A Literature Review on

POLARIZATION AND ON ENERGY AND CLIMATE POLICY IN CANADA

RAFAEL AGUIRRE

MARCH 2020

THIS REPORT WAS PREPARED BY:

**RAFAEL AGUIRRE
(GRADUATE STUDENT, POSITIVE ENERGY)**

POSITIVE ENERGY FINANCIAL SUPPORTERS

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INTRODUCTION

Positive Energy has identified polarization over energy and climate issues as one of the three core challenges facing Canada in its quest to "build and maintain public confidence in public authorities (…) making decisions about the country's energy future in an age of climate change" (Cleland and Gattinger 2019: 6).

This review explores scholarly literature on polarization as a general phenomenon as well as the state of knowledge over its extent and nature in the energy and environmental domain (see Box 1 for an overview of Positive Energy's broader research agenda on polarization).

Overall, the review finds that polarization as a general phenomenon has increased in Canada, as it has in other jurisdictions, notably the United States. There are some differences between the two countries: in both countries, there is evidence of increased affective polarization (strong positive/negative feelings towards political parties) and partisan sorting (views on policy issues polarized along partisan lines), but, contrary to the US, studies on Canada have not yet firmly established that partisan polarization (hardening of partisan identities) is on the rise. When it comes to polarization over energy and environment in Canada, there has been relatively scant research undertaken to understand the nature, extent and drivers of polarization.

The review is organized as follows: section one provides a number of basic definitions, section two explores the partisan elements of polarization and their connection to public policymaking, and section three examines the role of ideology and values in polarization. Given Positive Energy's keen interest in questions of public trust and confidence, section four explores the role of trust when it comes to polarization. Section five examines scholarship related to polarization over energy and climate in Canada. conclusions follow. Appendix 1 lists a selection of findings and measures of polarization in Canada, the United States and other jurisdictions.

BOX 1: POSITIVE ENERGY'S RESEARCH ON POLARIZATION

The second three-year phase of Positive Energy (2019-2021) aims to address the following question: How can Canada, an energy-intensive federal democracy with a large resource base, build and maintain public confidence in public authorities (federal, provincial, and territorial policymakers and regulators, Indigenous governments, municipal governments and the courts) making decisions about the country's energy future in an age of climate change?

Three fundamental questions form the research and engagement agenda. How can Canada effectively overcome polarization over its energy future? What are the respective roles and responsibilities between policymakers, regulators, the courts, municipalities and Indigenous governments when it comes to decision-making about its energy future? What are the models of and limits to consensus-building on energy decisions?

Understanding the various dimensions of polarization over energy and environmental issues is fundamental to addressing roles and responsibilities, and models of and limits to consensus-building. And yet, the extent and consequences of polarization over Canada's energy future are unclear. Positive Energy's research and engagement on polarization seek to understand polarization as a general phenomenon affecting policies of all sorts, to assess the nature and extent of polarization when it comes to energy and environment, and to offer strategies to address or navigate polarized contexts.

The polarization research programme includes the following projects:

- A literature review on polarization as a general phenomenon: its causes, severity and consequences
- Original survey research to measure and track polarization among decision-makers and the general public
- Interviews with energy and environmental leaders to understand the role of language and terminology: unpacking assumptions and interpretations of the term "transition"
- Exploring attitudes and the role of values when it comes to perceptions of energy technologies (renewable energy technologies and carbon capture, utilization and storage)
- Identifying "What Works?": Case studies of organizations and programs designed to address polarization
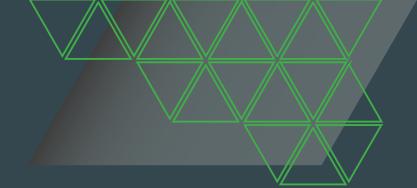
A FEW DEFINITIONS

Polarization is a form of social organization that occurs when competition shapes relationships. One classical study of party systems emphasizes: "a duality of parties does not always exist, but there is almost always a duality of tendencies (…) Every center is divided against itself and remains separated in two halves (…) the fate of the center is to be torn asunder" (Duverger 1963, cited by Johnston 2017: 68). In general, polarization can be understood as a configuration of political and social relations, characterized by a heightened degree of contention that influences beliefs, attitudes and values.

More specifically, the literature identifies a number of different forms of polarization (see Box 2). Partisan sorting refers to the degree to which citizens' attitudes on policy issues are clustered according to partisanship (Kevins and Soroka 2018: 110). Partisan polarization, by contrast, refers to the hardening of partisan identities and the more consistent alignment of three dimensions of voters' attitudes: partisan identity, ideology, and vote. The notion of partisan polarization reflects what most current commentary on national politics refers to as polarization.

Political scientists in the United States have been discussing polarization for almost two decades as a trend in the electorate and among political elites. In the US, liberal values and policy views have become the almost exclusive territory of Democratic voters, and the same can be said about conservative values, policy views and Republican voters. The hardening of partisanship and ideological positions seems to correspond, in the US and other cases, to a combination of long-term social trends whereby social groups sort themselves in accordance with ethnicity, education or income (Bishop and Cushing 2009).

Some streams of research approach polarization as primarily a political phenomenon, while others heighten its societal roots or manifestations. In the latter sociological approaches, polarization is taken as a social fact in the sense that it reflects differences in beliefs or values as expressed in policy preferences (and hence party affiliations).

In addition, polarization is starting to include an affective (i.e., emotional) dimension. Affective polarization refers to how much people like or dislike various political parties – those that they support versus those that they don't. It has been growing in Canada since at least 1988 (Johnston 2019) and exacerbates sorting, distance and conflict in ways that corrode public conversations around policy. This, then, can result in the opposite of policy learning. Politicians and political parties can thrive through the cultivation of mistrust and even of hatred. But not all societies or social groups will be equally receptive of such intentions and tactics.

BOX 2: DEFINITIONS OF POLARIZATION

Partisan sorting. Partisan sorting refers to the degree to which citizens' attitudes on policy issues are clustered according to partisanship (Kevins and Soroka 2018: 110). Partisan sorting is different from partisan polarization.

Partisan polarization. Partisan polarization emphasizes the hardening of partisan identities and the more consistent alignment of partisan identity, ideology, and vote, a tendency that is clearly occurring in the U.S. (Bafumi and Shapiro 2009).

Affective polarization. Polarization based upon feelings towards political parties measured by how much people like or dislike each party. It has been increasing steadily and substantially in Canada since 1988 (Johnston 2019).

A **sociological notion of polarization** takes polarization as a social fact (as opposed to a political one): polarization organizes and even constitutes policy preferences and systems of belief or values (example for religion: "the actively religious and secular could even be reacting and counter-reacting to actions and views perceived to be present in the other" (Wilkins-Laflamme 2018: 167)).

Polarization can be seen as an outcome of interaction and the **opposite of policy learning:** a change in attitude towards specific issues after receiving further information about them, closing the gap between previously more distant views (Montpetit and Lachapelle 2017).

PARTISAN POLARIZATION, PARTISAN SORTING AND PUBLIC POLICY

For more than a decade, political scientists in the United States have concentrated on singling out the variables that cause polarization and, more broadly, on examining the dimensions of social life where polarization occurs. The relationship between polarization and policy runs in both directions. The contentiousness around some policy issues nurtures negativity bias towards opposite parties and drives positions further apart (a process known as "conversion," Levendusky 2009). In turn, through partisan sorting, polarization can shape the range of policy options when citizens decide to support proposals that fit to what they perceive to be the preferences of their fellow partisans. When this happens, polarization can have deleterious effects on public policies, weakening their scope and complicating their implementation (Castel et al. 2017).

Partisan polarization is clearly occurring in the U.S. (Bafumi and Shapiro 2009) but it has not been detected with the same parameters in Canada (Kevins and Soroka 2018: 118). Kevins and Soroka (2018) demonstrate that, in Canada, preferences over economic redistribution policies have been aligning with party identification, vote, and income since at least 1992. Put differently, higher income and identification or vote for the conservative end of the political spectrum has become, statistically, a more faithful predictor of conservative views about welfare, and, conversely, lower income and identification or vote for the left-wing end of the political spectrum correlates to more liberal (i.e., progressive) views about welfare. Kevins and Soroka show that the fact that preferences distribute more clearly along the income and party identification-vote divides is evidence of partisan sorting.

Other studies of the Canadian electorate suggest that negative attitudes are also aligning with partisanship, that is: citizens are harbouring more intense emotional rejection of the parties that they consider opposite to their own (Caruana et al. 2015).

Recent studies suggest that the unification of the Conservative Party in 2003 has had the overall effect of tilting conservative positions to the right of the ideological spectrum while making the NDP and Liberal parties more similar to one another (Johnston 2019). This raises the question of the role of the party system in polarization.

According to Johnston (2017), two anomalies characterize the Canadian party system. It is a First Past the Post (FPP) electoral system that – contrary to the expectations of political science – formed a multi-party system rather than a two-party system. Additionally, a centrist party has been dominant throughout the 20th century – although this condition might be changing since the 1990s (see below). The causes of these anomalies, according to Johnston, relate to the weakness of the class basis of the party system, the discontinuity between federal and provincial election cycles, and the opportunities that a large national cultural cleavage (Francophones/Anglophones) offers the dominant party.

These particularities of the Canadian system have contributed more often than not to the strength of the centrist Liberal Party, although the limits of these tendencies are becoming clearer today. Demographic growth in the West has been reducing the political influence of Québec and making Ontario the pivot of victory (Johnston 2017). Moreover, there is an increasing gap between the centre and the right, along with a rise of negative partisanship (the tendency for citizens to say they would 'never vote' for a particular party; this can mobilize people to vote to avoid that party obtaining power) and affective polarization across Canadians (Caruana et al. 2016; McGregor et al. 2016; Cochrane 2015; Johnston 2019). The pull towards polarization seems to be attributable, however, to an intensification of the conservative views of the parties on the right of the spectrum (Cochrane 2015; Johnston 2019).

SOCIAL INFLUENCES:
THE ROLE OF IDEOLOGY, VALUES AND CULTURE

Ideology. Cochrane defines ideology as "the interconnections, the constraints, which bind opinions about multiple issues into coherent bundles of political viewpoints" (Cochrane 2010: 584). Similar to the US (Bafumi and Shapiro 2009), for the first three decades after the Second World War, ideology did not seem to weigh importantly as a source of political disagreement in Canada. The accommodation of political platforms around the centre (with periodic bouts of mild polarization between the centre and the left) gave credence to the theory of brokerage, which highlighted how negotiation between the political parties tended to dilute contrasts (Cochrane 2015). Johnston finds that before 1970 there were elections when the Conservative party stood to the left of the dominant Liberal Party (2017: 68).

But, as is also the case in the US, measures of ideological convergence and divergence have been confirming a trend of ideological polarization in Canada since the 1980s. The Campaign Manifesto Project (CMP) is an international project that assesses the ideological location of policy proposals as included in the party platforms during national elections. The trend of the last three decades shows that the NDP and the Liberal Party have gotten closer, both between themselves but also together in relation to the centre. Meanwhile, at the right end of the spectrum, the merger of the Progressive Conservative and Canadian Alliance parties in 2003 resulted in a shift further from the centre than ever before (Johnston 2017; Cochrane 2015: 158).

This said, there are real challenges specifying what ideology means and how it can be detected. For example, contrary to the intuition of framing a dichotomy as left-right, it may be better to assume that the processes that lead to different political views are asymmetrical. That is, views that constitute opposites at the level of policy may be based on underlying beliefs or assumptions that are not necessarily opposed. For instance, research has shown that peoples' views about economic and social policy are rooted in the egalitarian beliefs and attitudes that tend to prevail in left-wing minded people. By contrast, the economic and social policy views of the right-wing seem to stem from different roots with no obvious affinity to one another: support for free markets and religion (Cochrane 2015).

Values. The study of values, beliefs and attitudes relates closely to that of ideology. Post-materialism (Inglehart 1995 and 1981) stands out as a particularly relevant theoretical approach, especially for the comparison of national jurisdictions over long periods of time. It posits that cleavages in society will emerge due to modernization's effects on values. Higher levels of material security produce a shift towards post-materialistic values (belonging, self-expression and quality of life) over physical sustenance and safety. The latter are taken as consolidated gains in large swaths of the population of developed nations. In addition to material security (the scarcity hypothesis), the other mechanism that accounts for value change is inter-generational population replacement (the socialization hypothesis) (Inglehart 1981).

Since the end of the Cold War, security has taken on different meanings, all of which affect the shift of advanced societies towards post-material values. In one account of these changes, Inglehart and Norris (2012) make the case for broadening the concept of security in the World Values Survey (WVS). A more comprehensive notion of human security has emerged as a result, including peoples' perception of it across three dimensions (personal, community, and national). This new measurement of human security provided a more robust appreciation of the theory of post-materialism to explain value change.

Specifically, higher perceptions of security correlate with higher levels of trust and tolerance (Inglehart and Norris 2012: 87-90). Conversely, diminished expectations about material security can trigger a departure from post-materialistic values.

The comparative and longitudinal observations based on post-materialism tend to underscore the factors that make government and political institutions more robust in the developed world. In that respect, they look at Western society from an angle that contrasts with the above-noted literature on polarization, which is centred on variations of attitudes and their feedback with politics over the last few decades. The importance of perceptions of material security and (diminished) expectations about economic performance have become enormously relevant for explanations of attitudes. Economic anxiety and pessimism have been on the rise in Canada, measured through variables like self-rated social class and self-rated progress (Ekos Politics 2017). Research has started to reveal the correlation between anger, frustration and polarization (Webster 2018; Itten 2018). These trends underscore the already mentioned importance of knowing how economic anxiety relates causally with issues like the rise of populism and mistrust of government and political institutions.

Culture. Cultural theory also complements research on ideology. This research program evolved from anthropology and relies on organizational factors and their capacity to structure belief systems.

Cultural theory seeks to link motivations and beliefs, with a strong emphasis on the symbolic dimension of socialization. The program has a universalistic ambition to identify and explain symbolic commonalities across cultures. At its core, the theory proposes that four types of cultural symbols exist: individualistic, egalitarian, hierarchical, and fatalistic (Douglas 1996). These types result from the specific situation of groups and individuals in a social whole (holistic paradigm), where social organization encompasses all levels of life (body, identity, legitimacy of political power) (Douglas 1996: 341).

Cultural theory has been used as a frame for the study of attitudes in a range of policy fields, from technology risk and climate change to gun control (Kahan et al. 2011). In Canada, Montpetit and Lachapelle (2017b) apply a cultural theory framework to identify cleavages (or commonalities) that cut across regional divisions animating policy controversies in the country. Their research confirms that region plays a less transcending role in the formation of policy views than values. It serves to question (or even dispel) the otherwise intuitive notion that disagreements on policy issues can be attributed to value-divergences that mask regional fault lines. For all the influence that region can have in understanding policy controversies, it is the framing of controversies within each region that makes values express differently as policy preferences.[1] All told, region remains important, but perhaps in different ways than commonly believed. Cultural theory can serve, hence, as a tool to explain existing views and values, and to communicate more effectively across people with different value structures (see below).

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1. Issue-framing, however, can have an effect on the translation of values into policy preferences across regions. "The effect component of regionalism assumes that regional divides are so deep that issues are framed differently across regions, such that values have distinct regional effects" (Montpetit and Lachapelle 2017b: 6). For instance, support for the Energy East pipeline was one of the three issues that showed an important effect component of regionalism (attributable to framing).

TRUST, GROUP AFFILIATION AND FRAMING

Trust can be understood as a psychological state, the observation of which needs to address cognitive characteristics of the mind at the individual level. At the same time, trust also implies the existence of social relationships and a certain group of norms and values, or social capital, which evolve in complex ways (Fukuyama 2001). There are a number of relevant themes when it comes to cognitive-centred approaches to polarization.

Individual-level and group-level influences: blaming and politically motivated reasoning. *Negativity bias* is one of two main cognitive mechanisms used by political scientists to build explanations of polarization (Weaver 2018). This concept refers to the disproportionate sensitivity towards adverse stimuli (e.g., focusing on potential losses, not potential gains) and the proclivity to respond to others in ways that can worsen conflict (Hibbing et al. 2014). Negativity bias is at the root of blaming, a psychological mechanism that can nurture and lock in the politics of polarization in US political institutions (Weaver 2018). Blaming as a strategy for individual politicians serves to build political support, but it shifts proposals and lawmakers away from the centre. It is often associated with negative political advertising, a trend that began in the 1990s in the US and Canada (see Iyengar and Ansolabehere 2010; Marland 2015). Scholars agree that blame generation weakens the relationship of accountability towards the public, who rally around the purpose of prevailing over their (often imagined) counterparts and not around public values (Weaver 2018; Bafumi and Shapiro 2009).

The other frequent psychological mechanism in the literature on polarization is politically motivated reasoning (PMR), "the tendency of individuals to fit their assessments of evidence to beliefs that cohere with their political identities" (Kahan et al. 2017: 181). The roots of PMR are the human need for social belonging and group approval, paired with the capability of the human mind to set directional aims (what is right) and confirmation aims (what is desired) (Kunda 1990). Individual-level traits can be countered or intensified by peers and groups. Being essentially social creatures, individuals change or modify their beliefs because beliefs signal their belonging in groups (Kahan 2012). Weber and Klar (2019) have observed how and why individuals uphold or modify their ideological views in response to group pressure.

For Kahan et al. (2015), information gathering and inferences from information serve two main purposes: 1) to get access to science as an end in itself, and/or 2) to affirm the sense of identity in a community with particular cultural commitments. Interestingly, research demonstrates that higher levels of scientific knowledge among Republicans correlate with a hardening of their rejection of the scientific consensus about climate change (Bolsen and Druckman 2018).

To the extent that politically motivated reasoning is deeply rooted in the human mind, practitioners (instinctively or not) seek to use it. Psychological research has been highlighting the potential of skillful politics in the resignification of human action. As Kahan (2010) proposes, communication should uphold the values of each participating audience. For example, people with individualistic orientations and reluctance to endorse more aggressive mitigation policies may be more receptive to technologies like nuclear power or geoengineering, or to market-based solutions and innovative investments on the part of industry. These options underscore human resourcefulness and stand in contrast to spending and regulation, which are often derided by people with conservative ideological affinities (Kahan 2010: 297).

What applies to messages is also valid for messengers. People may be more open to consider evidence provided by members of their cultural community, as some initiatives in Canada and the United States are currently showing. In the United States, for instance, Republicans working to bring their party on board with climate change science and meaningful policy options for mitigation have been underscoring values like entrepreneurship, resourcefulness and inter-generational responsibility, which speak to the core of conservativism in the United States (Climate Policy 2019).[2] Initiatives like the Alberta Narratives Project (Climate Outreach 2019) also emphasize individual responsibility, communitarian involvement and conservation of resources (also pillar values of conservatism).

Language and framing. The above concepts (negativity bias, blaming and politically motivated reasoning) are present (sometimes implicitly) in scholarly interest in framing. In communication, a frame refers to words, symbols, phrases or images that highlight a subset of the potentially relevant considerations about any object (a candidate, policy, political issue, etc.) (Bolsen and Shapiro 2017: 150). Frames suggest conceptualizations of issues or events that social actors with influence can utilize to tilt opinion in desired directions. Through them, elites aim to distinguish between choices. These moves can have feedback effects that contribute to entrenching opposing viewpoints and aggravating misunderstandings and criticism (Druckman et al. 2013).

Perhaps the deliberate portrayal of climate change science as an uncertain set of assertions is the most conspicuous example of framing tactics (Bolsen and Shapiro: 151). But it might be more important to emphasize, simply, that language and symbols matter and that they can be as much part of the problem as they can be part of the solution.

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2. "A hard look at where Republicans stand on climate policy", Author: Julia Pyper, June 21 2019, accessed on September 26 2019, from https://www.greentechmedia.com/articles/read/a-hard-look-at-where-republicans-stand-on-climate-policy#gs.5qnumo

The causal role attributed to the use of framing has appeal as a prescription to find common ground. For instance, Dryzek and Lo (2015) report optimistic results of a dialogue that they facilitated with 25 Australian residents. The dialogue, which included climate and carbon tax sceptics, led to a strong consensus about the need for a new levy. The authors underscore that the introduction of an analogy suggesting the resemblance of a carbon tax to a public health levy (a Medicare carbon levy) helped to overcome distrust among sceptics. A carbon levy became accepted after the deliberative exercise, even when some participants remained sceptical about anthropogenic climate change.

This optimistic point can be taken further. Recent research identifies how problems are either accepted or neglected in relation to the costs and effects of their possible solutions. Solution aversion, as a form of motivated reasoning, completely reverses the intuitive logics of problem solving. At its core, the theory postulates that problems get identified in tandem with potential solutions. Recent research has been testing hypotheses on climate change science and other public problems (Campbell and Kay 2014). These findings, however, resonate with other approaches to motivated reasoning that also underscore solution-finding as the bedrock of problem acceptance among individuals and organizations. In the words of K. Weick (2006: 1): "A system's willingness to become aware of problems is associated with its ability to act on them. When people develop the capacity to act on something, then they can afford to see it. More generally, when people expand their repertoire, they improve their alertness".

LITERATURE ON POLARIZATION OVER ENERGY AND CLIMATE IN CANADA

There is very scant literature exploring polarization over energy and climate issues in Canada. Much of the existing literature addresses issues that relate to energy policy in more general or tangential ways. For instance, Anderson and Stephenson (2011) consider the importance of environmental policy (in general, not in direct reference to climate change and energy) for Canadian political parties. Their assessment posits that the Liberal Party had managed (by 2011) to advance positions on environmental policy to attract votes from the left and the right, while maintaining the issue as one that belongs in their centre-left side of the ideological spectrum (a positional issue). The article highlights the potential of the environmental agenda to become a *valence issue*, that is, an issue recognized by all sides of the ideological spectrum as an important problem to tackle and where politicians and parties would be expected to tout themselves as more competent to solve it — although each through different means. The authors observe that the Conservative Party "appears to have allowed an ideological gap to develop between themselves and the other parties on this issue" (361). Furthermore, the authors suggest that the merger of the Canadian Alliance and Progressive Conservative parties "may have contributed to the sharper partisan divide on the environmental issue in [the] 2004 and 2006 [elections]" (361).

Descriptive statistics of publicly available surveys strongly suggest partisan sorting on energy and climate policy but these relationships must be further specified and explored with methods used to assess polarization in other policy fields (for instance, Kevins and Soroka 2018) or for climate change in other jurisdictions (e.g., Farstad 2018; Lynn Guber 2013). As Carter et al. (2017) point out, there is a dearth of scholarly analyses linking partisanship to preferences on key questions in the energy sector, e.g., carbon pricing, utilization of carbon taxes, the future of oil and gas, and support for low emitting technologies. As a caveat, it must be acknowledged that national or provincial surveys can only go so far in this endeavor: except for very salient and *hot issues* (e.g., gasoline and electricity prices, when they peak, or pipeline decisions of nationwide significance), energy and climate change policies still tend to sit *below the radar.* For example, prior to April 1, 2019, when the federal carbon tax became effective in provinces without one, people in those provinces had an opinion about how a carbon tax *had already affected* their cost of living.[3] Nevertheless, there tends to be broad acceptance among the Canadian public of climate change science — in contrast to the United States, the most sceptical society about the existence and causes of the problem (Lachapelle et al. 2014).[4]

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3. Abacus Data, 2019 (March 27), Will Climate change be a ballot box question? accessed on April 30, 2019, from https://abacusdata.ca/will-climate-change-be-a-ballot-box-question-in-2019
4. See YouGov, 2019, "Most people expect to feel the effects of climate change, and many think it will make us extinct" accessed on September 25 from https://today.yougov.com/topics/science/articles-reports/2019/09/16/global-climate-change-poll; and Lachapelle, Eric, B. Rabe and C. Borick, 2014, "Public Opinion on climate change and support for various policy instruments in Canada and the US: findings from a comparative 2013 poll", CLOSUP (Center for Local State and Urban Policy), Université de Montreal, Institute of Public Opinion and G. Ford School of Public Policy, accessed from http://clo-sup.umich.edu/files/ieep-nsee-2013-fall-canada-us.pdf on September 25 2019. According to this study, Canadians who support the Conservative Party are 7% more likely than the average American to believe that global warming is occurring.

But while there may be polarization of the platforms of political parties, it is not yet clear how these relate to ideology (Guber 2013). For example, a recent comparative study of several jurisdictions suggests that broad environmental concerns and climate change policy must be considered separately when it comes to polarization, because ideological leanings influence each topic differently. One study suggests that climate change is being addressed more directly by parties on the left end of the ideological spectrum, making it a positional, not a valence issue (Farstad 2018). Another study posits that right-wing populism can be at odds with climate change science and policy for reasons of social structure (where carbon pricing policies are believed to disproportionately affect the poor) and of ideational divides (where climate change science is disputed by the economically disaffected who receive some scientific claims and their consequential policy proposals as cultural constructions that favour the interests and views of elites) (Lockwood 2018).

Scholarship on the role of values when it comes to polarization over energy and climate is also in its infancy. Post-materialism can offer insights into views on energy and climate change. On the one hand, post-material values should be expected to align positively with support for environmental policies. For example, Booth (2017) finds confirmatory evidence that youth in the United States hold values that are more post-materialistic than those of older generations and they correlate positively with concern about the environment. For Canada, a literature review (Zhou 2013) confirms trends based on post-materialistic values theory, that partially account for concern for the environment.

In relation to climate change, one analysis of the 7th wave of the World Values Survey notes that a country's recent experience with climate-related environmental disasters has little to no effect on concern for global warming. These results contradict other studies that make a causal link between the objective verification of disastrous environmental events and the inference that their causes are real and must be addressed accordingly: what is called the objective problem explanation of environmental concern (Running 2015). Nevertheless, these findings emphasize the social groundings of perception, which are directly linked to motivated reasoning and other aspects of cognition that have become central to the interest on polarization. Climate change touches people in different ways: disasters may heighten awareness about climate change as a catastrophic risk, but people may still prioritize their material security (Udalov 2019).

CONCLUSION

It is crucial to understand the role of polarization over energy and climate issues when it comes to strengthening public confidence in those charting Canada's energy future in an age of climate change. As part of this overall research objective, this literature review explored scholarly research on polarization as a general phenomenon as well as its extent and nature in the energy and environmental domain.

The review found that polarization has increased in Canada, as it has in other jurisdictions, in particular the United States, although the character of polarization in Canada is distinct. When it comes to energy and environment, there are relatively few studies exploring the nature, extent and drivers of polarization. Positive Energy's research on polarization over energy and environment has, therefore, the potential to make an important contribution to knowledge on this front.

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APPENDIX 1: SELECTED FINDINGS AND MEASURES OF POLARIZATION IN CANADA, THE U.S. AND OTHER JURISDICTIONS

Source	Findings and measurements
Canada	
Walks 2005	Demonstrates the increasing trend of divergence in party support and ideological leaning across the urban-suburban divide in Canada. Suburb/inner-city vote index for federal elections between 1945 and 1997. Differences grow from less than 10 points in 1945 to almost a hundred points in 1993 (Gap between NDP and PC or BQ, while gap between NDP and Reform is almost at a level of 150 points in 1997). Index of ideological leaning also displays a growing gap. From almost no difference in 1945 to almost 125 points in 1997 (NDP against PC and Reform).
Caruana et al. 2015	Analysis of the CES (2008 and 2011). 1) The independent variable is negative partisanship (measured by feeling thermometers and response to question on party that a citizen would definitively never vote for) and the dependent variables are vote choice. The correlation is statistically significant and regression shows that negative partisanship has an effect on vote choice that is independent of that of positive partisanship. Regression analysis also shows that negative partisanship has a positive effect on vote turnout: dislike of particular parties (not of all parties) mobilizes the electorate.
Yang et al. 2016	In a survey applied in 10 nations, Canada was the only case that identified energy as one of the most contentious policy issues in the media (mainstream and social media).
Mildenberger et al. 2016	Canadian Surveys on Energy and the Environment show that Canadians think climate change is occurring with higher intensity than that perceived by U.S. citizens. These perceptions are more marked in urban Canada than in rural Canada.
Montpetit and Lachapelle 2017	Account for processes where attitudes towards projects change after receiving more information about the project. Shifts towards the opposite position or softening of the initial position can be qualified as learning, while hardening of the initial position indicates motivated scepticism. Analysis of surveys on the development of shale gas in Québec and BC show that learning occurs more among people that value independent expertise. Conversely, motivated scepticism is more likely to occur among people that value their participation in a coalition, and who prefer internal expertise over independent expertise. Egalitarian values also predict a hardening of attitudes over time. At the aggregated level of the whole subsystem of policy for each province, the statistical analysis also demonstrates learning in Québec (that consolidated opposition against shale gas), and polarization in BC (where learning was lower than motivated scepticism). The potential for learning in a subsystem seems to be related, hence, to the developmental stage of the policy (although beyond a certain point, learning might not be possible), and to the background factors of the participants (valuing expertise, the purpose of coalitions, egalitarian values).

Source	Findings and measurements
Farstad 2018	This quantitative study for 18 developed nations, including Canada, measures climate salience, as a new concept (dependent variable) that allows differentiating the positions of political parties towards climate change, independent of their positions towards environmental policy at large. The study analyzes manually coded information from the Campaign Political Manifesto. It assesses the statistical correlation that explains climate change salience (dependent variable) by reference to ideology, and controlling for general economic and policy preferences, size and strategic incentives and incumbency constraints of political parties (independent variables). The study finds that left wing ideology does correlate to higher salience of climate change issues.
Kevins and Soroka 2018	Canadian Election Study from 1992 to 2015 (separate analysis for Québec and Rest of Canada), shows that variation in redistributive preferences (dependent variable) can be attributed to party identification, vote or income tercile (independent variables). Analysis of variance shows that the percentage of variance in the dependent variables attributable to partisan identity and vote has grown substantially in the period under study, although less markedly in Québec than in the ROC. Variation on income tercile is the only independent variable that explains a lower percentage of the variance on one of the dependent variables: 1) support or opposition to the idea that people who don't get ahead in life should blame themselves and whether government should be 2) helping people get a decent standard of living, or 3) reducing the gap between the poor and the rich.
Johnston 2019	Affective polarization has been growing since at least 1988. Based on the Canadian Election Study. Dispersion of feeling increasing steadily and substantially since 1988, in Québec and ROC. Measure is standard deviation (measure of distribution) of feeling thermometers of how much people dislike or like each party (0 to 100 with 50 indifference).
Owen et al. 2019	Affective polarization in a 0-100 (feeling thermometer) scale shows a gap of 40 points between in-group and out-group ratings. The source is an online survey of 1,200 Canadians. Social distance between in-group and out-group respondents is also the highest in comparison to other measures of social distance (race, Christian, Francophone, Anglophone). Analysis of use of Twitter shows that partisan-congenial media consumption is higher in right-wing partisans than in left-wing partisans, although overall Canadians show a modest exposure to partisan congenial media. Only 1% of right-partisans get more than half their information from partisan congenial sources (20).

Source	Findings and measurements
United States and other jurisdictions	
Carsey and Layman 2006	A regression analysis to assess the causal relationship between party identification (the independent variable) and ideology. Specifically, the dependent variable (ideology) is gauged through attitudes towards abortion, government spending and provision of services, and government's responsibility to help improve the social and economic position of African Americans (cultural, social welfare and racial issues). Party identification has statistically significant effect on attitude change. Source: three wave panel study of the NES between 1992 and 1996.
Bafumi and Shapiro 2009	Analysis of ANES (from 1950 to 2004 in the U.S.) showing that after a period of party de-alignment (between the 1960s and the 1980s), party identification has become a stronger predictor of vote. Additionally, self-reported ideological preferences have become a stronger predictor of party identification, while divergence on the issues that define ideology has also increased. ANES (American National Election Studies). Standard deviation of seven-point partisan identification self-placement between 1952 and 2002: falling from around 2.2 in 1952 to about 1.9 in the late 1970s, and then increasing (more moderately than it decreased) starting in the 1980 election. Regression analysis shows that party identification as a factor explaining vote exceeds 1950s levels in 2004 (also a U trajectory in the 50 years of the period under study). Ideological self-placement also has stronger predictive power over voting and partisan self-placement.
Levendusky 2009	Ideological polarization (the dependent variable, tracked only on set of economic distribution policy preferences) heightens in moments of inter-party contention, and does not return to the previous levels afterwards.
Adams et al. 2012	Examining the United Kingdom (post-Thatcher years) between 1987 and 2001, the researchers observe that the structural characteristics of the British political system (in explicit contrast to the U.S.) might have been keys to enable depolarization (highly decentralized structure of the U.S. polity and more strict party discipline in the U.K. parliamentary system). Conservatives and Labour in the U.K. could unify with their bases and convey clear-cut cues to the electorate (elites and the masses): between 1987 and 2001 the large political parties in Britain moved away from positional politics into valent competition. The opposite is true for the U.S. and might help to explain why the gap between parties and ideologies has been growing for 30 years.

Source	Findings and measurements
Lynn Guber 2013	Survey analysis for the years 1990, 2000, and 2010 shows that party sorting on climate change policy options occurs as a result of elite cues. Analyses of variance show that global warming is the issue over which Democrats and Republicans differ the most, as compared to 11 other issues, like the quality of the environment, affordability of energy, crime and violence or illegal immigration. These differences accentuate when respondents report being more knowledgeable about global warming: an indication that cues have an effect in polarizing views. Differences between Democrats, independents and Republicans on a range of issues on environmental concern (pollution of rivers, lakes and reservoirs, pollution of drinking water, etc.) are far from marked. The only exceptions are global warming and, to a lesser extent, air pollution.
Levendusky 2013	Original experiments showing that partisan media polarizes already extreme citizens. Similar observations apply to viewers of partisan cable news (Darr and Dunaway 2018)
Druckman et al. 2013	Study confirms the causal relationship between polarization and framing. In non-polarized environments, the strength of a frame (its persuasiveness) has a stronger role and can explain shifts of attitude towards ideologically contrary views. By contrast, amidst polarization party cues can override weak frames.
Levendusky and Malhorta 2016	Experimental test shows that exposure to polarized media has a significant effect on increasing the perception of polarization. Complementarily, when the media "depict the mass public as polarized and divided, citizens moderate their issue positions" (page 291).
Abramowitz and Webster 2017	Ideological differences accentuate affective polarization, possibly because of perceived threat of having out-party extreme ideologues in office. ANES (American National Election Studies) + behavioral experiment. Mean distance in the liberal-conservative scale (own party versus opposing party) increased by more than 100 percent between 1972 and 2012.
Druckman et al. 2018	Survey based experiment showing that incivility of partisan media depolarizes in group and polarizes out-group viewers.
Weber and Klar 2019	Behavioural experiment (United States) illustrates the conceptual difference between partisan ideological sorting and partisan social sorting. Voters that are psychologically more receptive to the opinion of others (high self-monitoring) are less likely to follow their own ideological preferences, and to adjust their preferences to partisanship. Conversely, ideological sorting is more likely among people that care less about the perceived opinion of others (low self-monitoring).

NOTES

POSITIVE ENERGY AIMS TO STRENGTHEN PUBLIC CONFIDENCE IN CANADIAN ENERGY POLICY, REGULATION AND DECISION-MAKING THROUGH SOLUTION-FOCUSED RESEARCH, ENGAGEMENT WITH DECISION-MAKERS AND RECOMMENDATIONS FOR ACTION.

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