

Inconvenience versus Rationality: Reflections on Different Faces of Climate Contrarianism in Poland and Norway

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(Manuscript received 1 November 2017, in final form 9 August 2018)

ABSTRACT

There has been increasing scientific evidence related to climate change and its attribution, impacts, and possibilities of mitigation. Yet, climate contrarianism still persists. This paper concentrates on Poland and Norway—two fossil fuel giants that represent essential differences on climate contrarianism. In Norway there is a broad social and political consensus about the attribution and importance of climate change and a motivation to undertake climate change mitigation measures, whereas in Poland the inconvenient truth on anthropogenic climate change remains particularly inconvenient. By taking a qualitative approach, this paper discusses different drivers of climate contrarianism in both countries; provides examples of contrarian attitudes present in society, media, politics, and research; and compares their role in Polish and Norwegian contexts. The findings show the difficulties in defining universal factors determining contrarian attitudes, because their understanding and weight can be different among countries and a more nuanced analysis is needed to scrutinize different national contexts. The conclusion calls for more comparative research, which would combine quantitative and qualitative approaches investigating climate contrarianism.

1. Introduction

Although climate change is one of the most severe challenges that humanity faces in the twenty-first century (Feulner 2017) and a majority of climate scientists agree upon the anthropocentric causes of global warming (Anderegg et al. 2010), climate contrarianism still persists. Scholars have investigated factors influencing environmental views and behaviors, including climate change attitudes (see Engels et al. 2013; Franzen and Vogl 2013; Freymeyer and Johnson 2010; Marquart-Pyatt 2012a; McCright et al. 2016a; Tranter and Booth 2015; Whitmarsh 2011), but most of these studies remain descriptive and atheoretical, and some findings have

been contradictory (McCright et al. 2016b; Whitmarsh 2015). However, several authors conclude that politics is one, if not the most, important predictor of climate change views and attitudes (Brulle et al. 2012; Goebbert et al. 2012; Marquart-Pyatt et al. 2014; Whitmarsh 2011). This is not surprising since political views determine individual responses to climate change (Knight 2016; McCright et al. 2016b; Whitmarsh 2011); policy-makers influence the general public's perception and understanding of climate change (Diethelm and McKee 2009; Moser 2010), they have the power and legitimacy to undertake the mitigation measures (Lorenzoni et al. 2007), and, no matter what kind of measures would be introduced, politicians need public support to implement them (Moser 2010). In other words, climate change is an extraordinary example of how a scientific fact can become politicized by public actors. While combining

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DOI: 10.1175/WCAS-D-17-0120.1

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the political sphere with attitudes about climate change, [Engels et al. \(2013\)](#) suggest that climate contrarianism might actually be a phenomenon of the Anglo-Saxon cultural sphere. Even if there are studies investigating climate change views from contrarian countries outside of this sphere, such as Poland (see, e.g., [Knight 2016](#); [Kvaløy et al. 2012](#); [McCright et al. 2016a](#)), they represent a quantitative approach, which often does not provide contextual information needed to reflect the nuances in which climate contrarianism has developed.

In this paper, we portray an overview of climate contrarianism in Poland and compare it to the Norwegian counterpart. While conducting the Climate Change Impact Assessment for Selected Sectors in Poland project (CHASE-PL; see <http://www.chase-pl.pl/> for a description), we noticed that both countries present different positions on climate change. There is a broad social and political consensus about the significance of climate change in Norway, while in Poland the inconvenient truth about anthropogenic climate change remains particularly inconvenient. Thus, we would like to use the scientific capital and accumulated empirical knowledge that have been developed and collected during the project and later to address the following question: What are the potential explanations for the embedded contrarianism in Poland and Norway? We chose these two cases to verify propositions about drivers of climate contrarianism and to learn more about it from a context other than the Anglo-Saxon sphere. Moreover, since we did not come across relevant literature dealing with this issue in a comparative way, with this paper we would like to call for intensive research explaining public and state responses to climate change in Poland and Norway. Last, we think it is important to look more closely at cases representing different faces of climate contrarianism in both countries, namely, fossil fuel giants and large carbon dioxide (CO₂) emitters, and on the basis of such an investigation we could launch a discussion on how the scientific understanding in the wider community differs between the two countries.

We base our deliberations on an extensive literature review, including documents, scientific papers, gray literature, media reports, and data coming from different surveys. This represents a comprehensive collection of knowledge that has not been analyzed anywhere else. In addition, some information is strengthened with primary data coming from semistructured interviews with actors active in the climate and energy field in Poland, conducted by the first author. [Section 2](#) starts with a short overview of climate change contrarianism, and it distinguishes actors participating in spreading the contrarian information. Later, this section summarizes factors explaining climate contrarianism at the individual

and systemic levels and presents our research approach. A systemic profile of both countries is reviewed in [section 3](#). Then [section 4](#) concentrates on society and media, [section 5](#) refers to contrarian examples present in a public (political) sphere, and [section 6](#) offers conclusions.

2. Definitions, grounds, and factors determining climate contrarianism

a. Literature review

Differences among terms such as “climate skeptic,” “denier,” and “contrarian” have been already discussed in the literature (see, e.g., [O’Neill and Boykoff 2010](#)), and studies investigating climate change skepticism have used differentiated conceptualizations to detect it, such as people’s awareness, perceived risks, seriousness and impacts of climate change, its anthropogenic roots, scientific consensus about it, or support for climate policies (see, e.g., [Engels et al. 2013](#); [Knight 2016](#); [McCright et al. 2016a](#)). In this paper we use the term “contrarian,” broadly understood as an individual who disagrees with the scientific evidence on climate change trend, cause and impacts, processes of scientific knowledge generation, and climate decision-making and responses in the form of policy instruments, independent from the level of certainty of skeptic belief ([Van Rensburg 2015](#)) and independent from narratives that these individuals are following ([Hobson and Niemeyer 2013](#)).

The scientific examination of climate contrarianism is relatively new. Its development is related to the awakening of global environmental awareness at the end of the 1980s and the early 1990s, and contrarianism’s development was driven by the fossil fuel industry ([Jamieson 2011](#)). This “crusade” began in the United States,¹ and it coincided with the collapse of the Soviet Union and resulted in the rhetoric proclaiming a replacement of the “red threat” with the “green threat” ([Dunlap and McCright 2011](#)). As a next step, corporate actors joined forces internationally to protect their interests ([Miller and Dinan 2015](#)) while at the same time other types of contrarian actors globally arose (such as think tanks), which resulted in the development of a strong international network of such entities (and also in Poland), which remained connected with actors operating in the United States as a center ([Harkinson 2009](#)).

The “climate change denial machine” discussed by [Dunlap and McCright \(2011\)](#) gives an overview of mechanisms determining the spillover of climate

¹For a detailed description of a contrarian strategy pursued by an industry actor in the United States, see, e.g., [Supran and Oreskes \(2017\)](#).

contrarianism and functioning of contrarian actors. Next to fossil fuel corporations, they list politicians, scientists, conservative think tanks, amateur climate bloggers and self-designated experts, public relations firms, “astroturf” groups, and (conservative) media. The roles and activities of contrarian actors are interdependent and intertwined, and they reinforce themselves (Dunlap and McCright 2011). For example, at the beginning of this movement, fossil fuel corporations tried to mobilize scientists² to promote contrarian views on climate change (Jamieson 2011). Unsuccessful international efforts to undermine the climate change science turned into developing domestically politically viable tactics such as financing think tanks that could continue producing contrarian information on climate change (Miller and Dinan 2015). While being active in national and international networks of policy-makers, these actors try to create conditions under which any mitigation measures can be challenged as too costly, in economic or political terms (Layzer 2007; Miller and Dinan 2015), and, to blur their linkages to the fossil fuel industry, contrarian scientists try to present their opposing views as intellectual courage against “mainstream” political correctness (Diethelm and McKee 2009). Although over 97% of climate scientists support the tenets of anthropogenic climate change (Anderegg et al. 2010), the credence given in public space to contrarian researchers creates a false impression, as if both stances were of comparable weight. The remaining 2%–3% of papers rejecting anthropogenic climate change are characterized by methodological flaws and a pattern of common mistakes (Benestad et al. 2016).³ All in all, the presence of contrarian points within the scientific community negatively influences its perception and credibility (Lewandowsky et al. 2015).

While media play an important role in spreading information on climate change (Boykoff et al. 2015;

Vainio and Paloniemi 2013; Whitmarsh 2011), they can also act as agents in the contrarianism-production process by providing unreliable information; reproducing unchecked claims of politicians; or, in the name of presenting “balanced” information, referring to contrarian scientists/experts (Dunlap and McCright 2011; Miller and Dinan 2015; Norgaard 2011). In this manner, the activities of contrarian actors concentrate on spreading and advocating messages, which activity can be identified as an “organized disinformation campaign” (Dunlap and McCright 2011) or “manufacturing uncertainty” (Dunlap 2013). While different strategies of creation of such messages can be recognized (see, e.g., Diethelm and McKee 2009; Lewandowsky et al. 2015; Moser 2010), they focus mostly not on the *goal* of the climate change mitigation but on the *need* for it, and they aim to reinforce the status quo (Miller and Dinan 2015). Since the public derives knowledge about climate change mostly from the media and from the claims of politicians, people remain vulnerable to these strategies. Moser (2010) distinguishes three dimensions through which contrarian views are present: cognitive, affective, and behavioral. While taking a broader, anthropological approach aimed at explanation of future political outcomes, Norgaard (2011) defines these individual’s contrarian responses as “an active resistance” to disturbing information that could evoke negative feelings. She explains it as a psychological process of creation of emotions, leading to collectively organized patterns of thinking and understanding. Eventually, these cultural norms come to be reflected in political–economic systems.

b. Research approach

In this context, it is not surprising that scholars combine different factors determining climate change views and behaviors, including individual and systemic variables. The former group encompasses, for example, age, gender, income, education, environmental values and beliefs, postmaterialist values, political orientation, class identification, energy source preferences, urban residence, or different trust forms. The latter group of variables comprises, for example, gross domestic product (GDP), climate vulnerability, environmental quality, population density, urbanization level, postsocialist past, democracy level, and country’s level of CO₂ emissions (see, e.g., Brulle et al. 2012; Chaisty and Whitefield 2015; Franzen 2003; Franzen and Meyer 2010; Kim and Wolinsky-Nahmias 2014; Marquart-Pyatt 2012b; McCright and Dunlap 2011; Nawrotzki 2012; Orru and Lilleoja 2015; Pisano and Lubell 2017; Poortinga et al. 2011; Sandvik 2008). After scrutinizing key predictors of climate change views, McCright et al. (2016b) recently proposed a theoretical framework explaining the strength of some of

² Many of them had at this time a similar experience working for industry on spreading doubts about scientifically based evidence of ozone depletion or for the tobacco industry on refuting the argument that second-hand smoke causes cancer.

³ In their paper, Benestad et al. (2016) analyzed 38 commonly cited contrarian papers and found substantial errors in all of them that put their conclusions into question. One common shortcoming for all of these papers was that they ignored previous work and information that did not fit their conclusion. Another explanation for erroneous results included insufficient model evaluation, leading to results that were not universally valid but rather are an artifact of a particular experimental setup. The examined contrarian papers also suffered from flaws that included false dichotomies, using inappropriate statistical methods (or even containing misunderstanding of basic statistical concepts), or basing conclusions on misconceived or incomplete physics.

these factors in relation to their position embedded in the political–economic system. This model is based on a broad interpretation of the antireflexivity thesis (McCright 2016; McCright and Dunlap 2010) defining contrarian actors as a collective force defending the industrial capitalist system. This framework integrates two principles: 1) climate contrarianism can be predicted by variables aligning with ideological or material positions within the capitalist system and 2) the strength of these ideology-based positions depends on the strength of the contrarian countermovement (McCright et al. 2016b).

On the basis of presented insights and by taking a qualitative approach, we would like to depict how climate contrarianism functions in the Polish and Norwegian contexts. Thus, while discussing the system’s spheres from the denial machine, where the contrarianism is reflected (society, media, politics, and, to some extent, science), we will apply the abovementioned framework into our cases. Recognizing the model’s limitations resulting from its embeddedness in late-industrial capitalism, which can make it inadequate for different political–economic settings (McCright et al. 2016b) such as Eastern Europe with its communist legacy (Chaisty and Whitefield 2015; Jorgenson et al. 2014; Marquart-Pyatt 2012b), we will discuss purposively selected drivers that are essential for the framework’s functionality and check their applicability in our cases. From component 1 of the framework as defined above, we focus on indicated variables related to the ideological position in the political–economic system, that is, environmental values, beliefs and identity, and political orientation (McCright et al. 2016b, p. 186); within component 2, we elaborate on the strength of the (contrarian) movement. Yet, although we think that the investigated cases are extraordinary in comparison with the U.S. setting for which the framework was designed, we do not want to dissociate ourselves from it but rather to adjust some propositions that can clarify the formation of climate contrarianism. In this manner, within component 1, we would like to expand the understanding of the identity factor, not limiting it to its environmental dimension but rather extending it to the broader identity issues that can distort the uptake of scientific information, as elaborated in the cultural cognition thesis by Kahan et al. (2011, 2012). Thus, with this complementary information, we will put emphasis on elements constituting identity that we find especially relevant in the Polish and Norwegian realities and, as such, important to explain and understand how contrarianism works there. Component 2 of the framework will be shown by taking an actor-oriented approach, as suggested in the research dedicated to social acceptance of energy infrastructure (Dermont et al. 2017; Devine-Wright et al. 2017) or climate adaptation measures (Moser and Ekstrom 2010).

Since we are aware that most of the interactions in the nexus between the industrial actors and the political domain take place “behind closed doors,” we will recall public statements made by decision-makers regarding climate change, climate policies, and the energy system. In this sense, we understand public authorities to be a voice of the strongest industrial actors in the political–economic system. Recognizing that there is an evident lack of data dedicated to Poland, it will be our natural focus, considering also that there is (almost) a non-existence of such statements expressed by Norwegian politicians.

3. Comparison of Poland and Norway

Poland and Norway can be considered as two most different case studies (Della Porta 2008) with many substantially differing elements, which include climate and energy policies. Except for comparable geographical areas (Norway is the sixth largest country in Europe, whereas Poland is ninth), significant differences can be observed in the population size, economy, and energy indicators. Table 1 summarizes selected categories that give an overview of systemic conditions represented by both cases. In addition, both countries have undergone different paths of development. Starting in 1989, Poland has experienced a dynamic transition from communism to democracy, from single-party rule to party pluralism, and from a planned economy to an open-market economy. In contrast, Norway is one of the most established and developed democracies worldwide, with the strong role of state that assures high standards of living (Christensen and Lægveid 2005; Gulbrandsen 2007). According to the Organisation for Economic Cooperation and Development (OECD) “Better Life Index,” which measures the well-being of societies, Norway is the leader among 35 investigated countries, whereas Poland occupies the 27th position (OECD 2017). The Norwegian wealth is related to the discovery of huge oil and gas deposits in the North Sea during the 1960s and contributed significantly to the economic development of the country. This discovery resulted in the founding of the integrated oil and gas company Den Norske Stats Oljeselskap A/S by the Norwegian government in 1972, to participate on the continental shelf and build up a Norwegian competency within the petroleum industry and to establish the foundations of a domestic petroleum industry. It grew to become a large company that represented a pillar in the wealth creation that supported the Norwegian welfare system through taxes, and it had a big share in Norwegian gas export (Norsk Petroleum 2018). A large part of the revenues from the offshore industry has been

TABLE 1. Comparison of Poland and Norway [compiled by the authors from EDGAR (2016), GUS (2016a), IEA (2017), Kaspersen (2016), and World Bank (2017)].

Category	Poland	Norway
Area (km ²)	312 679	385 252
Population (m)	38.430	5.213
GDP per capita (USD)	\$27,811 (39th globally)	\$59,302 (8th globally)
Energy production (Mt of oil equivalent)	67.33	196.31
Total primary energy supply (Mt of oil equivalent)	94.02	28.75
Electricity production (GW h)	159 059	142 327
Employment in fossil fuels sector	147 000 jobs in the mining and quarrying sector in 2015, with a decrease of 38 000 jobs in comparison with 2005	185 300 jobs in the petroleum industry in 2016, with a decrease of 40 000 jobs relative to 2014, primarily due to a reduction in the oil price
Annual emissions of CO ₂ (excluding LULUCF) (kt)	294 879.37	43 109.01

invested in the Government Pension Fund Global rather than being spent instantly on public goods (to avoid the so-called Dutch disease and to prepare for the future when the oil has run out). In public, supporters of the Norwegian offshore industry often argued that natural gas was a more environmentally friendly alternative to coal and sometimes even a means to reduce CO₂ emissions, as scenarios for future energy mix by the International Energy Agency (IEA) included fossil fuels (Lund 2012). The company changed its name to Statoil ASA when it became privatized and was listed on the Oslo Stock Exchange and the New York Stock Exchange in 2001. In 2018 the company profile was again rebranded, and it changed its name to Equinor ASA. Its ambitions were to become an energy company with a basis in a wider range of energy sources than just oil and gas (Aftenposten 2018). The resources themselves have not, however, determined the shape of the electricity regime—in both Norway and Poland this has been determined by a combination of historical developments and/or availability of certain resources. Poland's electricity system is centralized, and it has been dependent on coal. Large coal production was inherited from the communist system, and nowadays Poland is the largest hard coal producer in the European Union (EU) (BP 2015, pp. 30 and 32). The Norwegian electricity system has always been decentralized and has been based on locally based hydropower (Sataøen et al. 2015). As a result, in Norway 96% of electricity comes from hydropower, whereas in Poland 82.7% of electricity originates from coal (IEA 2017). In contrast, electricity production from renewables in Poland in 2015 amounted to 22.5 TWh (around 14% of the total electricity production), with prevailing biomass and wind power (GUS 2016b). However, the increase of electricity from renewables has been hampered by legislation passed in 2016 that blocks investments in windmills in proximity

to built-up areas. Such patterns of electricity generation affect the emissions profiles of both countries: power generation is responsible for more than 50% of total Polish greenhouse gas (GHG) emissions (KOBIZE 2015), whereas emissions from electricity production in Norway are very low and emissions resulting from oil and gas extraction are considerable (Steentjes et al. 2017).

With regard to climate change policies, both countries signed the United Nations Framework Convention on Climate Change (UNFCCC) in 1992 and the Kyoto Protocol in 1998, under which they agreed to control their GHG emissions. The emission targets foreseen in the Kyoto Protocol for the time horizon 2008–12 were –6% for Poland and +1% for Norway (which could increase emissions in reference to the base year). Countries with an economy in transition, such as Poland, had the right to select the base year. Poland chose the year 1988 with higher emissions, instead of 1990 as chosen by most countries, including Norway. After the collapse of the communism system in Poland, in 1989, there was a rapid decline of industrial production and outdated, ineffective, highly polluting and energy-consuming industries were gradually overhauled. The information compiled by UNFCCC (cf. Shishlov et al. 2016) gives the base-year GHG emissions for Poland and Norway as respectively 563.443 and 49.619 Mt CO₂e (CO₂ equivalent). The average emissions of Poland and Norway for 2008–12, including land use, land use change, and forestry (LULUCF), were 396.038 and 51.898 Mt CO₂e, respectively. This means that, in relative terms, the GHG emissions in Poland for 2008–12 decreased from the base year by 29.7% while in Norway they increased from the base year by 4.6%. Hence, in Poland the Kyoto Protocol target (–6%) was easily met with considerable surplus while in Norway the target (+1%) was not met. In addition, the drivers and means of the domestic climate policies are

considerably different. Whereas the Norwegian government declared in January of 2008 an ambitious goal of becoming carbon neutral by 2030, mostly by buying carbon offsets from other countries (Norwegian Government 2014), the development of climate policies in Poland is mostly driven by the EU (Ceglaz and Ancygier 2015). Although, the transformation of the 1990s gave optimistic assumptions for ambitious developments of climate policies in Poland, they were hampered in the late 2000s (Karaczun and Szpor 2013), including selective and insufficient implementation of EU climate policies (ClientEarth 2013) and an open opposition to the EU climate and energy policy targets (Ancygier 2013). The Polish government has been promoting a success story of effective long-term decoupling of GDP growth and reduction of GHG emissions (KOBIZE 2013) and potential threats resulting from the change from coal-based, low-cost electricity production toward a low-carbon economy, as was projected in a report contracted for by the Polish Electrical Energy Committee, arguing that such change can lead to an almost 8% GDP decline in 2030 (EnergySys 2014). At the same time, the Polish government has been ignoring alternative opinions that show that low-carbon innovation can give an impulse to the Polish economy (Karaczun and Szpor 2013).

4. Society and media: Values, identity, and political orientation

To the knowledge of the authors, there is no study covering climate issues and attitudes in Poland and Norway in a comparative manner, but data and information regarding both countries, in an international comparison or focusing on single issues, are available. For example, the study by Tranter and Booth (2015) comparing 14 industrialized countries revealed that Norwegians are placed at the second position as climate contrarians (after Australians). Yet, these results are embedded under specific conditions of the whole analysis and still the number of contrarians amounts to 15% of the nation, that is, a relatively small part of the society. The most current and complementary study investigating climate attitudes of Norwegians⁴ (including concerns, beliefs, emotions, identities, energy choices, and climate policy support) shows that contrarianism in this country is a marginal phenomenon (Steenjtes et al. 2017).

This picture is different when we look at Poland: international opinion polls clearly show that Poles are less

concerned about climate change and take fewer personal actions to fight climate change when compared with the rest of Europe (European Commission 2015, 2017). A survey of 40 countries by the Pew Center showed that the percentage of individuals in Poland who thought that climate change was a very serious problem was just 19%, far less than in other EU countries, which ranged from 41% to 56% (Stokes et al. 2015). According to the survey carried out by Ipsos MORI in 21 countries, 47% of Poles agree that “climate change we are currently seeing is a natural phenomenon that happens from time to time” (Ipsos MORI 2016b). They also belong to nations that have a relatively large minority who disagree that “climate change is largely the result of human activity” (19%; Ipsos MORI 2016a). Although these trends have changed in comparison with 2014 in a less contrarian direction, in both categories, Poland was in the most skeptical quartile of compared countries. A survey carried out in Poland in 2016 presents similar results: 44% of Poles agree that the ongoing climate change manifests a cyclical and natural phenomenon (warmer periods follow colder periods). This statement is contested by almost the same number (43%) of Poles. The same study states that, although almost one-half of Poles (49%) think that the scientific community agrees on anthropogenic climate change, a high percentage (40%) still think that scientists are divided about such scientific evidence (Feliksiak 2016).

Such a difference in attitudes between both societies can be partially explained by visible signs of global warming such as retreating glaciers, increasing temperature, the disappearance of snow, mild winters, more rain, or the appearance of new species, which Norwegians conscientiously notice because of their distinctive relationship to nature (Arnold et al. 2016; Daugstad 2008; Vorkinn and Riese 2001). Indeed, the outdoor orientation is one of the essential Norwegian values (O'Brien 2009), and being friendly toward the environment is an important part of being a Norwegian (Steenjtes et al. 2017). It does not mean, however, that contrarianism does not exist in Norway at all—it adopts a special form resulting from the other side of the same “identity coin.” Namely, the Norwegian identity is closely connected to good governance, democracy, wealth, egalitarianism, and economic prosperity that all are assured by the state, and many think that it would have not developed without oil and gas production, which therefore can be listed among the identity's constituencies as well (Arnold et al. 2016; Gulbrandsen 2007). According to Norgaard (2006a,b) this double-sided consciousness leads to a dissonance, and, in consequence, a socially organized denial that is reflected in political-economic relations that, in the case of Norway, are historically very strong and

⁴The study also included France, Germany, and the United Kingdom.

guarantee a maintenance of the universal welfare system (Gulbrandsen 2007). It does not, however, have a reflection in political (left–right) orientation (Steentjes et al. 2017), because the political class agrees upon the significance of climate change and any politician who makes a public contrarian statement is usually subject to social ostracism (see, e.g., Ørstavik et al. 2015).

In contrast, in Poland there is unanimity between political parties in contesting climate change and subsequent reluctance for climate policies (Marcinkiewicz and Tosun 2015; Szpor and Witajewski-Baltvilks 2016) (more examples on this are provided in the next section); therefore, political orientation is also not necessarily the crucial factor determining contrarianism in Poland. Although Poles declare that they appreciate and care about the environment, most of them think that protecting jobs and economic growth should be the top priority, even if the environment suffers to some extent (Szpor and Witajewski-Baltvilks 2016). Thus, many believe that the cure (climate change mitigation) could be worse for Poland than climate change itself (Kundzewicz et al. 2015), particularly when faced with a high carbon tax and the threat of “carbon leakage” and, in consequence, loss of jobs in Poland to non-EU countries, which may not partake in global climate change mitigation (Kundzewicz 2013). There is a strong link between identity and the fossil fuel (coal) sector in Poland, but it has only a local/regional dimension related to geographical distribution of the coal resources (Mandrysz 2011; Wódz et al. 2012). The values that are important components of identity in Poland are family, friends, and religion, which gave a feeling of stability during the unstable period of political–economic transition that the state was not able to assure (Krasowska 2013; Swadźba 2014; Wódz et al. 2012). This is also reflected in a public statement expressed in 2016 by the former minister of foreign affairs Witold Waszczykowski that (although it was a rhetorical shortcut) presented all of the abovementioned “traditional Polish values” and underlined that the renewable energy sources do not belong to them (OKO.press 2018). In just the opposite way, most public actors underline coal’s significance in a national context (see next section), although a considerable part of the society prefers the development of renewable energy sources instead of coal (Gwiazda and Ruszkowski 2016).

In this context, it is relevant to compare media coverage since it is a preferred source of information that plays a crucial role in forming the understanding of environmental problems (Biernacki et al. 2008). Norwegian media pay attention to scientific and international dimensions of climate change. For example, the Fifth Assessment Report (AR5) of the Intergovernmental

Panel on Climate Change (IPCC) was reported four times in the Norwegian Broadcasting Corporation (NRK) *Dagsrevyen* television news (Painter 2015), and there were 39 articles discussing it, in three differently oriented newspapers, published in the days adjacent to the AR5 plenaries of IPCC working groups. In Poland, there were only seven published articles in the three monitored newspapers, and the Polish evening news programs *Wiadomości* and *Fakty* had no reports on the launching of IPCC AR5 (Kundzewicz et al. 2017b). In a similar vein, an international study investigating newspaper coverage of the IPCC reports in 22 countries showed that Poland has the second-least amount of coverage (Kunelius et al. 2016). With regard to the coverage of articles in weekly or monthly magazines in Poland from September 2013 to February 2014, Kundzewicz et al. (2017b) found out that one-half of 22 examined articles were contrarian. These magazines contrasted the IPCC findings with Nongovernmental International Panel on Climate Change (NIPCC) conclusions that were conveyed as a proxy for truth. In contrast, in Norway, groups such as “klimarealistene” that promote the NIPCC—and, in what is not a surprise, collaborate with the Heartland Institute in the United States, which backs the NIPCC—have not been taken seriously.

5. Strength of the contrarian movement: Policymakers and scientists

The media often uncritically reproduces contrarian declarations and statements of political actors, which influences and reinforces the public attitude toward climate change. These arguments, often coming from the fossil fuel industry but expressed by politicians and officials, sound more credible and legitimized. In Poland, this interrelation is obvious, given that the privileged position of the coal industry results from the communist era, when coal was produced in very high quantities and largely exported to earn convertible currencies. Thus, the coal-mining lobby became very influential and continues to remain strong (Bokwa 2007; Stoczkiewicz and Jędrasik 2014; Szulecki 2018). Although in Norway clear links between political class and the fossil fuel industry exist as well (see the previous section), they do not lead to publicly verbalized contrarianism. For example, as a response to the U.S. withdrawal from the Paris Agreement in June of 2017 that was led by U.S. President Donald Trump, the Norwegian government was one of the most critical ones in the global comparison, and it was supported by the fossil fuel industry, showing a strong disapproval of this step (Berglund 2017), whereas the Polish government was the only one, globally, that was happy about Trump’s decision (Popkiewicz 2017).

Polish politicians support the energy system that is based on coal, even if the production in many deep Polish coal mines is unprofitable and the preference leads to the import of cheaper coal (Kundzewicz et al. 2017a). Indeed, the Polish government has frequently intervened to help coal companies affected by unfavorable conditions on the international market. Jarosław Kaczyński, head of the ruling “Law and Justice” party, declared that a part of coal production could be treated as “non-market commodity” (<http://next.gazeta.pl/next/7,151245,20042100,6-najciekawszych-pogladow-jaroslaw-a-kaczynskiego-na-tematy-gospodarcze.html>). Smoothing variability of coal prices is regarded as consistent with the Polish *raison d'état*. In the presidential and parliamentary election campaigns in 2015, the winning party repeatedly promised support to the Polish coal industry. In one of the presidential campaign's speeches, Andrzej Duda (current president of Poland at the time of writing this paper) said, “I do not agree on closing the Polish mines . . . Coal is our national treasure and guarantee of energy security” (<http://wpolityce.pl/spoleczenstwo/245431-duda-nie-ma-zgody-na-zamykanie-polskich-kopaln-wegiel-to-jest-nasz-narodowy-skarb-i-gwarancja-suwerennosci-energetycznej>). In December of 2015, he stated that decarbonization and reduction of coal extraction are a heresy and an action against the state (<http://www.pap.pl/aktualnosci/news,441099,prezydent-mowienie-o-dekarbonizacji-jest-herezja-i-jest-antypanstwowe.html>), and in October of 2015, he vetoed an amendment extending the Kyoto Protocol until 2020, arguing that the country needed more time to analyze its impact on the national economy.

Similarly, but already in 2011, Janusz Lewandowski, then the EU Budget Commissioner, said that “the thesis that coal energy is the main cause of global warming is highly questionable . . . Moreover, more and more, there is a question mark put over the whole ‘global warming’ as such” (<http://www.euractiv.com/section/public-affairs/news/poland-s-eu-commissioner-in-surprise-climate-denial-move/>). This is not an isolated example of doubting the scientific findings on climate change: J. Kaczyński stated that there is no evidence that CO₂ emissions play any role in climate change and there are very many proofs that they do not play any role (<http://www.newsweek.pl/polska/co2-nie-ma-znaczenia-dla-klimatu-kaczynski-na-slasku,89656,1,1.html>). Zbigniew Ziobro, at present the minister of justice and attorney general, said (ironically?) that “We drink carbon dioxide in carbonated drinks, so it cannot be harmful” (<http://naukaoklimacie.pl/aktualnosci/klimatyczna-bzdura-roku-2014-wybrana-72>). Jan Szyszko, a former minister of environment, stated that “carbon dioxide emitted in Poland is the gas of life for living natural systems so that they get better”

(<http://www.klimatycznabzduraroku.pl/gaz-zycja>). He advocates climate change mitigation measures related to the forestry sector, which he is closely related to, although they are overrated, insufficient, and unsuitable (Szulecka 2016). A former member of the European Parliament, Janusz Korwin-Mikke, delivered a peculiar speech in European Parliament on 25 June 2014, in which he proposed the prosecution of bad-faith climate scientists for their “lunacy.” (<https://www.youtube.com/watch?v=AjMQYE6Qp-k>). He stated that “the global warming—if it is real—is not anthropogenic. . . But it is the instrument to achieve a specific goal: zero growth. And this goal. . . has been reached. For 2 trillion Euro spent—and wasted.” Contrarian views can be also met among civil servants dealing with climate and energy policies, claiming that “there are many different views on causes of climate change”⁵ (see also Braun 2014).

In this context, the acceptance of the EU climate and energy package and related climate change mitigation policies have been perceived as an externally imposed policy problem (Ancygier 2013). A clear noncooperative approach represented by Polish officials at the EU level led to a situation in which, on 23 October 2014, the eve of the European Council's meeting supposedly to agree on the EU's climate and energy goals until 2030, three ambassadors (British, French, and German) in Warsaw published an article titled “To leave the dangerous path” in the influential Polish daily newspaper *Rzeczpospolita* (Buhler et al. 2014). The authors sketched a vision of an ambitious global agreement that would improve the chances that a dangerous level of warming will not be reached and presented positive national experiences in decarbonization of the energy sector. The article was a specific appeal to the Polish government, because of a threat that it would veto a European climate and energy agreement again (cf. Ancygier 2013). Nevertheless, to show that Poland is not a “black sheep” of the international community, the government organized two Conferences of Parties (COP) of the UNFCCC: COP 14 in 2008 in Poznan, Poland, and COP 19 in 2013 in Warsaw.⁶ The latter attracted considerable attention, because in the opening speech, Prime Minister Donald Tusk emphasized the role of coal for economic growth of Poland, whereas development of renewables was not mentioned at all. Parallel to COP 19, the Polish Ministry of Economy organized a “coal summit.” For this “achievement,” Poland was given the “Fossil of the Day”

⁵ Interview in Ministry of Energy, Warsaw, Poland, 25 October 2017.

⁶ The COP 24, in 2018, is going to be organized in Poland as well, this time in Katowice in Upper Silesia.

award (<http://www.climatenetwork.org/fossil-of-the-day/poland%E2%80%99s-blind-addiction-coal-earns-them-fossil>). In addition, Marcin Korolec, who opened COP 19 as the minister of environment and took the duty of conference president, was dismissed from the ministerial position during the conference by Mr. Tusk, which was interpreted by the leading nongovernmental organizations (NGOs) as a clear signal that the Polish government was not treating the COP seriously (PAP 2013).

The fossil fuel sector can attempt to strengthen its position in the system to some extent by using the support of scientists. Typically, contrarian scientists are not climatologists, but rather are, for example, geologists, astronomers, economists, or mining or energy engineers, whose arguments in the case of climate change often reach beyond their competence field. For example, in February of 2009, the Committee of Geological Sciences of the Polish Academy of Sciences presented a position paper on global warming in which an opportunity to explain the current warming by geological analogies was suggested (KNG 2009). This manifesto, delving into an area outside of the Committee's competence and contradictory to the statement of the General Assembly of the Polish Academy of Sciences, included many mistakes, did not refer to any scientific literature, and eventually was challenged by the Committee of Geophysics of the Polish Academy of Sciences (Popkiewicz 2013). It is interesting to note that an informal Polish–Norwegian collaboration of climate contrarians commenced in the late 1980s and early 1990s. For example, contrarian arguments created by such collaboration have been “smuggled” into a peer-reviewed journal (Jaworowski et al. 1992b) and other publications (Jaworowski et al. 1990, 1992a). The late Zbigniew Jaworowski, professor of medical sciences, was very successful in disseminating contrarian views in Poland (Doskonale Szare 2013) such as, for example, his contributions to the opinion-making Polish weekly magazine *Polityka*. His scientific advice backed selection of the advent of a new ice age (on the ground of orbital theory) as a fake-news cover story in July of 2003, during the record-hot summer weather in Europe. This is not to say that there have been no scientifically informed and bona fide voices on climate change in Poland—they can be found, for example, in two Polish websites: *Doskonale szare* (Perfectly Gray Body; <http://doskonaleszare.blox.pl/html>) and *Nauka o klimacie* (The Climate Science; <http://naukaoklimacie.pl/>). The latter website bestows an annual “award” for the climate hoax of the year, and it is worth noting that two of these awards have been given to abovementioned ministers in the Polish government, Mr. Szyszko (2015) and Mr. Ziobro (2014).

In this manner, it is difficult to find a countervailing force to the position of the fossil fuel sector in the political–economic system. Such a role should be naturally ascribed to the NGOs, which could influence the social perception of climate change, but this is not the case in Poland. Although there are examples of successful actions led by environmental NGOs and environmental movements in Poland, such as stopping the development of a motorway crossing the small Rospuda River in northeastern Poland (Szulecka and Szulecki 2013), their endeavors advocating action on climate change result in a small social resonance. Therefore, instead of concentrating directly on the importance of climate change, they try to redirect their actions and link climate change with the issue of smog⁷ that became a highly discussed topic in Poland in recent years and that was able to mobilize environmental movements at the local level (Szulecka and Szulecki 2017).

6. Concluding remarks and discussion

In this paper we presented an overview and explanation of climate change contrarianism and compared national contexts of Norway and Poland. These countries represent two different approaches with regard to climate change contrarianism, and this is what encouraged us to investigate their respective drivers. We based our analysis on the model proposed by McCright et al. (2016b), emphasizing the ideological factors determining positions in political–economic systems and the general strength of the contrarian movement. In addition, we supplemented this approach with the cultural cognition thesis proposed by Kahan et al. (2011) underlining the role of identity in the creation of contrarianism. Our findings show that factors suggested by these authors are confirmed only partially and that it is still difficult to define universal drivers of contrarianism that are valid in different cases.

Although one can state that in both countries environmental values are important for the society, this does not have a direct reflection on the occurrence of contrarian attitudes. One reason for that could be that Norway seems to be more vulnerable to climate change, and its direct implications are much more visible “on the ground” for the public in Norway than in Poland. Another explanation could be that environmental values are inevitably coupled with the Norwegian identity, which is not the case in Poland. In this context it could be

⁷ Interview with ClientEarth, Warsaw, 14 November 2017; interview with Greenpeace Poland, Warsaw, 16 November 2017; telephone interview with WWF Poland, 5 December 2017.

reasonable to scrutinize the relationship between other elements important in shaping the identity and its impact on the contrarianism, such as religious beliefs, which have been excluded from McCright et al.'s (2016b) model. Actually, such investigation would be relevant in the case of Poland—as suggested by Kvaløy et al. (2012), religion can have only a moderate impact on climate attitudes or, at least, it does not increase the level of contrarianism (Tranter and Booth 2015). Yet, this nexus is different in the Polish case, as illustrated by the reaction to Pope Francis's encyclical, “*Laudato si'*” (Pope Francis 2015), which devotes paragraph 26 to the need for climate change mitigation. In the largely Roman Catholic Polish society, the teachings of the church and of the Pope are usually heeded with much attention and respect, but since publication of the encyclical it has been regarded by nominally conservative authors as anti-Polish; it was also noted that the papal infallibility dogma is not necessarily valid for the issues of global warming (Lamża 2016).

Similarly, political orientation (left–right), considered to be one of the strongest factors of contrarianism, is not an important driver in both countries, where the political spheres are like a monolith in representing climate change attitudes. Perhaps in such cases it would be more relevant to focus on different elements regarding the political dimension such as trust in governments and political system, especially when scholars are not sure about its exact impact. For example, Tranter and Booth (2015) showed that less trust in the government is correlated with climate contrarianism, whereas Vainio and Paloniemi (2013) found that distrust in governments and the political system motivates people to take climate-friendly actions. In the case of both countries, it would be relevant to check such a relation, especially when Norwegians are characterized by one of the highest levels of trust in governments and public institutions globally (Christensen and Læg Reid 2005) and Poles, on the contrary, hold comparatively low levels of trust in government (OECD 2013; Ortiz-Ospina and Roser 2016). Moreover, the public acceptance of the Government Pension Fund Global in Norway, built on offshore revenues, creates a space for a careful analysis, since it could contribute to the high level of general trust. This, in turn, could be explained by the fact that people in Norway have experienced the benefits of a welfare system that they consider to be unique, built on the “Nordic model,” with a trusted way of governance (Eklund et al. 2011). The Nordic social democracy and an inclusive and egalitarian society distinguish Norway from Poland and Anglo-Saxon countries, characterized by stronger competition, a fiercer market economy, and a purer brand of capitalism. These differences may also be

possible explanations for how the fossil industries respond differently to climate change in the respective countries. In this context, cultural aspects of interpersonal trust among Norwegians may also affect climate change attitudes, because climate change is a collective responsibility and coping strategies require collaboration on par with the Norwegian term “*dugnad*” (meaning volunteer collective effort, dating back to the Viking era).

With regard to the last element of the framework, the strength of the contrarian movement, we find it appealing that the strong position of fossil fuel actors in the political–economic system can lead to two different outcomes with regard to contrarianism. Since the oil and gas sector is much more important for the Norwegian economy in general than the coal sector is for the Polish economy, it should mean that fossil fuel industrial actors have a stronger position in the Norwegian system than in the Polish one and that they would undertake many actions to spread contrarian information in Norway. However, it is just the opposite—they are involved in activities calling for climate change mitigation measures or they advocate, at least, for a broader energy mix. One can interpret this by stating that the strength and the behavior of the fossil fuel industrial actors in the political–economic system can differ from sector to sector and among different fossil fuel types. Moreover, the continuously diminishing role of the coal sector for the Polish economy over time could justify a hypothesis that, in the past, contrarianism could have been even stronger there. This would, however, be difficult to validate because of the lack of historical data and the fact that the decline of the coal sector in Poland is temporally related to the political–economic transformation as well as to contrarianism's development at the global scale. Therefore, it shows that the relative strength of contrarian movement positions can be a result not only of the currently available resources but also of the path dependency of developments of social, political, economic, and technical regimes. This would be an interesting domain to investigate in a comparative way in the future with cases from different countries, such as Germany, with its low level of contrarianism (Engels et al. 2013) but with a very strong (and protected) position of the automobile industry (Eddy and Ewing 2017). Moreover, we agree with McCright et al. (2016b) that the strength of the contrarian movement may have different repercussions in political–economic settings that are different than late-industrial capitalism. A fast and aggressive introduction of the free-market economy in Poland resulted in “winners and losers” of the transformation and in occurrence and growth of many social problems (Wódcz et al. 2012). Therefore, we could

identify other challenging areas of further research, such as geographical distribution of fossil fuels and its impact on identity in the regional comparison or the role of the fossil fuel industry in redistribution of national wealth.

We are aware of the shortcomings of our work resulting from the lack of a big primary dataset and the descriptive character of our analysis. However, we think that this work shows that, in analyzing climate contrarianism in differentiated contexts, in-depth qualitative case studies can add value and shed light on issues that require more detailed elaboration, interpretation, and insider knowledge. This work can also trigger a discussion as to how to investigate climate contrarianism at all—the dominant form of surveys cannot always give a nuanced understanding of the surroundings in which it develops and functions. It also concerns the understanding of potential drivers of contrarian attitudes, as exemplified by environmental values, which can have multiple meanings for different societies and which may bring different effects in various settings. Last, it raises a question about the researcher's role in counteracting contrarian information spread in specific contexts.

Although dissemination of scientific knowledge on climate change can overcome contrarian attitudes (Shi et al. 2016), it still has a one-direction character of communication, and, to be effective, communication strategies should take more sophisticated and tailored forms [for a discussion, see Moser and Dilling (2011)]. One suggestion for that could be establishing collaborations that integrate actors from industry, politics, and civil society (Kundzewicz et al. 2017a; Wall et al. 2017). Next, learning from our cases in preparing tailored communication strategies, we would turn to Smith et al. (2017) who underscore basic values, like security or well-being, in evoking climate change concerns.⁸ One line of argumentation could be smog and ambient air pollution-related concerns, which could improve awareness of the coal-air health-quality link (Pillay and van den Bergh 2016), and this issue has the potential to make a clear tie with climate change. Since energy security and energy independence are presented in the Polish public debate as very important issues (Świątkiewicz-Mośny and Wagner 2012), linking climate change with energy security (Toke and Vezirgiannidou 2013) could be another starting point to reduce contrarian attitudes in Poland. Last, but not least, in the latter context, we think that an extended Norwegian–Polish cooperation could bring additional

outcomes in showing how seriously climate change and its attribution, impacts, and possibilities of mitigation can be treated by decision-makers. We do not refer here to academia, because, as our research project's example (and many others) show, there is an understanding and willingness to cooperate. We think, however, that the latest developments in Polish–Norwegian gas cooperation, building a special energy infrastructure (the Baltic Pipe), and its importance in the Polish public debate about gaining independence from Russian gas supplies (Jakóbiak 2018; KAB 2018), give opportunities to create a forum in which representatives from the fossil fuel industry, policy-makers, and researchers could together tackle the issue of climate change significance.

This is not to say that in both countries only examples of black–white division are present. We are aware that this is not true, and it would be unfair to state so, because there are many people in Poland who point to the importance of climate change, and the general attitude of the political establishment seems to be slowly but continuously changing. Nevertheless, with this paper we hope to stimulate a deeper discussion about climate contrarianism, its drivers, and different channels of spreading contrarian information, as well as to contribute to the campaign against contrarian claims.

Acknowledgments. This work was supported by the Polish-Norwegian Research Programme operated by the National Centre for Research and Development (NCBiR) under the Norwegian Financial Mechanism 2009-2014 (Norway Grants) in the frame of Project Contract POL-NOR/200799/90/2014 (to authors REB and ZWK) and by the Foundation of German Business (Stiftung der Deutschen Wirtschaft) (to author AC). This paper is based on an independent research resulting from the cooperation launched in the CHASE-PL project (Climate change impact assessment for selected sectors in Poland). We thank two anonymous reviewers for their valuable comments and suggestions. We also thank Michael Hickin for his proofreading and editing help. The authors declare no conflict of interest. This paper reflects the authors' views and not necessarily those of the listed institutions.

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⁸ However, we do not intend to call for creation of negative feelings related to fear (see, e.g., Janković and Schultz 2017) or to selective science communication strategies that could evoke ethical concerns (Persson et al. 2015).

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