrated into a strategy we call—in reference to “the judicialization of politics” (Hirschl 2011)—the judicialization of conflicts: ways of mobilizing law and legal regulation to promote vicariously on behalf of non-humans’ interest.¹⁵ How and in what way environmental legislation is applied at the local level thus opens another arena of environmental discourse worth investigating.

Discussion: Ecological Justifications and the Different (Public) Tests of Fracking

In our analysis of the national media coverage of conflicts around shale gas and hydraulic fracturing, we identified several ecological justifications performed by social actors' disputes about implementing an "unconventional" energy technology. While in Germany, the main competing claims were industrial interests versus civic and environmental ones, with the federal state mostly observing from the sidelines or intervening by promoting expert reports, in Poland, it was the broad political consensus about national energy independence and diversification that played a leading role in the public debate. Table 1 (below) assembles the different argumentation clusters we identified in relation to ecological justification and situates them in the context of justification (orders) presented above. As we will see, the value horizon of what we can call "green" in its different shapes and references is most often exemplified by what, for example, Claudette Lafaye and Laurent Thévenot (2017) described, as compromises with the existing orders (such as civic or industrial justification orders). Others show how green values camouflage in other orders (such as the domestic one) or how they refer to different "green entities" (such as the concern for water pollution or water consumption).

Global Climate Change as a Conventionalized and Legitimate Concern

In the German discursive conflicts we observed, shale gas extraction is contested by global climate change concerns. Shale gas is considered either a climate-friendly energy resource by its industrial proponents or a climate-damaging energy resource by the counter-discourse. Each position refers to CO₂ emission as a test criterion, but with disputed results, depending on the different ways of comparing shale gas and the by-products of its extraction process (including methane emissions) to other energy resources (referring to existing dispositions or imagined energy futures). The main mode of measured evaluation is calculating CO₂-production rates of shale gas and its impact on the global climate; in both, the argumentation cluster "ecological justification" is used on both sides, but they disagree about which tests are correct. The tension between the introduction of a new energy extraction technique and its impact on the climate remains unresolved as the truth of the test is questioned. The actual climate impact of

Table 1 ■ Argumentation clusters and their relations in the German and Polish media debate (diagonal line marks the opposition of values)

	climate change	groundwater	landscape destruction
GER	green-industrial conflict (global)	green-civic-market conflict (local)	
values at stake	energy stability CO ₂ -emissions	economic gain water quality and human health	
tests and main actors	PFG-I: estimating CO ₂ emissions; green value as carbon footprint compared to existing fossil fuels <i>industrial practitioners and federal authorities</i> CFG-I: estimating CO ₂ emissions green value as carbon footprint compared to renewable resources <i>environmental associations, environmental activists, and energy experts</i>	PFG-II: safe: best practices applied by extractive industries; green value as water quality defined by scientific standards <i>industrial practitioners and government agencies</i> CFG-II: unsafe: experiences of foreign contamination accidents and thus the inevitability of technological risks green value as clean water quality for the integrity of human health <i>activists, NGOs, politicians, local economic actors, and local communities</i>	
POL	green-civic-industrial compromise (global)	green-civic-industrial compromise (global)	domestic-civic-industrial compromise (local)
values at stake	energy diversification and energy autonomy CO ₂ -emissions	energy security and energy independence water scarcity and wastewater contamination	local prosperity and communal well-being landscape heritage
tests and main actors	PFP-I: estimating CO ₂ emissions; green value as carbon footprint compared to emission intensity of existing national energy infrastructure based on coal <i>national politicians, economists, national and international energy institutes</i>	PFP-II: appropriate application of the technology; green value as water quality and supply defined by scientific standards <i>engineers, industry experts, and scientific bodies</i> CFP-I: disproportionate use of clean water and its contamination and recycling regarding resource scarcity; green value as a long-term clean water supply for human-beings <i>national and international environmental organizations as cautioners against water pollution; geological experts as testers and providers of "definitive judgment on-site"</i>	PFP-III: improved infrastructures for inhabitants compared to the current state civic-industrial value as modernizing local infrastructures for traffic and job creation <i>state development units, energy companies, national and local politicians (district governors)</i> CFP-II: inhabitant's attachments to local heritage (conserving local attributes) domestic value as a form of personal attachment to recreational sites and traditional use of space <i>inhabitants, national and local politicians</i>

this extraction technology remains open. We, therefore, speak of a “green-industrial conflict.”¹⁶

In the Polish case, and in reference to the existing Polish energy portfolio, shale gas is considered a (more) climate-friendly energy resource in terms of the existing energy mix portfolio. The media debate is expert-centric: arguments are backed up by expert opinions and economic calculations of CO₂ emissions are compared to the existing coal-dependent energy production in Poland. National energy production is viewed in relation to the emission output. Emission measurements, energy reports, empirical data, and statistics are the qualifying objects when testing shale gas as a possible energy resource: shale gas is considered a helpful energy resource to diversify the Polish energy portfolio and ensure a secure energy supply. Therefore, ecological arguments do not stand alone but are embedded in industrial, long-term considerations to secure the domestic energy demand. We call this a “green-industrial compromise.” Actors who would contest this argumentation are missing in the Polish media debate. Compared to the German media debate, climate issues are less central than energy security and geopolitical issues associated with fracking in the Polish media debate. Efforts to gain independence from Russian energy suppliers and reduce the cost of combating climate change by diversifying its energy supply and production are dominant figures of argumentation.

Against the background of European climate protection measures, the energy policy sector in both countries, though with different emphasis, can be labeled “climatized” (see Aykut et al. 2021). The reference to climate change works as a conventionalized form of green justification with standardized testing formats such as the CO₂ measurement. The disagreements—if any—refer to the modes of “correct measurement.”¹⁷

Local Hazards versus Higher Goods, Process at Risk versus Process Safety

In our analysis, we also identified a green-civic-industrial conflict and compromise that refers to the risk evaluation of hydraulic fracturing concerning the quality of water, especially groundwater, and related hazards for human health, in both cases.

In Germany, academics, scientists, and activists use references to “intact versus threatened” nature (underground, water) with potentially harmful effects on humans, to criticize the use of hydraulic fracturing. The testing format is the identification of harmful chemical components in groundwater systems or the “politicization” of not knowing precisely



the chemical constituents and their possible reactions and effects—to them, academics, scientists, and activists fracking is a risky technology with a high potential for harm. Proponents underline the skilled engineering competence in Germany and the complete control of the extraction process—so there is zero risk if technology is used with standard care. As there has been no “solution” to this constellation, we consider it a rather classical green-industrial conflict, which might be transferred into some compromise by the expert commission’s final report delivered in the summer of 2021, which summed up that *ex ante*, as far as is known, there is no serious risk if the technology is used with care.

Specific to the fracking case in Poland is the ambiguous competition between the domestic underground resources such as “gas” and “water.” Politicians and industrial experts consider gas a helpful resource to gain energy independence and become more sovereign as an energy-producing country. As gas extraction can significantly impact the ground, especially the drinking water resources, it must be strictly monitored during the exploration and extraction phases. Voices of worried inhabitants and environmental organizations are silenced by best-practice references of the industry that guarantee “not to violate limits of known chemicals” in groundwater supplies. The testing format is the continuous on-site assessment of fracturing processes by research institutes, analyzing critical values of natural entities such as drinking water components. Standard, industry-specific safety assessments are complemented by an additional impact assessment of environmental elements.¹⁸ As this interferes with the firm’s “national interest” argument, we speak of a “green-civic-industrial compromise,” which allowed fracking to be used with some regular on-site testing measures.

The Local Costs of Landscape Destruction and the Rights of Non-Humans

For the Polish case only, we identified argumentation clusters referring to the massive upheavals of the Polish natural landscape caused by the infrastructural provisions needed for the fracturing processes. Here, residents and local as well as national politicians articulated traditional ideas about nature in place; they express their views of an unspoiled landscape to evaluate the potential impact of shale gas extraction. Landscape conservation for recreational, touristic, and agricultural purposes represented the primary evaluation criterion and was “proofed” by long-established, traditional values of the respective affected environment and the well-being of local inhabitants—which we called a “domestic-civic

compromise.”¹⁹ To this specificity played out in the national arena we would like to add a local example, which additionally could be called a local CFP-IV argumentation cluster concerning the protection of non-humans. Therefore, we would like to add one final observation:

Conclusion: Toward Enclosed Ecological Justifications?

As shown in our empirical analysis, green values and their importance are ordered by different criteria such as scientific risk evaluation, the correct application of environmental regulations as well as local knowledge, experience, and attachment.²⁰ The argumentation clusters of ecological justification referred to what has been identified by Laurent Thévenot, Michèle Moody, and Claudette Lafaye (2000), Claudette Lafaye and Laurent Thévenot (2017) and others or Bruno Latour (1998) as the compromise forms of “political ecology.” Although our analysis shows references to global climate change as a basis for ecological justification, the climate is not introduced as an “end unto itself,” but in relation to catastrophic effects for the biosphere and therefore ultimately for humans. As Latour stated, it is all about human interests—here: about energy supply. The conflictual realm of local hazards shows some elements of what Latour referred to as a “real ecological order” against the modern one if we interpret the debate about technological safety or riskiness that way. However, the proposed solutions—knowledge production, evaluating risk *ex ante* or on-site, and promoting process safety—remain relatively modern. In the national press, we could not identify a solid ecological justification cluster pointing to (local) ecosystems as “ends to themselves.” This is also valuable for the argument of landscape destruction, which is linked to human interest in preserving intact conditions in the sense of traditional understanding.

Our identified forms of compromise are nevertheless not achieved after a long conflictual process between different orders of worth and engaged actors. They show up from the beginning of the European shale gas debate but are postponed indefinitely for different reasons: in Germany because of environmental concerns and the proclamation of further scientific studies; in Poland because of the withdrawal of energy companies and the lack of further investments.

However, in order to account for this current “always already thereness” of ecological justifications, we suggest the concept of an enclosed ecological (order of) justification. Enclosed ecological justification means that, whatever the purpose might be, an account of the



kind of environmental impact and its reach is always integrated and part of the articulated proposal—not in its own right, but to give a solid argumentative foundation for the pursued issue. Such an enclosedness can take at least two different forms:

- an integration of ecological argumentation clusters in every promotion of larger socio-technical projects (e.g., via reference to additional win-win profits for the environment). It is simply no longer possible to promote some new product or technology without undermining the positive effects on the environment, or at least its “do no harm” status.
- as *ex ante* integration of established environmental regulations, like nature protection laws, environmental impact assessments and references to ecological aspects of sustainability.

The concept of an enclosed order indeed must be specified via further research about different subject areas. In our case and similar conflicts, it might be an effect of the focus of debate, which, after all, is the energy supply for human society. It might be very different for cases of protection of natural habitat and biodiversity or ecosystems *per se*. However, it might indicate a general tendency for the six orders of worth identified by Boltanski and Thévenot—rather than constituting a new seventh order, ecological justification has become an inherent parameter of all regimes of judgment and critique, as soon as some relation to the use of “natural resources other than humans” (like air, water, ground, underground, landscape, minerals, etc.) is at stake.

A marginal argumentation cluster we identified in a few local newspapers’ contributions (which have not been our focus here) referred to sporadic voices of protesters as they tried to prevent extractive companies from starting exploration by referring to environmental regulations such as bird protection during breeding seasons. Here we speak of a (possible) green-civic-compromise, as the application of the law was evaluated and administrative judgment took a relatively long time, but due to the fading industrial interest, decisions had not been taken.

The interesting point here is that the situatedness of ecological justification comes into play and complexifies the picture. Future research about ecological justification might more systematically address comparative questions of the level of “conflict existence”—national print media debates are quite different from parliamentary sites, social media meaning-making, or local conflicts, and maybe some more sites we do not know yet.

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Notes

1. Extraction companies left Poland for different reasons. In Germany, a temporary ban was installed by law in 2017 and combined with the creation of an expert commission by the federal state. This commission submitted its final report in the summer 2021, stating that there are, from a scientific point of view, no dangerous risks in fracking if the current state of technology would be used. In addition, it stated that political considerations might take additional factors into account in their reconsidered decision-making.

2. We are aware of the different English translations of the original French term *economies de la grandeur* suggested by Boltanski and Thévenot, as well as its particular and more recent elaboration in the study of *economies of worth*. From a theoretical point of view, we chose to refer to the enlarged concept of *modes of critique* as developed by Boltanski's pragmatic sociology of critique (Boltanski 2011; see handbook by Turner and Susen 2014) to elaborate on the role of green critique and modes of justifi-



cations in contemporary public conflicts. Nevertheless, our understanding of modes of ecological justifications is also profoundly influenced by the empirical work of Thévenot and Lamont (2000) or Thévenot Moody, and Lafaye (2000) and linked research (see the comprehensive discussion in Centemeri [2022] for a most recent contribution).

3. As our main concern is public debate, not concrete local regulation, we will not enter the broader field of economies of the convention (see Diaz-Bone 2018). For an up-to-date discussion of research on green justification within the economies of convention field, see Centemeri [2022]).

4. In the following, we refer to the English translation of *Une justification écologique? Conflits dans l'aménagement de la nature?* (1993) published in 2017.

5. In Centemeri's earlier work (2015), she argues that the approach can make an important contribution to understanding situations of "incommensurability," i.e., situations in which the formation of compromises between conflicting value orientations fail, especially in the effort of environmental modes of evaluation. Please also see Centemeri (2017) and her research on the Malpensa airport in northern Italy.

6. This is reminiscent of the evaluation criteria of loose coupling and rigid coupling proposed by Charles Perrow to evaluate the un/certainties of large socio-technical systems and to decide whether or not to "use it, or better not." See Perrow (1984).

7. For a more systemic comparison of Latour's and Boltanski's theoretical perspectives, please see Guggenheim and Potthast (2012).

8. Similar definitions of green values & justifications can be found in, for example, Cidell (2012); Bodt (2014); Centemeri (2015, 2017); Finch et al. (2017); Holden (2020); and Lehtimäki (2021).

9. The research was carried out between 2017 and 2020.

10. See Borneman and Saretzki (2018), Schirrmester (2014), and Schreurs (2018) for a detailed description of the debate about hydraulic fracturing. In addition, see our contributions Cantoni et al. (2018), Keller et al. (2021), as well as working papers by Klaes (2017, 2018).

11. The German national papers were *Die Zeit*, *Der Spiegel*, *taz*, *Frankfurter Rundschau*, *Frankfurter Allgemeine Zeitung* (FAZ), *Süddeutsche Zeitung* (SZ), and *Die Welt*; Polish included *Rzeczpospolita*, *Gazeta Wyborcza*, *Dziennik Gazeta Prawna*, *Puls Biznesu*, *Nasz Dziennik*, and *Wprost*.

12. Please note that SKAD proposes different heuristic concepts for exploring discourses, controversies, and dispositive, which we cannot explain in detail here (see, for example, Keller 2011, 2013, 2017). Complementary research results are presented in Cantoni et al. (2018) and Keller et al. (2021).

13. This would have to be discussed via further research.

14. This is one possible way of formulating the core arguments. In the following, we will present each cluster in the form of a general statement and then provide some illustrations.

15. Meaning: looking for any kind of potential recourse or loopholes in a given legal regulative framework to enforce one's position. In this local case, this included reference to bird breeding.

16. For a detailed analysis of the ambiguity of climate justifications, see, for example, the study of Knoll (2012, 2013).

17. An analysis going beyond public debate could elaborate in detail on the different "dispositives" that explain this national "relativity of ecological values" (see, for example, the study of Suckert [2014, 2019]).

18. This public argumentation is especially astonishing since Poland was referred to the European Court of Justice by the European Commission for failing to ensure an adequate assessment of the environmental impacts of fracking operations (see European Commission 2016).

19. In that sense, it is similar to the notion of Laage-Thomsen and Blok of a “place-based material engagement” (2020: 162). Here, they refer to Thévenot’s concept of “regimes of engagement” (Thévenot 2002, 2014), which addresses a new mode of conflict solving by referring to familiar attachments (i.e., their attachment to local landscapes).

20. Concerning the notion of different kinds of attachments that are put forward in conflictual situations, the theoretical developments of a *Sociology of Engagement* by Laurent Thévenot (2019) should be re-considered.

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